



REGIONAL CANCER CENTRE

THIRUVANANTHAPURAM

1995-96

1995-96

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INTRODUCTION

During the year under report, the main activity was the construction of the second phase of the building of the R.C.C. proposed to accommodate offices, pay wards, general wards with 150 beds, palliative care centre, 10 additional pay wards, surgical theatres and post-operative wards, research laboratories, auditorium and Library. This building has a total floor area of approximately 2,35,00 sq.ft in 8 floors. The civil construction is almost complete and it is hoped that the building will become operational by June, 1996. Because of the rapid pace of construction a lot of financial problems were encountered inspite of the generous grants received from the Department of Health & Department of Science & Technology of Govt. of Kerala & Department of Atomic Energy, and Department of Health and Family Welfare, Government of India.

As a fitting reward to the Regional Cancer Centre's activities in comprehensive cancer control, the World Health Organisation designated this Centre as a W.H.O Collaborating Centre for Cancer Control for the developing countries. This has enabled this Centre to pretest, formulate and implement cancer control models developed in the Regional Cancer Centre in the other regions of the world. No other Centre in India has been entrusted with such a major responsibility in collaboration with the W.H.O. in such an important area. The details of the W.H.O. collaborating Centre and its prospects are given in a section of this report.

It is also noteworthy that the Regional Cancer Centre has made phenomenal progress in the area of cancer research. The Centre has produced 9 Ph.Ds during the last decade and it has to its credit more than 500 papers in peer reviewed scientific journals. Such a creditable performance was made possible because of the co-ordinated activities between the research scientists and doctors of this Centre. The excellence achieved by this Centre has enabled us to get major funding for research to the tune of approximately Rs.120 lakhs per annum from prestigious agencies like the International Agency for Research (IARC) on Cancer and International Union

Against Cancer, Cancer Research Institute, U.K, Indian Council of Medical Research, Department of Science & Technology, Centre for Scientific and Industrial Research and Department of Atomic Energy.

This Centre has made excellent progress in human resources development as well. Already 12 persons have been awarded N.C.I (USA) Fellowships under which they obtained top class training in their respective fields apart from another 32 who have been trained elsewhere.

Preliminary work to extend the cancer control activities in Kannur District and Kollam District is already on. The Early Cancer Detection Centre in Kannur was inaugurated by the Hon.ble Chief Minister of Kerala Sri A.K.Antony on February 1996. The number of pain relief centres have also increased during this year. Regular pain clinic activities were started in Palakkad and Cochin apart from 10 other pain clinics which work with the support from the RCC. Continuing Medical Education programmes conducted by Dr.D.Banerjee, Chief of Oncologic Pathology, Princess Margaret Hospital, Ontario, Canada and Dr.Paul Kleihues, Director, I.A.R.C, Lyon, France. were highly appreciated by the students and staff. Programmes like these enabled the faculty from other institutions also to update their knowledge as well as to see the advancing frontiers of medical science.

The report contains the activities of the various divisions and the audited statement of accounts of this Centre for the year 1995-96.

DEPARTMENTAL ACTIVITIES

DIVISION OF RADIOTHERAPY

Dr. M. Krishnan Nair	Director & Professor
Dr. F. Joseph	Professor
Dr. B. Rajan	Professor
Dr. T. Gangadevi	Addl. Professor
Dr. P.G. Jayaprakash	Assoc. Professor
Dr. C.S. Rafeeka Beegum	Assoc. Professor
Dr. S. Parameswaran	Assoc. Professor
Dr. V. Narayana Bhattathiri	Assoc. Professor
Dr. Jayaprakash Madhavan	Assoc. Professor
Dr. Suresh Chandra Dutt	Asst. Professor
Dr. K. Ramadas	Asst. Professor
Dr. K. Ratheesan	Asst. Professor
Dr. Thomas Koilparambil	Asst. Professor
Dr. Francis V. James	Asst. Professor
Dr. Rema Jyothirmayi	Lecturer
Dr. Rojymon Jacob	Lecturer

The department of radiotherapy continues to be responsible for the primary care of cancer patients attending this centre. It functions as two units with 16 radiotherapists. In many situations the optimal management of cancer patients require co-ordination of radiotherapy, surgery and chemotherapy. This department along with other divisions of this centre conduct regular combined tumour clinics three days a week. This department continues to interact with various departments in the Medical College and conduct speciality clinics as follows :

Paediatric tumour Board	Every Monday
Gynaecological Tumour Board	Last Friday of every month
Gastroenterology Tumour Board	1st Thursday of every month
Surgery Tumour Board	3rd Thursday of every month

The follow up clinics at our peripheral centres at Ernakulam and Karunagappally are going on well with better patient compliance.

Clinical Activities

The practice of good quality radiotherapy has attracted more patients to this centre. Compared to previous year there is an increase of 7.4% in the number of new patients attending this centre. Table 1 outlines the extent of the radiotherapy services.

	1994-95	Current Year
External beam therapy	5836	6114
Interstitial implantation	99	94
Mould treatment	10	1
Intralimbal treatment for Ca Oesophagus (Radium)	39	76
Intralimbal treatment for Ca Oesophagus (Selectron)	--	--
Intracavitary treatment for Gyn. Tumours (Selectron)	349	420
Intracavitary treatment for Gyn. Tumours (Manual)	29	61

Academic Programmes :

This department continues to function as the postgraduate training centre for Medical College, Trivandrum. This year we have 9 postgraduate students.

1. Dr. Ajith Kumar T.V	M.D. Radiotherapy
2. Dr. Anish Kumar K.P	-do-
3. Dr. Aswin Kumar	-do-
4. Dr. Beela Sarah Mathew	-do-
5. Dr. Joseph Edison	-do-
6. Dr. Sharmila Mary Joseph	-do-
7. Dr. Sherin Satheesh	Diploma (D.M.R.T)
8. Dr. Sivanandan	-do-
9. Dr. Sonia.S	Diploma (D.M.R.T)

During this year besides the routine symposia and Journal clubs, we had 8 guest lectures by overseas faculty.

The staff members of this department have also contributed in the teaching programmes for house surgeons, nursing students and other paramedical staff.

Staff distinctions and awards:

Prof. M. Krishnan Nair received the Dorab Tata Award in March, 1996. Two of our staff members Dr. Rema Jyothirmayi and Dr. Rojymon Jacob were awarded the UICC-ICRETT fellowship and successfully completed 6 weeks training in the Department of Radiotherapy at Royal Marsden Hospital, London.

Dr. V.N. Bhattathiri was nominated as a Member of the Board of Studies in Radiotherapy, Banaras Hindu University. Dr. Rema Jyothirmayi and Dr. K. Ratheesan received the best paper awards during the XVIIth Conference of Association of Radiation Oncology of India held at Lucknow.

Research Projects :

Various clinical research projects in conjunction with other departments have been carried out. The department staff co-operated in a number of protocol studies in a number of clinical sites viz. head and neck, oesophagus, breast, uterine cervix, central nervous system and G.I. tumours.

The ongoing clinical trials are given below:

1. Clinical trial of 5 FU and Interferon alpha 2b in Hepatocellular carcinoma.
2. Randomised clinical trial of radiotherapy combined with Mitomycin-C in the treatment of locally advanced head and neck tumours.
3. Radical radiotherapy with and without concurrent Interferon in the management of advanced squamous cell carcinoma of oral cavity - A randomised clinical trial.
4. Hyperfractionated accelerated split course radiotherapy in cancers unsuitable for radical radiotherapy.
5. Concurrent Interferon and radiotherapy in nasopharyngeal cancers.

6. Concurrent Interferon and methotrexate in cancers of tongue.
7. Adjuvant trial on carcinoma colon using 5-FU and Levamisole Vs 5-FU.
8. Plasma and tumour tissue glutathione in oral cancers.
9. Multimodal assaying for prediction of oral cancer radiosensitivity.
10. Relation of micro-mutagenesis of markers of proliferation in oral cancers.
11. Radiosensitising with Withaferin in head and neck cancers.
12. Adjuvant chemotherapy with Procarbazine, Lomustin and Vincristin in grade III & IV glioma - a randomised study.
13. Vincristin trial in the management of pleural effusion.

Conferences etc. attended. (Chapter III)

Papers Published / Presented (Chapter IV)

DIVISION OF SURGICAL ONCOLOGY

Dr. Paul Sebastian	Associate Professor
Dr. M. Iqbal Ahamed	Associate Professor
Dr. K. Chlathara	Assistant Professor
Dr. Jem Prabhakar	Lecturer
Dr. Berryson Edward	Lecturer (On Leave)

Anaesthesiology

Dr. Gladys Jeevy	Associate Professor
Dr. Rachel Cherian Koshy	Assistant Professor
Dr. P. Usha	Lecturer

During the reporting year, a total of 1559 procedures were carried out in the Surgical Oncology Division, of which 785 were major radical operations (Table 1).

TABLE 1

Major procedures	-	785
Minor procedures	-	552
Endoscopic procedure	-	222
Total		1559

Endoscopic procedures included cystoscopic examination mainly for staging Carcinoma Cervix and flexible nasopharyngoscopy. As in the previous years, head and neck malignancies constituted the majority (45%) of the radical operations, although there was a definite increase in the number of cases with internal malignancies like gastrointestinal and genitourinary cancers being treated during this period (Table 2)

TABLE 2

Region	No.	%
Head and Neck	349	44.5
Breast	160	20.4
G.I.T & Retroperitoneum	71	9.1
Genito urinary and Pelvis	127	16.1
Bone and soft tissue	49	6.2
Skin	14	1.8
Malignant melanoma	15	1.9
Total	785	100.0

The site wise distribution of Head and Neck cancers treated in the division is given in Table 3.

TABLE 3

Site	No.	%
Oral Cavity	199	57.02
Thyroid	62	17.76
Paranasal Sinuses	15	4.30
Salivary glands	14	4.01
Laryn	7	2.01
Skin	6	1.72
Metastatic Neck Node	29	8.31
Miscellaneous	17	4.87
Total	349	100.00

Majority of oromandibular cancers subjected to surgery were either radioresistant or postradiation recurrent cases, in whom salvage surgery often necessitated reconstruction which was always done as a primary procedure. Nearly 2/3 of these patients required primary reconstruction and pectoralis major myocutaneous flap was used in the majority (Table 4).

TABLE 4

Flaps used for Reconstruction in Head and Neck Region

Pectoralis major myocutaneous flap	-	91
Sternomastoid myocutaneous flap	-	1
Platysma myocutaneous flap	-	2
Nasolabial myocutaneous flap	-	9
Split thickness skin graft	-	14
Total		117

Unlike the previous years, there was a trend towards surgery being considered as the primary modality of treatment, particularly in patients with tongue cancer.

Total mastectomy with axillary clearance was the commonest procedure performed in Breast cancer cases, (139 cases); and in 11 patients breast conservation surgery was carried out. Four patients required flap reconstruction (latissimus dorsi) after excision of locally advanced breast cancer.

TABLE 5

Region wise Distribution of Gastrointestinal Cancers

Oesophagus	20
Stomach	16
Colorectal	23
Retroperitoneum	6
Others	6
Total	71

Compared to yester years, more number of patients with gastrointestinal malignancy were treated in the Surgery division during this period. The region wise distribution of the cases is given in Table 5. In selected cases disposable staplers have been used for intestinal anastomosis.

TABLE 6

Site wise Distribution of Genito Urinary Cases

Ovary	-	48
Cervix	-	34
Uterus	-	15
Bladder	-	5
Penis	-	6
Vulva & Vagina	-	13
Kidney	-	2
Prostate	-	2
Scrotum	-	2
Total		127

A total of 127 patients (16%) with malignant diseases of the genitourinary system and pelvic area were offered surgical treatment. In some cases of cancers of external genitalia, radical excision with groin dissection, necessitated flap reconstruction and Tensor fasciae lata and Gracilis myocutaneous flaps were used for the purpose.

Bone and soft tissue sarcomas constituted another 6% (49) of the total number of cases. Bone sarcomas almost always, were treated by amputation or disarticulation. However, in soft tissue sarcoma of the extremities (Total 28), a planned limb salvage surgery could successfully be carried out in 18 patients.

Anaesthesiology

A total number of 794 patients were given anaesthesia during the reporting period. An average of 66 major surgeries were done per month on the two operating tables.

1. Head and Neck cases - 45%

Of this blind nasal intubation was done in 90% of the patients for giving general anaesthesia, because of trismus - due to the disease or previous radiation therapy or previous surgery.

2. Laparotomy - 25%
3. Thoracotomy with one lung anaesthesia - 5%
4. Breast and other surgeries - 25%

65% of the patients were of the age group above 55 yrs with added geriatric problems for anaesthesia. 50% of the patients had added complications due to XRT and chemotherapy with cardiac, pulmonary and renal toxic effects. 164 patients had hypertension which was controlled before surgery and 40 patients had history of ischaemic heart disease. 156 patients had respiratory problems and 225 patients were operated after controlling their diabetes.

CVP monitoring was done in all major cases and in those patients having cardiac or renal problems. Autologous blood transfusion was given to patients with rare blood groups. Blood was collected in blood bags at the operation table itself before induction of anaesthesia.

For continuous post operative pain relief in some thoracotomy and laparotomy cases, epidural analgesia was given using epidural catheter.

Fifteen patients were operated under spinal anaesthesia and in 17 patients operation was performed under dissociative anaesthesia with Ketamine. Minor surgical procedures in 10 patients were done under nerve block.

Xylocard 2% (2 mg / kg) given 90 seconds before laryngoscopy lessened the hypertensive crisis.

NSAIDs were given as analgesic intra - operatively in time related doses so that they had good analgesia with all the protective reflexes and in selected cases narcotics were also given. No anaesthetic casualty occurred.

Academic Activities

Post graduate students in General surgery from Medical College, Trivandrum and in Oral and Maxillofacial Surgery from Dental College, Trivandrum and A.B Shetty Dental College, Mangalore had regular postings in this division. Journal clubs and symposia are conducted regularly. This division also take part in all the academic activities of the centre.

Conferences etc. attended. (Chapter III)

Papers Published / Presented (Chapter IV)

DIVISION OF PAEDIATRIC ONCOLOGY

Dr. P. Kusumakumary

Associate Professor.

This division is responsible for the primary care of all the patients upto the age of 14 years registered in this centre.

Clinical Activities:

Paediatric Oncology outpatient service functions on a referral basis six days a week. The number of new patients registered during the year under report was more than that of previous years. The pattern of malignancies reported this year is given below:

Leukaemias	140
Brain Tumours	54
Lymphomas	24
Soft tissue sarcomas	17
Neuroblastoma	20
Wilim's Tumour	21
Bone tumours	24
Retinoblastoma	9
Germ Cell Tumours	10
Hepatoblastoma	4
Histocytosis	4
Miscellaneous	40
Non malignant	35
Total number of new patients	402
No. of outpatient visits	4218.

As in previous years the most common malignancy reported this year also was leukaemias. All of them except two were acute leukaemias. There was considerable increase in the number of leukaemia patients during this year.

All new patients underwent detailed diagnostic work up and appropriate treatment was given paediatric tumour board, the multi-disciplinary team consisting of paediatric oncologist, paediatric surgeon pathologist and radiation oncologist met every monday at 2 pm and major management decisions were taken by this team as in previous years.

Academic and Research Activities

This division actively participated in the teaching and training programme of undergraduates and post graduates (MD Radiotherapy, MD Paediatrics) of Medical College, Trivandrum.

Conferences etc. attended. (Chapter III)

Papers Published / Presented (Chapter IV)

DIVISION OF MEDICAL ONCOLOGY

Dr. V.P. Gangadharan
Dr. N. Geetha

Associate Professor
Assistant Professor

The out patient service of this division is conducted 6 days a week. The major work of the division is diagnosis and management of Haematological and lymphoreticular malignancies. 1000 new cases were seen in this division during April 1995- March 1996. Special procedures like Bone marrow aspiration, Bone marrow biopsy, Liver biopsy and central venous catheter installations were done as outpatient procedures.

670 patients were admitted in the ward for administration of high profile chemotherapy and management of emergencies and complications. Critically ill patients were closely monitored and managed in the ICU.

Post graduate students in Radiotherapy were given Medical Oncology training. Teaching sessions included case discussion, seminars and journal discussions. Diagnosis and management of Haematological malignancies and the current trends in the management of all medical oncology problems were taught to them. Ward nurses were trained in patient care especially the care of the immuno compromised and neutropenic patients.

Periodic teaching lectures were conducted in 'MEDISAT' programme of General Medicine department of Medical College, Trivandrum and for the training programme of house surgeons. Chemotherapy clinics were conducted on all wednesdays at 3 pm. Interesting cases were discussed in the clinic. Dr. Santhosh Kumar joined as Professor of Medical Oncology and Cancer research on 04-03-96.

This division was actively involved in various research programmes Ongoing research programmes include

1. Cytogenetic and haematologic remission in CML inter feron 26.
2. Gm-CSF in AML- Role in induction

3. Neo adjuvant chemotherapy and limb salvage in osteosarcoma.
4. Inter ferron in Gestational Trophoblastre tumours with reference to s & HCG regression -Randomised double blind placebo controlled trial.

Dr. V.P. Gangadharan attended the following symposia.

International

1. Symposia on Gemcitabine Indiana Polish, U.S.A June 1995.
2. American society of clinical oncology - Annual meeting Los Angeles, U.S.A, June 1995.

National

Symposia on Good Clinical practice (GCP) New Delhi May 1995.

Special Training Programme

Dr. V.P. Gangadharan underwent Bone Marrow transplantation training for 3 months (September 1995 - December 1995) at George Towns University Medical Centre, Washington, U.S.A.

Conferences etc. attended. (Chapter III)

Papers Published / Presented (Chapter IV)

DIVISION OF DENTAL WING

Dr. Nafina Kumari, K.R. Lecturer

This division plays an important role in the detection of oral cancer and clinical and research activities of the centre.

Highlights of Activities

A. During the year under report the Dental Wing was engaged in the following items of work.

1. Minor operations for biopsies
2. Dental extractions
3. Preparation of bite blocks and prosthetic appliances.
4. Preparation of moulds.
5. Management of pre-cancerous and other Oral lesions.

B. Clinical Activities

This clinic is attending to out patients as well as inpatients. The out patients are referred by the Division of Radiotherapy. Dental extractions and biopsies are the main items of work in the clinic. The clinic works on all days of the week except sundays.

The following table gives data on services rendered by the Dental wing.

Total No. of cases attended during the year	-	3809
New cases	-	751
No. of bite blocks and moulds prepared	-	179
No of Biopsies	-	522
Supplementary Registered cases	-	9
Early Cancer Detection Camps	-	1

Following are the details of biopsies done in the Dental Wing during the period under report.

Sl. No.	Name of Site	No. of Cases	Percentage to Total
1	Right Buccal Mucosa	71	12.86
2	Left Buccal Mucosa	80	14.49
3	Right Commissure	28	5.07
4	Left Commissure	31	5.61
5	Hard Palate	24	4.34
6	Soft palate	8	1.45
7	Right Retromolar region	23	4.17
8	Left Retromolar region	14	2.54
9	Dorsum of Tongue	27	4.89
10	Left Border of Tongue	56	10.14
11	Right Border of Tongue	55	9.96
12	Tip of Tongue	1	0.18
13	Under surface of tongue	6	1.07
14	Floor of the mouth	22	3.99
15	Left Lower alveolus	25	4.53
16	Right Lower alveolus	22	3.99
17	Left upper alveolus	6	1.09
18	Right upper alveolus	6	1.09
19	Right lower sulcus	4	0.72
20	Left lower sulcus	9	1.63
21	Left upper sulcus	3	0.54
22	Right upper sulcus	3	0.54
23	Lower lip	23	4.17
24	Upper lip	3	0.54
25	Right Oropharynx	1	0.18
26	Left Oropharynx	1	0.18

Bite blocks and moulds are prepared by this wing for treatment of Oral cancer patients in connection with their treatment with radiation and radium implantation.

In cases of Leucoplakia, SMF, Lichenplanus etc. monthly check up is conducted to assess the condition of these patients who are under treatment.

C. Research Activities

This division renders support for research work done by Research Division and Radiotherapy department during the year under report.

Conferences etc. attended. (Chapter III)

Papers Published / Presented (Chapter IV)

DIVISION OF CLINICAL SERVICE & MEDICAL RECORDS

Mr R Raveendran Nair

Administrative Officer
(Clinical Services).

This section is concentrating more on patient related services. For this some of the work related to medical records mainly filing, retrieval, coding & indexing, death reporting, stock of various forms etc. were separated from February 1996 onwards. The following are the activities during the period under report.

- OP service (This is managed with support of nursing service & other para medical workers)
- Medical record assembling
- New case registration and income assessment (This is managed with the support of cancer registry)
- Patient identify card preparation
- Information
- Telephone Operation
- Follow-up
- Appointment Scheduling
- Admission & discharge
- Death reporting
- Issue of railway concession
- Payment and patient billing
- Coding and indexing
- Filing and Retrieval
- Patient correspondence & public relations
- Conduct of follow up clinic at ECDC, Emakulam
- Cancer detection & prevention clinics
- Co-ordination with EST, CCL & other schemes
- Security
- Garden
- Pay ward booking and its allotment
- Assisting patient for getting financial aid

A 16% increase in the work load of this division was noted compared to that of the previous year. The following data will reflect on the magnitude of activities of this division.

	Current Year	Last Year
Total new cases registered	7981	7429
Review cases	77511	66328
Daily average patient	258	221
Average attendance per patient	10	9
No. of inpatient admission	6365	5951
Hospital Deaths	302	309
Average length of stay	13	16
Total appointment given	63165	59468
Attendance from appointment	50847 (80.5%)	48764 (82%)

RCC is providing investigation and treatment free of charge to 51% of the total patients. This is 10% less than the figure in 1990 and this is mainly due to the fact that more patients are coming under reimbursement of health schemes. During the year under report 115 new patients received Cancer Care for Life benefits and 2157 patients received benefits under ESI and other schemes.

Table showing the site wise distribution of cases for the years 1985 and 1994

ICD - 9	Site	1985		1994	
		Total	%	Total	%
140-208	Cancer	3683	88.06	6339	85.33
229	Benign neoplasm	49	1.17	102	1.37
230-234	Ca-in-situ	3	0.07	19	0.26
235-238	Neop. uncertain beh.	27	0.64	50	0.67
239	Neop. unspecified nature	2	0.05	6	0.08
630	Vesicular mole	91	2.18	117	1.58
	Others	327	7.82	7.96	10.71
Grand Total		4182	100	7429	100

DIVISION OF NURSING SERVICES

Sr. Vijaya

Chief Nursing Officer

Objectives of the division are to render quality patient care, give support and guidance to patients and relatives, give palliative care service to patients, promote in service education and up to date the nursing standard.

During the year 95-96 the nursing department has been provided with an increased number of nurses due to the increased number of patients in OPD as well as in the inpatient department. A total of 85 staff nurses & 47 nursing assistant give service to different departments.

Activities

Nursing service in Outpatient Departments

OPD Clinics: Provide service in assisting doctors for various investigations and procedures give guidance and help to patients and relatives about the disease and investigations.

Clinical Laboratory & Blood Bank: Nurses are posted in these areas to give services by taking blood samples and by giving psychological support and guidance to patients.

Palliative care service and Pain clinic: Is functioning daily from 9am - 4pm. A total of 6 Nurses are trained & posted for palliative care. The nurse posted in pain Clinic is responsible to assess the condition of the patient by completing the patients data form and to give complementary therapy by way of guidance and psychological support to others visiting the inpatients in wards.

Chemotherapy: In Chemotherapy unit daily 80-90 patients come for Cisplatin and for other chemotherapy. Daily an average of 10-11 patients are posted for Cisplatin regimen. One head nurse 4 staff nurses, Nursing assistants & Sewa attenders manage the unit. Nurses in this unit are conscious to maintain high standard of nursing

care by administering all the toxic drugs with great precaution to avoid any extravasation or tissue necrosis.

Imageology: Nurses and Nursing Assistants are posted in Imageology Division to assist in CT Scan, Ultrasonography, Mammography & Thyroid function tests. Nurses prepare the patients psychologically for all these investigations.

Nursing Services in Inpatient Departments

Medical Oncology: In Medical Oncology ward nurses take care of patients with different cancers, neutropenic patients and patients on Chemotherapy.

Radio Iodine Ward: This unit is also managed by the nurses posted in Medical Oncology ward. All precautions are taken while attending these patients.

Surgical Oncology Ward: Includes operation theatre and surgical ward. Each unit is managed by separate head nurses and staff nurses. In addition to the major & minor surgical emergency cases and diagnostic investigations are also carried out. One staff nurse is posted in each shift in the I.C.U to take care of serious patients.

Pay Ward Block: Consist of patients with all kinds of cancers like Paediatric, Surgical, Medical and Palliative cases. Nurses are posted in 3 shifts: - one nurse in each floor.

Brachy therapy: Unit consist of a bed strength of 10 patients. Nurses & Nursing Assistants are responsible to take care of the patients fully as no bystanders are allowed in the unit. Nursing staff are specially instructed of the hazards of radiation.

Paediatric Oncology: This unit is still in the old building without any basic facilities patients & staff working there find lots of problems due to inconveniences in the ward. Nurses utilise a lot of time in preparing the parents to accept the reality of situation.

IP Ward in Old Block: These wards are functioning with the help of Medical College Staff. Most of the patients in these wards are poor and can not afford payward. Even though the facilities are not

sufficient maximum Nursing care is provided to all patients with the available facilities.

In Service Education Programme: Classes are conducted among nurses at clinical side as well as in the class room during monthly meeting of nursing staff in each wards. Educational programmes are also included in the periodical nurses meetings.

To improve the standard of nursing care CNO conducted in service programmes and motivated the nurses for setting nursing standards in each wards. A core group is working in nursing standards form each ward.

Observation visit and Orientation Programmes: Classes on various oncology topics were conducted for the nurses and nursing students who made observation visit to RCC. In addition clinical posting was arranged to MSc Nsg. students from TVM., for 2 to 3 weeks in our MCH cancer wards.

Nursing Assistant Training Programme: 1st batch of Nursing assistant trainees have finished 1 yr. training & are on apprenticeship. II nd batch will be starting from July 1st 1996.

Conferences etc. attended. (Chapter III)

Papers Published / Presented (Chapter IV)

DIVISION OF PAIN AND PALLIATIVE CARE

Dr. Vasudevan Mappat Anaesthesiologist

1996 new cases were registered and treated at pain clinic during the year under report. Total number of follow-up cases were 3660.

WHO	Step I	-	73	cases
	Step II	-	472	„
	Step III	-	951	„

The most important development in 1995 as far as pain clinic is concerned was establishment of two satellite pain clinics at ECDC, Kaloor and ECDC, Kanjikode (Palghat) from July 1995. At Kaloor the pain clinic is conducted on every second saturday of the month at ECDC and General Hospital, Ernakulam. Daily up to 60 patients are seen in these clinics. Drugs are taken from RCC and distributed free of cost.

At Kanjikode, Palghat a pain clinic is conducted on every 3rd saturdays of the month. These clinics is extremely helpful for the local cancer patients.

The division works as a team with the active participation of Dr. Paul Sebastian, Dr. Francis V James, Dr. Thomas Koiparambil and Dr. Gladys Jeevy.

Conferences etc. attended. (Chapter III)

Papers Published / Presented (Chapter IV)

DIVISION OF BLOOD BANK

Dr. Jayalakshmi.P	Blood Bank Officer
Dr. Kusumam.K	Medical Officer
Mr. Meera Sahib	Technical Assistant

There were no additions in the equipments. There were increase in the number of donors, component preparation such as packed red cells, platelet rich plasma, fresh frozen plasma, as compared to previous years.

Activities

25-11-95: Blood grouping camp was conducted at Bethany Ashram, Nalanchira, where 50 people were grouped.

20-02-96: Blood grouping camp was conducted at V.J.T hall organised by Indian Red Cross Society, Kerala State Branch where 25 people were grouped.

Two weeks training in blood banking procedures was given to Rev. Sisters Vimala, Deva Matha Hospital, Kootattukulam.

Blood Bank Statistics 01-04-95 to 31-03-96

Grouping	16000
Cross Matching	5316
Blood donors	4189
Hbs Ag done	4189
Hbs Ag +ve (donors)	66
HIV -1 (donors done)	4189
HIV+ve (donors)	8
HIV-1 (patients)	3212
HIV-1 ve (patients)	3

Components Prepared

Total PRC (Packed Red Cells)	3150
PRP (Platelet Rich Plasma)	1403
FFP (Fresh Frozen Plasma)	637
SDP (Single Donor Plasma)	397

Conferences etc. attended. (Chapter III)

Papers Published / Presented (Chapter IV)

DIVISION OF CYTOPATHOLOGY

Dr. N. Sreedevi Amma	Deputy Director and Professor
Dr. B. Chandralekha	Professor
Dr. Elizabeth K. Abraham	Additional Professor
Dr. G. Rajasekharan Pillai	Associate Professor
Dr. K. Jayasree.	Assistant Professor
Dr. Anitha Francis	Lecturer
Dr. Rekha A. Nair	Lecturer
Smt. J. Ambika Kumary	Senior Scientific Officer
Dr. Raveendran Pillai	Cytotechnologist
Dr. K. Sujathan	Cytotechnologist

Introduction

Microscopic confirmation of the diagnosis by cytology and/or histopathology which is important for treatment planning is the prime function of this Division. The participation of the staff members in the daily noon clinic, monthly special clinic and clinicopathologic conferences further helps in patient management and post graduate education. In the academic field some of the senior staff members have been invited to conduct CMES/Workshops/Seminars/Symposia/Special lecturers in different centres in India.

A two days lecture cum slide discussion sessions on "Flow cytometry and immunohistochemistry in tumour diagnosis" by Dr. D. Banerjee, Chief of Oncologic Pathology, Princes Margaret Hospital, Toronto, Canada in December 1995, by the effort of Dr. Elizabeth K. Abraham was conducted. Pathologists from all over Kerala attended this.

A slide discussion session on neuropathology with Dr. Paul Kleihues, Neuropathologist and Director of International Agency for Research on Cancer, Lyon, France was arranged in March 1996.

Highlights of Activities

1. Diagnostic services - Cytology, Histopathology
2. Teaching, training and other academic activities

3. Research programmes
4. Special training of staff
5. Awards and Honours
6. Conferences attended and papers presented in conferences and published in journals

Diagnostic Services: Major services offered were Cytology, Histopathology and Bone Marrow examination.

Cytology Services

Gynaec Cytology: Cervical smears were examined from 5833 women out of which 3336 were from various projects and 2497 from hospital patients. The distribution of normal (including inflammatory) premalignant and malignant lesions of the hospital cases are shown in Fig:2(a)

Non Gynaec and Aspiration Cytology

Aspiration Cytology was done in 6873 cases. 787 malignancies were detected. The predominant sites were Breast, Lymphnodes and Thyroid. The sitewise split up of malignant lesions are shown in Fig:1 (b) some of the rare cases diagnosed by FNA were Lung metastasis from acinic cell carcinoma of salivary gland, giant cell tumour of hyoid bone, parapharyngeal chordoma in a 13 year old boy, multiple myeloma infiltrating breast and liver metastasis from liposarcoma thigh and malignant thymoma.

Fluid Cytology

Aspirated fluid from body cavities were examined in 819 samples. C.S.F was the commonest one received. The sitewise split up is shown in Fig: 2 (b).

Bone Marrow (B.M) Aspiration & Imprint Smears

Bone Marrow aspiration and imprint smears were examined from 1380 cases (71 cases more than that of the previous year) at an average of at least 4 smears per case amounting to screening more

than 5500 smears. The predominant disease was acute leukaemia. (272 cases including 5 CML in blast crisis) As we could not start immunophenotyping the number of unclassified acute leukaemias could not be reduced. Included in this series are a few rare cases like myelofibrosis, histiocytosis, hairy cell leukaemia, and infiltration from germ cell tumour and malignant round cell tumour.

Sputum Cytology

Sputum samples were examined from 741 cases (70 cases more than the previous year) by collecting 3 to 5 early morning samples and preparing minimum 2 smears from each sample. 55 cases of different types of malignancies were diagnosed.

Histopathology

Histopathologic examination was done in 4800 samples of which 3200 were surgical specimens from the centre and 1600 were review slides of referred patients with prior biopsy/surgery in other hospital. From each case 1-15 or more slides were examined and the total work load is 3-4 times more than the total number of cases. A total of 3182 malignancies were reported. The predominant sites were oral cavity breast, cervix and lymphnodes. Percentage of malignant lesions in major sites are shown in Fig: 1 (a). Analysis of subtypes of lymphomas, both Hodgkin's and non - Hodgkin's is shown in Fig 3 (a) and (b) respectively some of the interesting cases worth mentioning are Extraskeletal Osteosarcoma, Villoglandular Papillary Adenocarcinoma of the cervix giant cell rich osteosarcoma of scapula, signet ring carcinoma of rectum metastasis to scrotum, adenoid squamous cell carcinoma of the penis. Hairy Cell Leukaemia, renal involvement in malignant mixed germ cell tumour, Kikuchis disease, extensive sarcomatous metaplasia in Transitional cell carcinoma bladder, Merkel cell carcinoma, Traumatic neuroma of common bile duct, papillary cystic tumour of pancreas etc.

Teaching and Training: The laboratory is accredited by Indian Academy of Cytologists (IAC) for diagnostic and examination purposes. Full time Cytotechnician and Cytotechnologist training courses of 6 months and 1 year duration respectively are conducted based on set objectives and defined curriculum. The candidates are selected by a written test sponsored by ICMR under a fellowship.

This division is also involved in the teaching and training programme of Medical and Paramedical students of Medical College, Trivandrum. Short term training is also imparted to pathology postgraduates of Dental College, Trivandrum, Kottayam and Calicut Medical College and also to practising pathologists of other centres.

Research Programmes: Extramurally funded projects of HPV, NBRR, immunobiology of trophoblastic tumours and molecular aberrations in oral squamous cell carcinoma and its adjacent epithelium is containing and the staff of this division give support to these. IARC assisted 'cervicoscopy' project is a new one which is also assisted by this division.

Trainings

Dr. K. Raveendran Pillai and Mr. Sujathan K.

Training in Electron Microscopy at cell biology Division, Cancer Research Institute TMH, Bombay from 20th - 30th November 1995.

Awards and Honours

Dr. Elizabeth K. Abraham

ICRETT Fellowship for training in "Early Breast Cancer Screening" at St. Joseph's Health Centre, London, Ontario, Canada and training on lymphomas at Princess Margaret hospital, Toronto, Canada (May - July 1995)

Dr. K. Raveendran Pillai

National Cancer Institute fellowship (4 months) for training in bone marrow Transplantation at George Town University, Washington.

Association with Professional Bodies

Dr. N. Sreedevi Amma

1. Member of Indian Academy of Cytologists (IAC) & Treasurer of IAC.
2. Member of Accreditation and Examination Committee (Cytology) of IAC.
3. Member subcommittee of IAC for Human resource development in Cytology in India.

4. Member of Editorial Board of Journal of Cytology.
5. Member of IAPM Kerala Chapter
6. Member Regional Cancer Association (RCA)

Dr. B. Chandralekha

1. Member IAC and Member of Executive Committee of IAC.
2. Member and Executive Committee Member of RCA
3. Member IAPM Kerala Chapter.

Dr. Elizabeth K. Abraham

1. Member of Indian Association of Pathologists and Microbiologists (IAPM)
2. Member of IAC
3. Member of Review committee of Indian Journal of Medical Research.
4. Member of RCA

Dr. Rajasekharan Pillai

1. Member of IAPM
2. Member IAPM Kerala Chapter.

Dr. Jayasree.K

1. Member of Indian division of International Academy of Pathology.
2. Member if IAC
3. Member IAPM Kerala Chapter.
4. Member of Indian Society of Blood Transfusion and Immunohaematology.

Smt. J. Ambika Kumari

Member of IARC

Dr. K. Raveendran Pillai

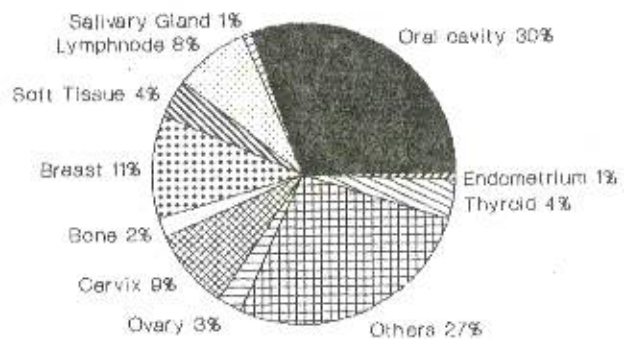
1. Member of Indian Society of cell biologists
2. Member of Indian Association of Biomedical Scientists

Conferences etc. attended. (Chapter III)

Papers Published / Presented (Chapter IV)

FIG. 1: MALIGNANT LESIONS IN MAJOR SITES

(a) Histopathology n = 3182



(b) Aspiration Cytology n = 787

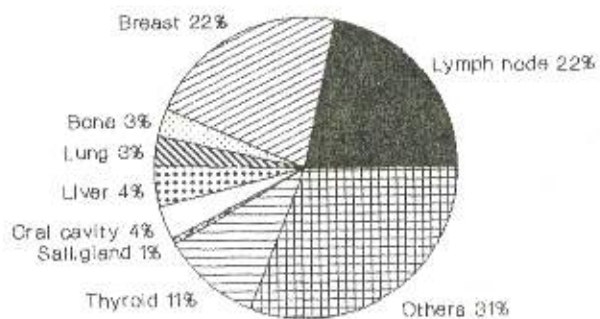
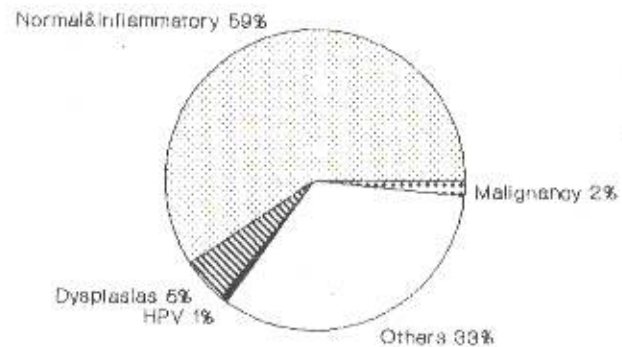


FIG. 2

(a) Cervical Smear (E) n = 2497



(b) Fluid Cytology n = 810

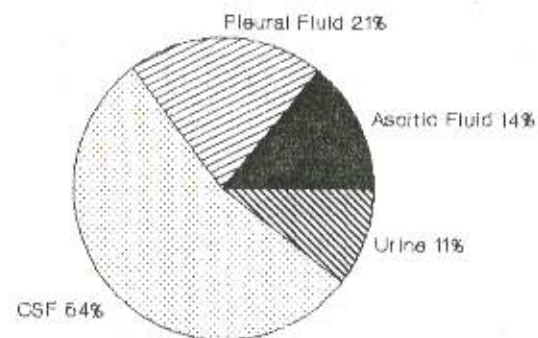
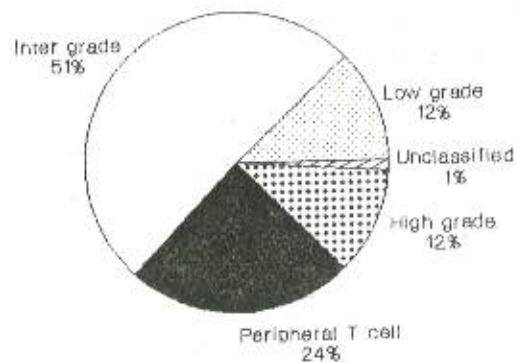
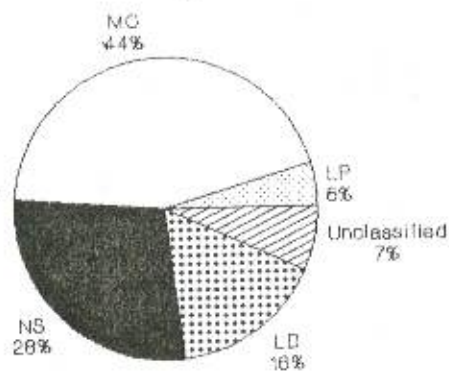


FIG. 1: MALIGNANT LESIONS IN MAJOR SITES

(a) Histopathology n = 3182



(b) Aspiration Cytology n = 787



DIVISION OF IMAGEOLOGY

Dr. K. Sasidharan	Professor
Dr. Alex K. Ittyvirah	Associate Professor
Dr. K. Ramachandran	Associate Professor
Dr. A.S. Krishnakumar	Assistant Professor

The following is the break up of various investigation done during this period under report.

Plain X-ray	9888
X-ray Tomography	30
Barium Study	144
Mammogram	733
Myelogram	23
CT Scan	4221
Ultrasonogram	5376
CT guided procedures	197
Doppler and Colour flow study	320

CT /US guided fine needle aspiration for cytology showed a marked increase, the findings from this procedure is shown in table below:-

Site	Repre- ntative	Non- Repre- ntative	Inflam- matory	Malignant	Non Specific
Chest (135)					
Lungs 119	96 (81%)	23	13	44	39
Chest wall 7	7 (100%)	--	--	5	2
Mediastinum 9	9 (100%)	--	--	9	--
Abdomen (31)	26 (84%)	5	3	10	13
Pelvis (5)	4 (80%)	1	-	1	3
Spine (26)	14 (54%)	12	3	5	6

Table showing CT guided aspiration for Cytology during 1995 - 1996

Academic Activities

Undergraduate and post graduate training in various imaging modalities continued as in the previous year. One month training on ultrasonography for post graduate degree - diploma holders was started during this period. Already 15 candidates were given the course have undergone training certificate after the training. Regular film reading sessions on every day morning and the monthly meeting of the Trivandrum Radiology Club provided ample opportunity to see the application of different diagnostic modalities in difficult Clinical situations.

Dr. K. Sasidharan rejoined duty after leave on 21 st March 1996.

Dr. K. Ramachandran was promoted to the post of Associate Professor from 12 th January 1996.

Coguide in MD Thesis submitted to the University of Kerala

1. Ultrasound and Colour Doppler flow velocimetry in Ovarian Masses - Dr. K. Sathishkumar.MD Gynaecology 1996.
2. Carotid Doppler study. Dr. Brahmadathan. MD Radiodiagnosis (1996)

Ongoing Projects:

1. Malignant breast disease ultrasound and mammographic correlation.

Conferences etc. attended. (Chapter III)

Papers Published / Presented (Chapter IV)



Receiving Dr. D. Banerjee Chief of Oncologic Pathology and Director of Laboratories, Princess Margaret Hospital, Toronto, Canada, who gave lectures in this Centre in December 1995. Lecture Sessions given on 4th & 5th Dec. 1995 at RCC, Trvn.

DIVISION OF NUCLEAR MEDICINE

Dr. V.M. Pradeep	Associate Professor & Head
Dr. Reghuram K. Nair	Assistant Professor
Dr. Kuruvila Varkey	Lecturer (on leave)

Thyroid Clinic continued to be the major component of the departmental activity. The patient load showed an increase over the previous year. The number of thyroid hormone assays done also showed an increase.

The work load on the Gamma camera is also on the increase with an increasing number of cases coming for renal studies.

The total number of individual tests and therapy carried out in the department for various investigations and management was 56,732

The break-up cases according to categories is given below:

A. *Thyroid*

Radioisotope Scan	:	1881
Ultrasound Scan	:	3268
Uptake	:	1224
Thyroid cases	:	9400
Total		<u>15773</u>

B. *Gamma Camera*

Bone	:	701
Renal	:	221
Liver	:	33
		<u>955</u>

C. *Immunoassay*

T3	:	10200
T4	:	10200
TSH	:	10200

TG	:	840
AMC	:	180
ATG	:	180
FT3	:	240
FT4	:	240
HCG	:	2520
AFP	:	960
CEA	:	960
FSH	:	420
LH	:	420
PRL	:	600
TESTOSTERONE	:	120
CORTISOL	:	360
GROWTH HORMONE	:	120
PROGESTERONE	:	60
17-OH-PRG	:	10
ACTH	:	96
PTH	:	200
PSA	:	360
CA-125	:	122
Total	:	<u>39608</u>

D. Therapy

Ca. Thyroid	:	210
Thyrotoxicosis	:	186
Total	:	<u>396</u>
Grand Total	:	<u>56,732</u>

Academic Activities

1. Teaching activities medical undergraduates, postgraduates and paramedical.
2. Training CRA students

Conferences etc. attended. (Chapter III)

Papers Published / Presented (Chapter IV)

DIVISION OF RADIATION PHYSICS

Dr. V. Padmanabhan	Professor
Sri. C.A. Davis	Assoc. Professor
Sri. Thayal Singh Elias	Asst. professor
Sri. L.S. Arunkumar	Asst. Professor
Smt. P. Sushamma	Lecturer

Main Activities :

Clinical Physics :

Calibration of Radiotherapy equipment
 Quality assurance
 Treatment Planning
 Dose computation
 Radiation safety

Intercomparison studies using TLD (WHO/BARC)

Teaching, training and research

Daily maintenance, checking and repair of all teletherapy and brachytherapy equipment.

Patient Service :

Treatment planning and related dose computation were carried out routinely in the case of patients undergoing external beam therapy and brachytherapy. The number of patients planned and treated during the year was as follows :

External beam radiotherapy	6114
Brachytherapy	
- Intracavitary treatment for carcinoma cervix using selectron after loading system	420
- Intracavitary treatment for carcinoma cervix using manual after loading system	61

- Intracavitary treatment for carcinoma oesophagus (conventional method)	76
- Intracavitary treatment for other sites with selectron (oesophagus, Maxilla P/O)	2
- Interstitial Implants for carcinoma tongue, cheek, lip etc.	94
- Palate Mould	1

Compared to last year there is an increase from 5-7% in each service.

Mould Room facilities :

POP shell	-	71
Orbit shell	-	200
Aquaplast shell	-	58
Bite blocks	-	143

Compared to last year, there is an increase from 25-30% in each service.

Radiation Safety activities :

Personnel dose monitoring using film badge is carried out for 102 radiation staff in this centre, Periodical radiation protection servers of teletherapy and brachytherapy installations ensured safety of radiation to staff, patients and public.

Academic Programmes :

Teaching and training in Medical Physics were imparted to the following categories of students.

- M.D. Radiotherapy
- M.D. Radiodiagnosis
- MDS Oral Medicine and radiology
- DMRD, DMRT, CRA, Third year MBBS
- M.Sc. Nursing students.

Training Programme :

1. There has been a demand from the fresh CRA passed students from Medical Colleges within the State to organise a refresher programme for them in the Regional Cancer Centre so that full use of various equipment can be studied by them.

With this view, a refresh programme was started with an intake of 6 trainees in Imageology/Nuclear Medicine Divisions and 4 trainees in Radiation Physics/ Radiotherapy Divisions for a period of 3 months each. Mr. L.S. Arunkumar & Mr. P. Sushama are actively co-ordinating the programme.

Upto March 96, a total of 8 students have been trained in Imageology / Nuclear Medicine and 4 students in Radiation Physics / Radiotherapy.

The trainees are evaluated and arrangements have been made to issue certificates after evaluating their performance during the training period.

2. Practical field training for one month was given to two students of the Diploma in Radiological Physics (Dip. R.P) Course of B.A.R.C. Bombay.

Research Project (Completed)

1. Mr. T.S. Elias Principal Investigator (STED)

Design Development of Contour Plotter.

For manual contouring a contour plotter is fabricated. In this system the plotter board is resting on a couch and hence any portion of the body can be traced in the treatment position. The life size contour line has 100% matching with the body contour. As the tracer is curved, any curved surface can also be easily traced with accuracy. The equipment is used in routine clinical service since Nov. 1995.

2. Studies on some essential quality control tests on X-ray machines :

- | | | |
|--------------------|---|---|
| 1. Santhi S | } | M.Sc. Applied Physics students
Department of Physics
Kariavattom. |
| 2. Kumari Harisree | | |

Guides :

1. Dr. V. Padmanabhan
2. Mr. G. Ramakrishnan (Medical College, Trivandrum)
3. Dr. Devanarayanan (Dept. of Physics, Kariavattom)

Using the B.A.R.C. quality control test various X-ray machines in the Medical College Campus were evaluated for quality control. The following parameters were studied :

1. Applied Tube Potential KV.
2. Tube current & time of exposure mAs.
3. Focal spot size
4. Beam alignment
5. Congruence of optical and radiation fields
6. Radiological Protection Survey

Research Projects :

1. Patient and organ dose measurements in CT scanners - A field study.

Principal Investigator	-	Dr. V. Padmanabhan
Co-investigator	-	Mr. G. Ramakrishnan (Medical College, Tvm)
Funding Agency	-	STED

With increasing number of diagnostic CT scanners of different manufacturers in our state, the project aims to measure the radiation doses received by patients and also determine the doses to critical organs like lenses of the eye, thyroid, ovary, testis etc. Study has been planned and work started since March 96.

2. Development of indigenous wedge filters for Megavoltage X-rays and Co^{60} gamma radiation used in Radiotherapy.

Principal Investigator	-	Mr. L.S. Arunkumar
Co-investigators	-	1. Dr. V. Padmanabhan 2. Dr. M. Krishnan Nair
Funding Agency	-	STED

What is desirable in radiotherapy treatment planning and what is practical are not always the same, but one's aim should be such that the lowest doses throughout the target volume should be within a few percent of the maximum target dose. When tumours under varying body contour are treated with radiations, the variation causes improper dose delivery to the tumours and results in nonhomogenous dose distribution within the tumour. This problem can be overcome by designing some special type of beam modifying devices called wedge filters.

Wedge filters are currently not manufactured in India. These treatment aids need to be imported at exorbitant cost. That too is available for discrete values of wedge angles and wedges with intermediary angles are not available. But wedges with intermediary values are often needed in some clinical situations where with these wedges only, satisfactory dose distribution can be achieved. Presently in such situations, wedges with available angles are used or a combination of wedges are tried.

The proposed work is aimed at the design and fabrication of wedge shaped filters for various angles and using different materials.

Dosimetric evaluation of each wedge will be done for Co^{60} gamma radiation and mega voltage X-rays from Linear Accelerator, using small volume ion-chamber and water phantom system.

Invited Talks :

V. Padmanabhan.

1. Applications of radioisotopes in Medicine Roentgen centenary celebrations. School of Medical Education. M.G. University, Kottayam, 15.11.95.
2. Nuclear Medicine and its applications. Roentgen centenary celebrations. Medical College, Trichur, 26.11.95.
3. Understanding Nuclear Medicine. All Kerala Government Radiographer's Association - Roentgen centenary celebrations and Becquerel Day, Trivandrum, 15.02.96.
4. Mr. T.S. Elias delivered Inaugural address of the Physics Association of Arts and Science College, Lekshmpuram, Jan. 1996.

L.S. Arunkumar

1. Radiation Protection in Medical Practice. Roentgen centenary celebrations. Medical College, Trichur, 26.11.95.
2. Two guest lectures on "Molecular effects of ionising radiation. P.G. students Women's College, Trivandrum, 5th, 6th Dec.1995.

Awards :

1. Dr. V. Padmanabhan and Mr. L.S. Arunkumar were elected as President and Secretary for a 2 year term (1995-97) of the Association of Medical Physicists of Kerala (KAMP).
2. Mr. C.A. Davis - Awarded ICRETT fellowship for one month training in After loading brachytherapy at Cookridge Hospital, Leeds and Christie Hospital, Manchester, U.K.

Meetings Organised :

Dr. P.S. Iyer, Head, Division of Radiological Physics, B.A.R.C, Bombay delivered the First Dr. T.P. Ramachandran Memorial Oration on 07.08.95 in the Foyer of the Regional Cancer Centre. All staff participated in the function.

"100 years of Radiation Physics in Medicine".

His talk was exhaustive covering a wide range of applications of radiation in Medicine with emphasis on diagnostic radiology, radiation oncology and Nuclear Medicine. Under diagnostic radiology the use of computed radiography (CR) and PACS (Picture archiving and Communication system) was discussed. While reviewing the Physics behind therapeutic radiology and the association of Physicists with Doctors, he did mention about modern Neutrons, Heavy ions therapy and stereotactic radiotherapy. The new technique of Pulsed brachytherapy found a place. Newer imaging modalities like SPECT / PET, advances in Nuclear Medicine instrumentation were touched upon.

Directorate of Radiation Safety (DRS) :

Government orders the formation of a Directorate of Radiation Safety (DRS) an independent agency in consultation with the Atomic

Energy Regulatory Board, Bombay. The Academic staff of the Division will be in a position to offer consultancy service to this Directorate in matters related to quality control of radiological installations and their safety aspects.

A project of RCC supported by D.A.E. Bombay

Natural Background Radiation Registry : (Physics Studies Ongoing)

The study area is Karunagappally taluk in Quilon District which has 12 panchayats with a population of 383514 (1991 census).

External gamma radiation level measurements :-

μ R Scintillometer :

Using μ R Scintillometer both inside and outside gamma radiation levels are measured. A total of nearly 40,000 houses have been surveyed.

TLD survey :

The objective of the TLD survey is to obtain annual cumulative dose of radiation as well as to detect seasonal variations if any. CaF_2 TLD powder in Plastic lockets were kept in specified houses for a period of 3 months and the dose estimated using a TLD Reader in the Division. A comparison of TLD Vs Scintillometer reading shows a good correlation of $\gamma > 0.95$.

Soil Sample Studies :

This study will throw light on the concentration of Th^{232} , U^{238} and K^{40} in the region of high, medium, low background radiation in the Karunagappally taluk.

The samples are analysed in a P.C.linked gamma ray spectrometer coupled to 4K MCA. The **unscar** 1993 values for the dose rate per unit radioactivity concentrate in the soil at 1m height has been converted to $\mu\text{R}/\text{hr}/\text{Bq}/\text{Kg}$ to correlate with the measured exposure rates in $\mu\text{R}/\text{hr}$ and the plot showed a good correlation ($\gamma > 0.98$).

The external gamma radiation dose to the population ranged between 1.0 and 8.0 mSv per year. Available results indicate that the Panchayats Alappad, Chavara, Neendakara may qualify as high background areas. Thazhava, Kulasekharapuram and Clappana as normal background areas and the remaining six as intermediate areas.

Internal Dosimetry :

Assessment done by SSNTD studies to estimate the inhalation dose and Thoron - in breath studies to estimate ingestion dose.

The above two techniques have been standardised with the help of Environmental Assessment Division (EAD), BARC, Bombay and Indian Rare Earths (IRE) Alwaye.

Details of work done in dosimetry upto 1995 and on going is indicated in

TABLE I.

MEAN EXPOSURE LEVELS INSIDE AND OUTSIDE HOUSES IN THE PANCHAYATS ($\mu\text{R/hr}$)

Panchayat	Inside houses			Outside houses		
	Min.	Max.	Mean \pm SD	Min.	Max.	Mean \pm SD
Chavara	7	545	57 \pm 38	10	802	82 \pm 62
Thazhava	4	127	18 \pm 07	4	141	16 \pm 11
Alappad	7	227	47 \pm 32	10	317	65 \pm 42
Clappana	2	222	30 \pm 11	3	110	37 \pm 13
K.S. Puram	7	220	30 \pm 14	6	220	42 \pm 23
Neendakara	7	682	59 \pm 76	7	1100	117 \pm 133
Panmana	7	308	37 \pm 24	7	44	54 \pm 37

μR Scintillometer readings have been completed in 7 panchayats out of 12

Table II.

DETAILS OF WORK DONE IN DOSIMETRY UPTO 1995 AND ONGOING

Panchayat	Scintillometer		Soil Sampling		TLD		Thoron breath measurement		SSNTD	
	External	Internal	Sampling	Assayed	NBRR	BARC	NBRR	BARC	NBRR	BARC
Chavara	7079	6322	24	24	120	108	34	57	--	57
Thazhava	7207	6384	50	50	80+85	--	--	02	--	02
Alappad	4380	3894	16	16	20	112	--	27	--	27
Clappana	4019	3592	21	21	100	--	--	--	50*	--
K S Puram	7962	6991	30	30	--	100**	--	45#	--	45#
Neendakara	2801	2525	14	14	100#	60**	8	05	50*	05
Panmana	8574	7804	-35	--	100#	60**	--	45#	--	45#

First quarter running.

* Second quarter running.

** Third quarter running.

NB: Measurements progressing in 4 Wards of Thekkumbhagom Panchayat.

Ph.D. Thesis by Dr. Raghu Ram K Nair (1995), University of Kerala, Trivandrum.

Topic : Ultrasound and Radionuclide imaging of the Urinary system - Physical and clinical studies.

Guides: Dr. V. Padmanabhan & Dr. M. Krishnan Nair.

The study includes :

1. The causes of unpredictable yield while extracting ^{99m}Tc from ^{99}Mo by Solvent Extraction Technique.
2. An indigenously manufactured Isotope Calibrator was evaluated for its performance by testing parameters like precision accuracy, linearity etc.
3. Renogram in the evaluation of urinary tract obstruction - the Renogram was compared with ultrasound (U/S) and IVU for evaluating obstruction and was found more sensitive than both in identifying obstruction. Diuretic renogram is a very sensitive indicator for identifying early obstruction.
4. ***Post surgery renograms :***
In the limited analysis done, the study showed that diuresis renography has only a limited role to play in monitoring patients post operatively.
5. ***Renography in the presence of pelvic masses.***
U/S was helpful in assessing the nature of the lesion and indicating the presence or absence of calyceal dilatation, Renogram was the investigation which assessed the functional status of the kidneys more accurately. Both procedures were complementary in the management of mass lesions of the pelvis.
6. ***Measurement of renal dimensions and bladder volume by ultrasound.***
Renal dimensions measured using U/S in 87 normal subjects showed that the male kidney was larger than the female. The average length of the male kidney was 101.5mm while that for the female was 94.5mm. The anterior posterior thickness was 45mm for males and 41.5mm for females. While the width was

62.5mm and 59.5mm respectively. The cortical thickness was 16mm for male and 15.4mm for the female. Renal volume was 143cc for male and 118cc for female.

Eight known formulae and their combinations were used for calculating bladder volume and the results presented.

Conferences etc. attended. (Chapter III)

Papers Published / Presented (Chapter IV)

DIVISION OF CANCER EPIDEMIOLOGY AND CLINICAL RESEARCH

Dr.R.Sankaranarayanan	Assoc. Professor (On leave)
Dr.Chorian Varghese	Assistant Professor (On leave)
Ms.Aleyamma Mathew	Assistant Professor in Computational Statistics & Epidemiology

The Cancer Epidemiology and Clinical Research Division acts as the nodal point for organising epidemiological and clinical research activities of the centre and provides project consultancy. This Division has attracted substantial research projects through collaborative research agreements with international organizations. A schematic representation of the activities of the Division is given in Table-1.

New Projects

Exposure to pesticides and risk of breast cancer:

Collaborators: Environmental Epidemiology Branch
National Cancer Institute, USA.

Objective: To study the risk of breast cancer associated with exposure to pesticides. This study will also collect detailed information on dietary practices and other confounding risk factors for breast cancer. Controls will be selected from patients attending surgical outpatient departments.

Ongoing studies:

1) Cohort study on Human Papilloma virus and cervical neoplasia.

Collaborators: Institute of Cancer Research, Cancer Research Campaign, Sutton, UK.

Objective: To address the natural history of cervical neoplasia and Human Papilloma virus in a stable population in Kazhakuttam Panchayat near Trivandrum.

The project is in the fourth year of operation. The third round of sample collection is proceeding. Overall compliance rate was 30-40% and efforts are progressing to invite women who have had HPV infection at the first visit.

2) Case-control study on occupational exposure and cancer.

Collaborators: Unit of Analytical Epidemiology, IARC, Lyon.

This is the first major study on occupational cancers in India and our centre is part of a multi centric study coordinated by the IARC, Lyon. The study has accrued 702 cases and 1825 controls during the reporting year.

3) Surveillance system to monitor cancer incidence and mortality in Trivandrum Corporation, Chirayinkil, Kazhakuttam and Trivandrum rural Development Blocks.

Collaborators: Unit of Descriptive Epidemiology IARC, Lyon.

Cancer incidence data for the years 1991-92 were compiled during the reporting year. The crude, age adjusted and truncated rates for cancer in Trivandrum are given in Table-2. The data for the years 1991-92 from the Trivandrum cancer registry is accepted for publication in the IARC/WHO Publication, Cancer Incidence in Five Continents.

TABLE-2.

CR, AAR and TR, Trivandrum Population Cancer Registry.

Area	Total cases	CR	AAR	TR	Total cases	CR	AAR	TR
Tvm Urban	208	75.8	122.4	172.5	198	73	93.9	193.4
Tvm Rural	177	65	102.6	157.2	160	54.8	75	127.3
Total	380	71	111.9	164.7	358	64.2	83.9	159.8

Project consultancy

Assistance in the design, implementation and analysis have been provided to researchers within the department and for those from the Medical College hospitals. Statistical analytical support was provided for post graduate dissertations and other research programmes.

In addition the members of the Division participated in the academic activities of the centre and contributed to the research activities of other Divisions of RCC.

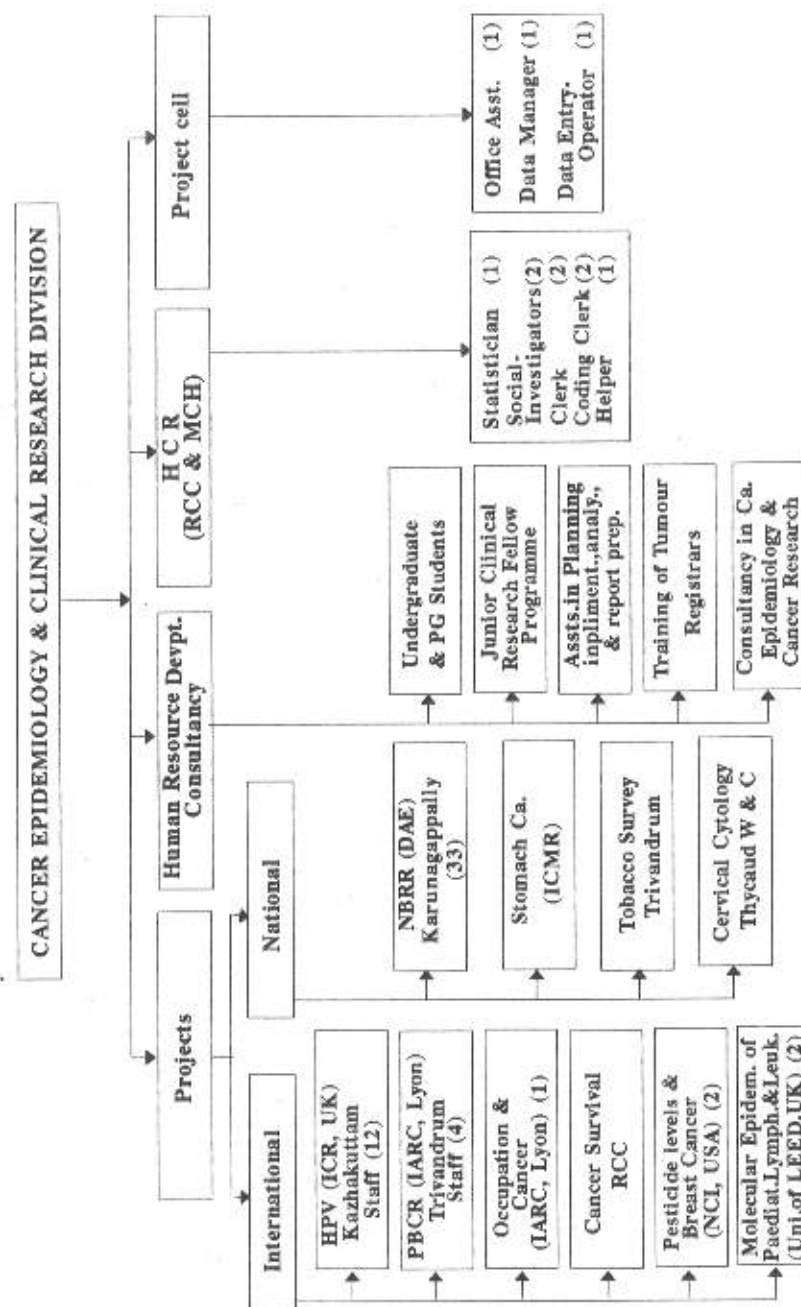
Fellowships

1. Dr Cherian varghese received a Senior research fellowship from the University of Leeds, UK for 18 months.
2. Ms Aleyamma Mathew was awarded a UICC-ICRETT fellowship which was carried out at the University of Leeds, UK, December 1995 (Supervisor Prof. David Forman)

Acknowledgments

World Health Organization, Geneva, Switzerland.
 International Union Against Cancer, Geneva, Switzerland.
 International Agency for Research on Cancer,
 MRC Biostatistics Unit, Cambridge, UK.
 Finnish Cancer Registry, Helsinki, & University of Tampere, Finland.
 Leukaemia Research Fund, UK.
 National Cancer Institute, USA.
 Yorkshire Cancer Organization and University of Leeds, UK.
 Kay Kendall Leukaemia Research Fund, UK.
 Cancer Research Campaign, UK.

Conferences etc. attended. (Chapter III)
Papers Published / Presented (Chapter IV)



DIVISION OF HOSPITAL CANCER REGISTRY AND MEDICAL RECORDS (NCRP, ICMR)

P. Gangadharan	Emeritus Medical Scientist (ICMR)
Dr. Cherian Varghese	Assistant Professor (On leave)
Smt. Padmakumary	Medical Statistician

The Hospital Cancer Registry (HCR) is part of the National cancer Registry Programme of India and is in the 14th year of existence. During the reporting year, the registry has abstracted, analysed and generated the cancer statistics for the year 1993.

Cancer pattern:

Six thousand two hundred and nine (6209) cases were reported during the year 1993. The distribution of cancer cases with respect to site, age and sex are given in Tables 1 & 2. The male female ratio was 1.2 : 1. The peak age frequency in males was observed in the 7th decade and in females in the 6th decade. The age distributions for males and females are shown in Figures 1 and 2. Ninety one percentage of cases had microscopic verification of their diagnosis. In the 4977 analytic (previously untreated) cases 12.6% were in the early stages, almost 88% being in more than localised disease group. Among these who reported for treatment 29% were palliatively treated and 57% were treated with a curative intent. Among the 4977 analytic cases 32.49% received radiation as the only form of treatment and 51.08% received radiation either alone or along with other forms of therapy and this formed the largest group. Surgery alone or in combination with other therapy was received by 21.67% of patients and was the 2nd commonest form of therapy.

Leading Cancers:

Among males lung was the commonest site of cancer and among females it was breast cancer. The ten leading sites of cancer are

shown in Table 3. The system wise pattern of cancers is shown in Fig. 3.

Childhood Cancers (0-14 years)

The childhood cancers formed 267 (4.3%) of the total cases. The leading paediatric cancers were leukaemia 101 (37.8%), Brain 39 (14.6%) and Bone 22 (8.2%).

Smt PT Latha

Smt PT Latha was awarded an UICC-ICRETT fellowship for training in Psycho-social oncology at the Memorial Sloan Kettering Centre, New York, December 1995 (Supervisor; Dr Jimmy C Holland).

WHO Workshop on palliative care and pain relief at RCC Trivandrum. July 1995.

Seminar on Psycho Social Oncology Bangalore March 1996.

Medical Records

Mr. G. Rajasekharanan Nair	Medical Records Officer (From 24-01-96)
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With the re-organisation of Medical Records Department on 24-01-96, special efforts have been made to systematise case record storing, classification, filing, listing and retrieval.

Old case sheets of patients who attended from 1959-1981 were 773 and these are specially preserved. From 1982-86, 20,289 case records have been classified as per I.C.D (O) Codes and stored according to these numbers. At present this department is handling more than 82,000 individual case records.

The major activities of this Division for three months ie, January 1996 to March 1996 are as follows:-

1. Medical Record assembling
2. Filing of various investigation results on the concerned case records.

3. Maintenance and retrieval of case records.
4. Storage of X-ray films according to chronological order of each year.
5. Coding and Indexing
6. Filing and retrieval
7. Sending of follow up letters to lost follow up cases.

Case records were issued for various purpose to various departments as noted below:-

The following table shows the distribution of case records to various divisions of this centre during the month of January to March, 1996.

1. Appointment, late appointment without appointment (OP)	: 23,733
2. Academic and Research study	: 1,313
3. ECDC Clinic, Ernakulam	: 253
4. NBRR Clinic, Karunagappally	: 90
5. Number of inpatient admissions	: 1,290
6. Number of discharges	: 1,290
7. Histopathology, Cytology department	
8. Academic & Research study	
9. Hospital Cancer Registry (for reporting of cancer cases to (ICMR)	
10. Hospital deaths reporting to the Registrar of Births and Deaths, Trivandrum.	

Moreover, this division is making arrangements for printing, arranging and issuing of various types of Medical Record forms, registers and accessories properly in time.

*Conferences etc. attended. (Chapter III)
Papers Published / Presented (Chapter IV)*

TABLE 1
HOSPITAL CANCER REGISTRY - TRIVANDRUM : CANCER CASES OF 1993 : AGE BY SITE ---MALES

Icd-9	Site	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	Total	%
140	Lip	-	-	-	-	-	-	-	-	1	1	2	-	5	2	1	2	14	0.41
141	Tongue	-	-	-	-	-	2	4	10	12	19	32	35	27	23	20	9	193	5.69
142	Salivary Gl.	1	-	-	-	-	2	-	2	1	4	1	1	1	1	2	2	19	0.56
143	Gum	-	-	-	-	-	-	1	2	5	9	5	10	16	12	8	16	84	2.48
144	Floor of Mouth	-	-	-	-	-	-	-	2	2	4	8	6	9	7	3	-	41	1.21
145	Other Mouth	-	-	-	-	-	-	1	12	7	27	34	48	41	42	29	36	277	8.17
146	Oropharynx	-	-	-	-	-	-	-	1	3	9	17	24	22	21	10	7	114	3.36
147	Nasopharynx	-	-	1	4	1	1	2	1	3	3	3	5	2	3	1	-	30	0.88
148	Hypopharynx	-	-	-	-	-	1	3	1	8	13	16	15	20	26	9	13	125	3.69
149	Pharynx Etc.	-	-	-	-	-	-	-	1	1	1	2	2	2	1	1	-	11	0.32
150	Oesophagus	-	-	-	1	2	1	-	4	5	12	26	40	32	40	23	13	199	5.87
151	Stomach	-	-	-	-	2	2	-	4	8	9	26	17	22	18	13	14	135	3.98
152	Small Intes.	-	-	-	-	-	-	-	-	-	2	2	1	1	-	1	1	8	0.24
153	Colon	-	-	-	2	1	1	1	4	-	4	6	7	7	2	3	5	43	1.27
154	Rectum	-	-	-	-	-	-	4	4	6	4	10	12	12	13	4	4	73	2.15
155	Liver	4	-	1	1	4	4	6	10	6	10	9	11	11	9	3	3	92	2.71
156	Gall Bladd.	-	-	-	-	-	-	1	-	-	-	3	2	2	1	1	-	11	0.32
157	Pancreas	-	-	-	-	1	-	1	3	3	8	4	3	6	9	4	1	43	1.27
158	Retroperit.	-	-	-	2	1	-	-	3	1	-	-	-	1	1	2	-	11	0.32
159	Other Dig Sys	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	0.03
160	Nasal Cav.	-	-	-	-	1	2	-	5	1	3	5	2	1	1	7	1	29	0.86
161	Larynx	-	-	-	-	-	-	-	2	2	9	21	39	44	34	15	10	176	5.19
162	Lung	-	-	-	-	2	4	4	7	30	52	53	78	69	52	29	21	401	11.83
163	Pleura	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.03

164	Thymus	1	-	1	1	2	2	-	-	-	-	-	-	-	-	-	-	8	0.24
170	Bone	-	2	7	15	12	-	-	2	-	4	1	1	1	1	-	-	48	1.42
171	Conn. Tiss.	5	-	2	4	6	5	5	4	7	5	3	3	1	3	1	1	55	1.62
172	Skin, Mela	-	-	-	-	-	1	-	-	2	2	-	3	1	4	2	3	18	0.53
173	Skin, Other	-	-	-	2	-	1	2	2	7	5	5	4	7	12	5	6	53	1.71
175	Breast Male	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	8	0.18
185	Prostate	-	-	-	-	-	-	-	-	-	-	1	6	21	9	17	13	67	1.96
186	Testis	-	-	-	1	2	1	3	3	2	-	1	1	1	1	-	1	16	0.47
187	Penis Etc.	-	-	-	-	-	1	-	2	6	5	4	10	3	6	3	3	43	1.27
188	Uri. Blad.	1	-	-	-	-	-	1	1	1	1	1	1	12	7	11	9	58	1.71
189	Kidney	5	-	1	-	-	-	1	1	3	2	-	1	1	2	-	1	19	0.56
191	Eye	11	-	-	-	-	-	-	-	-	-	1	1	2	-	1	1	106	3.13
191	Brain	7	11	5	4	6	7	10	14	8	13	5	9	5	2	1	1	4	0.12
192	Nervous Sy.	-	1	1	-	-	-	1	-	-	-	1	-	-	-	-	-	84	2.48
193	Thyroid Gl.	-	1	-	-	11	2	11	7	12	10	9	5	7	3	4	2	12	0.36
194	Oth. Enrio. Gl.	2	1	2	1	1	-	-	-	1	1	2	-	1	-	-	-	8	0.24
195	Ill. Def. Sit.	1	1	-	1	1	-	-	-	-	2	1	1	-	-	-	-	8	0.24
196	Sec. Lymph. N	-	-	-	-	-	2	1	-	12	10	10	11	10	12	4	9	81	2.39
197	Sec. Res. Etc	-	-	-	-	-	-	2	4	3	5	5	6	9	10	3	3	50	1.47
197	Sec. Res. Etc	-	-	-	-	-	-	2	4	3	5	5	6	9	10	3	3	50	1.47
198	Sec. Other	2	-	-	-	1	-	2	1	6	3	5	12	12	7	4	5	60	1.77
198	Sec. Other	2	-	-	-	1	-	2	1	6	3	5	12	12	7	4	5	60	1.77
200	Lymphosarc.	-	2	1	-	3	3	8	5	7	6	6	7	7	9	6	4	66	2.01
200	Lymphosarc.	-	2	1	-	3	3	8	5	7	6	6	7	7	9	6	4	66	2.01
201	Hodgkins, D.	-	1	2	1	6	2	3	1	2	3	3	3	2	2	-	-	31	0.91
201	Hodgkins, D.	-	1	2	1	6	2	3	1	2	3	3	3	2	2	-	-	31	0.91
202	Oth. Lymph.	3	7	2	4	3	4	7	7	6	8	7	7	16	9	4	6	98	2.89
202	Oth. Lymph.	3	7	2	4	3	4	7	7	6	8	7	7	16	9	4	6	98	2.89
203	Mult. Myel.	-	-	-	-	-	-	1	-	3	8	4	8	13	8	3	5	54	1.59
203	Mult. Myel.	-	-	-	-	-	-	1	-	3	8	4	8	13	8	3	5	54	1.59
204	Leuk. Lymph.	15	18	10	6	6	4	6	6	1	2	-	1	3	1	2	1	77	2.27
204	Leuk. Lymph.	15	18	10	6	6	4	6	6	1	2	-	1	3	1	2	1	77	2.27
205	Leuk. Myelo	-	7	9	14	10	4	3	3	7	8	8	4	6	2	2	1	100	2.95
205	Leuk. Myelo	-	7	9	14	10	4	3	3	7	8	8	4	6	2	2	1	100	2.95
206	Leuk. Monoc.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	0.03
206	Leuk. Monoc.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	0.03
208	Leuk. Uns.	1	1	-	-	-	-	1	-	1	1	-	-	1	-	-	-	6	0.18
208	Leuk. Uns.	1	1	-	-	-	-	1	-	1	1	-	-	1	-	-	-	6	0.18
Total		59	53	46	65	86	60	100	140	202	308	370	477	500	434	260	232	3381	

TABLE 2

HOSPITAL CANCER REGISTRY - TRIVANDRUM : CANCER CASES OF 1993 : AGE BY SITE --- FEMALES

Code	Site	0-4	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	Total	%
140	Lip	-	-	-	-	-	-	-	2	-	1	1	3	3	2	1	13	0.46
141	Tongue	-	-	-	-	2	1	5	4	10	7	26	19	21	16	5	108	3.17
142	Salivary Gl	-	-	1	-	2	-	3	5	1	1	1	-	-	1	1	17	0.60
143	Gum	-	-	-	-	-	-	1	2	2	3	3	8	9	8	7	43	1.53
144	Floor of Mouth	-	-	1	-	-	-	-	-	-	-	1	-	2	-	-	4	0.14
145	Other Mouth	-	-	-	1	-	2	2	5	11	15	19	25	32	17	22	151	5.36
146	Oropharynx	-	-	-	-	-	-	1	-	-	1	2	1	3	1	-	9	0.32
147	Nasopharynx	-	-	-	3	3	1	1	1	-	2	-	2	1	-	1	15	0.53
148	Hypopharynx	-	-	-	-	1	1	3	1	-	1	1	2	-	-	1	17	0.60
149	Pharynx Etc.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	0.04
150	Oesophagus	-	-	-	-	-	-	-	4	3	7	10	11	8	3	5	51	1.81
151	Stomach	-	-	-	-	1	-	5	2	1	2	7	2	4	3	1	28	0.99
152	Small Intes.	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	0.04
153	Colon	-	-	-	-	2	-	3	2	2	8	3	3	6	5	2	36	1.28
154	Rectum	-	-	-	-	-	-	6	3	1	5	7	5	10	7	2	46	1.63
155	Liver	1	-	-	1	-	-	-	3	1	6	1	6	2	2	-	20	0.71
156	Gall Bladd.	-	-	-	-	-	-	-	1	1	1	1	1	1	-	1	7	0.25
157	Pancreas	-	-	-	1	-	-	2	2	2	3	5	3	3	4	2	28	0.90
158	Hepatoperit.	1	-	-	1	-	-	-	1	-	2	-	-	-	-	-	5	0.18
161	Nasal Cav	1	-	1	-	-	-	1	-	4	2	3	4	-	2	1	13	0.87
161	Nasal Cav	1	-	1	-	-	-	1	-	4	2	3	4	-	2	1	13	0.87
161	Larynx	-	-	-	1	-	1	-	1	-	5	1	-	-	-	-	11	0.39
162	Lung	-	-	-	-	-	2	1	4	7	7	7	4	7	4	2	45	1.60
163	Pleura	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	0.04
163	Pleura	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	0.04
164	Thymus	1	-	-	-	-	-	1	1	-	-	-	-	-	1	-	4	0.14

170	Blnc	1	3	0	-	8	1	-	2	1	-	-	-	-	-	-	21	0.85	
171	Conn. Pas.	2	1	-	1	5	4	1	1	1	-	-	-	-	-	-	29	1.03	
172	Skin, Mala	-	1	-	-	1	2	1	-	-	-	-	-	-	-	-	14	0.50	
173	Skin, Other	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	27	0.96	
174	Breast	-	-	-	-	5	1	1	1	1	-	-	-	-	-	-	572	23.35	
175	Uterus Nos.	-	-	-	-	1	1	1	1	1	-	-	-	-	-	-	1	0.04	
180	Cervix	-	-	-	-	3	3	3	3	3	-	-	-	-	-	-	459	16.29	
181	Placenta	-	-	-	-	3	3	3	3	3	-	-	-	-	-	-	4	0.14	
182	Body Uterus	-	-	-	-	1	1	1	1	1	-	-	-	-	-	-	53	1.88	
183	Ovary	-	-	-	-	1	1	1	1	1	-	-	-	-	-	-	158	5.61	
184	Vagina	-	-	-	-	1	1	1	1	1	-	-	-	-	-	-	39	1.38	
189	Uti. Blad.	-	-	-	-	1	1	1	1	1	-	-	-	-	-	-	8	0.28	
189	Kidney	4	1	-	-	1	1	1	1	1	-	-	-	-	-	-	17	0.60	
190	Eye	5	5	6	1	6	4	3	5	4	4	3	3	2	1	-	60	2.13	
191	Brain	5	5	6	1	6	4	3	5	4	4	3	3	2	1	-	5	0.18	
192	Nervous Sy.	-	-	2	-	-	-	-	1	1	-	-	-	-	-	-	217	7.70	
193	Thyroid Gl.	-	-	2	6	23	31	34	23	23	-	-	-	-	-	-	7	0.25	
194	Oth. Endo. Gl.	2	-	1	1	-	-	-	-	-	-	-	-	-	-	-	3	0.11	
195	P. Der. Sit	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	37	1.31	
196	Soc. Lymph. N	-	-	-	-	1	-	-	2	1	3	1	7	9	2	8	3	37	1.21
197	Soc. Pas. Eto.	-	-	-	-	-	-	-	5	2	2	5	10	4	2	6	1	37	1.21
198	Soc. Other	-	-	-	-	-	-	-	2	2	2	4	6	11	3	3	4	40	1.42
200	Lymphosarc.	1	-	-	-	2	2	2	2	1	3	1	5	3	3	1	5	0.28	
201	Hodkins. D.	-	1	1	1	2	1	1	1	1	1	1	1	1	1	1	48	1.70	
202	OTH. Lymph.	1	-	2	-	2	2	3	3	3	3	3	3	3	4	4	32	1.14	
203	Mult. Myel.	-	-	-	-	-	-	-	2	2	2	2	2	2	1	-	54	1.92	
204	Leuk. Lympha.	14	13	4	5	5	1	2	1	1	1	1	2	2	2	2	53	1.88	
205	Leuk. Myelo.	2	1	1	6	2	4	7	2	3	3	3	3	2	-	-	4	0.14	
203	Leuk. Uns.	-	1	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	
	Total	45	27	37	36	81	96	128	238	271	292	314	359	307	289	161	133	2818	

Table 3
10 LEADING SITES OF CANCER IN
MALES AND FEMALES 1993.

Rank	Male		Female	
	Site	No. %	Site	No. %
1	Lung	401 11.82	Breast	672 23.85
2	Mouth	277 8.17	Cervix	459 16.29
3	Pharynx	230 7.37	Thyroid	218 7.74
4	Oesophagus	199 5.87	Ovary	158 5.61
5	Lymphoma, HD	198 5.84	Mouth	151 5.36
6	Leukaemia	184 5.43	Leukaemia	111 3.94
7	Larynx	176 5.19	Lymphoma, HD	80 2.83
8	Stomach	135 3.99	Brain	60 2.13
9	Brain	106 3.13	Body Uterus	53 1.88
10	LIVER	92 2.71	Oesophagus	51 1.81

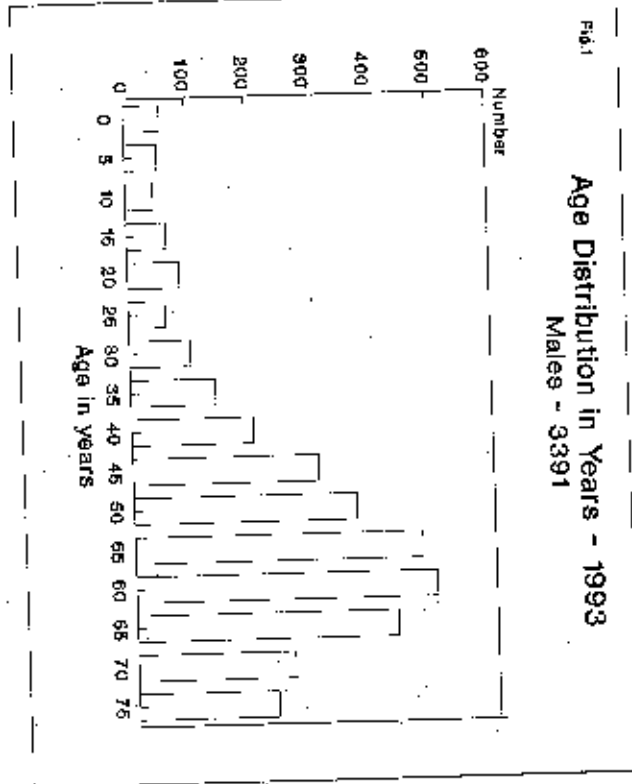
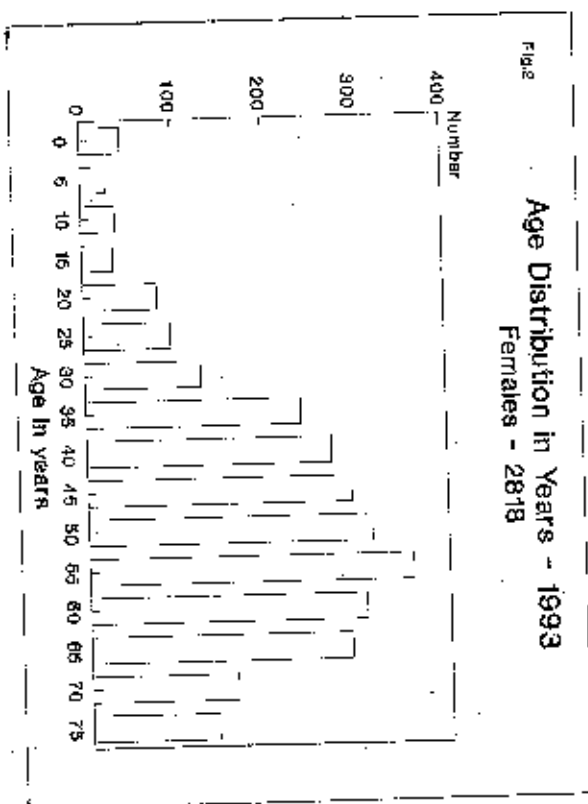
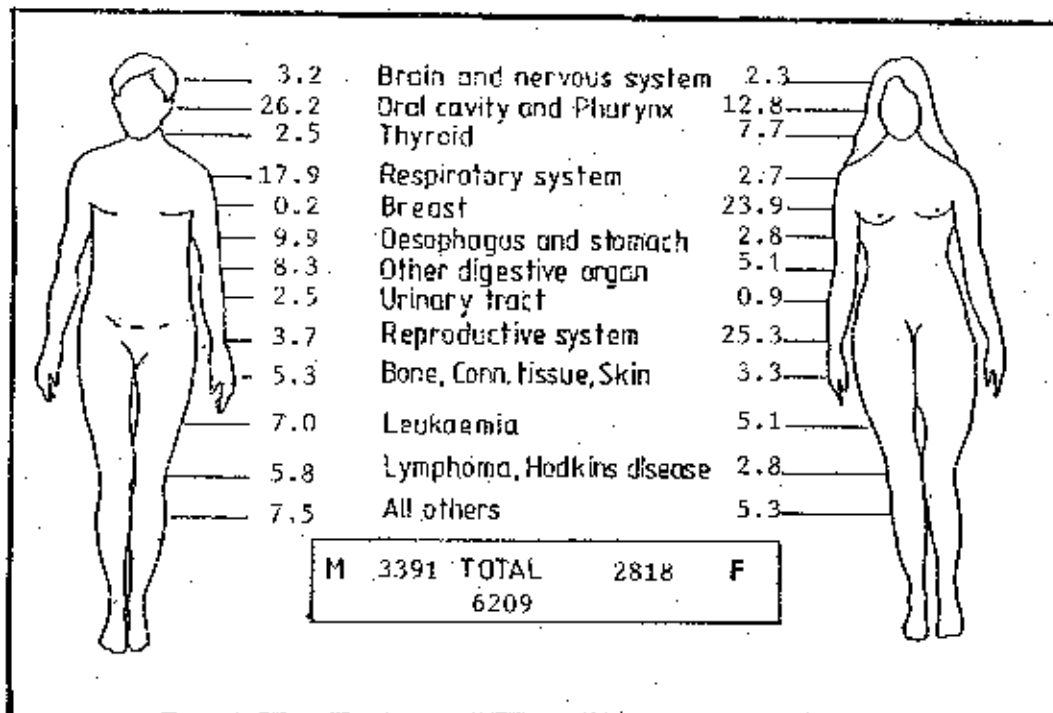


FIG. 3 : HOSPITAL. CANCER REGISTRY, TRIVANDRUM
SYSTEM-WISE DISTRIBUTION OF CANCER CASES - 1993



DIVISION OF RESEARCH

Dr. Prabha Balaram	Additional Professor
Dr. Ravindran Ankathil	Assistant Professor
Dr. S. Kannan	Assistant Professor
Dr. P. Remani	Assistant Professor
Ms. Molykutty John	Lecturer
Dr. Thomas Abraham	Scientific Officer
Ms. Padmavathy Amma	Technical Officer

The division had 21 ongoing projects in 1995-96 in areas of cancer biology relating to molecular aspects, cytogenetic aspects, biochemical aspects, tumour markers etc, with a total budget nearing Rs.22,00,000 from various national and international funding agencies. 22 papers were published in national and international journals. The main aim of research in the division was understanding the basic mechanisms and its application in the clinical management of cancer patient.

Project -1

Immunobiology of Gestational Trophoblastic Disease and Correlation to tumour regression (1994-1997)

(Funded by Department of Science and Technology, Govt. of India)

Principal Investigator	: Dr. Prabha Balaram
Co-investigators	: Ms. Molykutty John, Dr. T.N. Rajalekshmi, Dr. V.P. Gangadharan, Dr. Joy Augustine

The aims of this proposal were to (1) Elucidate major risk factors predisposing an individual to this disease.(2) Analysis of systemic and local immune responses and its role as a predisposing factor. (3) Evaluate the status of growth factors, cytokines and its receptors, surface glycoprotein alterations and evaluate its clinical usefulness alone or in combination in identifying high risk lesions.

The incidence of GTD was 12/10,000 deliveries, one of the highest reported in the world. Predominance of individuals with ORh+ blood group and reduced incidence in individuals with BRh+ blood group with GTD was observed. Combination of male ORh+ and female ARh+ had high risk. More aggressive moles presented with earlier symptoms (<12 weeks). Epidermal Growth Factor, Transforming growth factor alpha and their receptor, Epidermal Growth Factor Receptor were 10-100 fold increased in GTD. TGF alpha and EGF showed quantitative and qualitative over expression in more aggressive tumours. TGF beta, however, did not show significant alterations in the pathological placentae. Cytokines IL-1 beta was over expressed in GTD lesions with higher expression in more aggressive cases while IL-1 alpha was not over expressed. Analysis of serial monitoring of serum beta human chorionic gonadotropin (β HCG) in GTD patients showed that a cut off value of 300 mIU/ml of β HCG at 4 weeks was a good indicator of the aggressiveness of the disease. The initial value of β HCG or the immunohistochemical staining of the lesion with anti- β HCG was not a good indicator. Surface glycoprotein changes were evaluated using jack fruit lectin histochemistry. Lectin binding score was seen to be an excellent marker of aggressiveness with differential pattern of expression in the normal and pathological placenta. The studies so far carried out showed the expression of EGF, TGF-alpha, IL-1- β , Lectin binding and serum β HCG >300 mIU/ml at 4 weeks of evacuation as good indicators of aggressiveness. A multivariate analysis is in progress to pick out the most sensitive and cost effective marker.

Project -2

Evaluation of circulating trophoblastic antigen as a prognostic indicator in Gestational Trophoblastic Diseases. (1993-1996)

(Funded by the State Committee on Science, Technology and Environment, Govt. of Kerala)

Principal Investigator	: Dr. Prabha Balaram
Co-investigators	: Ms. Molykutty John, Dr. T.N. Rajalekshmi, Dr. V.P. Gangadharan, Dr. Thomas Abraham

The main aim of the project was to evaluate the presence of circulating trophoblastic antigens and anti-trophoblastic antibodies in Gestational Trophoblastic diseases. The work was essentially the continuation of the previous year's work and 80 lesions of GTD and 50 normal placentae and serum from these individuals were analysed.

Presence of circulating antibodies to trophoblasts was seen in 65/80 (82%) of GTD patients and 80% of normal pregnant females when neat serum was analysed suggesting that the trophoblasts are antigenic. None of the normal pregnancy sera had an antibody titre above 20 while 48% and 15% of the GTD patients had a titre of above 20 and 80 respectively. All the patients with antibodies in the normal range showed spontaneous regression of their tumour while only 40% of the patients with presence of circulating antibodies showed spontaneous regression. The invasive moles showed very intense staining of the tissue sections with autologous serum and also was positive for (antitrophoblastic) antibodies at a titre more than 100 suggesting that the presence of (anti-trophoblastic) antibodies is associated with poorer prognosis. Antibodies raised to the molar placental extract was positive at the immunohistochemical level at a dilution of 1/4 and could not be detected by double diffusion technique.

Project - 3

Prognostic evaluation of Nucleolar Organizer region associated proteins in premalignant and malignant oral lesions (1993-1996)

(Funded by Dept. of Science and Technology, Govt. of Kerala)

Principal Investigators : Dr. Ravindran Ankathil,
Dr. Jayaprakash Madhavan

Collaborating : Dr. V.T. Beena, Dept. of Oral
Investigators Pathology, Dental College,
Trivandrum

This was a 3 year project and the work has been completed. To summarise, the AgNOR technique was applied to oral tissue sections of 185 oral cancer (OC), 42 oral leukoplakias (OL) 37 Oral Submucous Fibrosis (OSMF) and 10 normal subjects to investigate whether any correlation held good in these different tissues. Compared to the AgNOR counts in normal oral epithelium, there was a gradation in

increase in the mean AgNOR counts from oral leucoplakia to oral submucous fibrosis to oral carcinoma ($P < 0.01$). This suggests that AgNOR count parallels the degree of neoplastic transformation of oral epithelium. Three OSMF patients who showed very high AgNOR counts as that of oral cancer patients, later developed oral carcinoma. Among the oral cancer tissues, the moderately and poorly differentiated subtypes showed higher AgNOR counts and scattered distribution pattern than the well differentiated subtype which showed a clustered distribution pattern. These results suggest that AgNOR technique can be utilised as a diagnostic and prognostic indicator in premalignant and malignant oral lesions.

Project - 4

Reversion of Ph¹ chromosome positivity in CML patients by Interferon treatment (1995-1996)

(Funded by Fulford Foundation, India)

Investigators : Dr. Ravindran Ankathil
Dr. V.P. Gangadharan

Chronic Myeloid Leukaemia is genetically characterized by fusion of the BCR/ABL genes which involves reciprocal translocation t(9;22)(q34;q11), resulting in the cytogenetically distinct Philadelphia (Ph¹) chromosome observed in more than 90% of CML patients. In most CML patients, the Ph¹ chromosome is present even after haematologic remission is induced by chemotherapy. Interferon Alpha therapy has been useful in suppressing a relapse of Ph¹ positive cells. This study aims to evaluate the cytogenetic response of CML patients undergoing interferon - α therapy.

Project - 5

Chromosome sensitivity studies in colon cancer families (1994-1997)

(Funded by Dept. of Science, Technology and Environment, Govt. of Kerala)

Investigators : Dr. Ravindran Ankathil,
Dr. Jayaprakash Madhavan

Inheritance of susceptibility has been documented to be the basis for the familial aggregation of colon cancer. But there is paucity of information on the possible genetic defects or genetic susceptibility risk in close relatives of familial colon cancer patients. Genetic studies of individuals in such cancer families may shed some light on the possible predisposing factors. So this study aims to (1) biomonitor the constitutional genomic instability in familial colon cancer patients and their first degree relatives by investigating the constitutional chromosomal markers and quantitating the mutagen (Bleomycin) induced chromosome sensitivity and (2) determine whether these parameters could give any clues to identify the cancer predisposed high risk family members.

Project - 6

Establishment of a Familial Cancer Registry (1995-2000)

Investigators : Dr. Ravindran Ankathil, Ms. Aleyamma Mathew, Ms. Latha P.T, Ms. Anitha Nayar, Dr. M. Krishnan Nair

Some kinds of cancers including the common ones as colon cancer, breast cancer, ovarian cancer, prostate cancer etc and the uncommon ones as retinoblastoma, medullary thyroid cancer etc. show a tendency to aggregate in families. We have started taking details of family history of cancer among all the cancer patients registered at our centre. Pedigrees of all those with positive family history are also prepared. The family history analysis is an easily acceptable and very productive method for identification of family cancer clusters. The objectives of this study are to (1) investigate the incidence of familial cancers at the Regional Cancer Centre through pedigree analysis, (2) to compile the pedigrees and estimate the relative cancer risk of the family members and (3) formation of a registry for familial cancers

Project - 7

Lectins as diagnostic markers in haematological malignancies (1994-1997)

(Funded by Dept. of Science, Technology and Environment, Govt. of Kerala)

Principal Investigator : Dr. P. Remani
Co-Investigators : Dr. P. Kusumakumary,
Dr. G. Rajasekharan Pillai

The changes in glycosylation of glycoprotein and membrane glycolipids occur as quickly as the process of phosphorylation at all stages of differentiation, development and oncogenesis. The difference in carbohydrate structure on cell surface have been studied by the use of plant lectins. The main objectives of this study are (1) to isolate and purify those plant lectins which specifically react with leukaemic cells (2) to see whether the lectins can be used for the diagnosis or prognosis of lymphomas and leukaemias and (3) to see whether these lectins can be used for the typing of different types of leukaemias.

Project - 8

Indigenous plant lectins and their use as reagents in immunology and Pathology (1995-1997)

(Funded by Dept. of Science, Technology and Environment, Govt. of Kerala)

Principal Investigator : Dr. P. Remani
Co-Investigator : Dr. Joy Augustine, Dr. T. Vijayakumar

Plant lectins are of great use in the detection of complex carbohydrates of the cell membrane. Due to their high specificity lectins are used in membrane studies of normal and cancerous cells. The ability of lectins to bind carbohydrate and their specificity with respect to the type of lymphocytes they stimulate had been well explained. The high specificity of the lectins is being utilized for the identification and separation of cells. The main objectives of this study are (1) to isolate and purify new tissue specific plant lectins from the indigenous plants (2) to study the different properties of these lectins, like mutagenicity, cytotoxicity, tissue necrosis and cell surface binding (3) to study the cytochemical and histochemical application of the newly purified lectins.

Project - 9

Development of Multifactorial Index of Radiocurability in oral cancers

(Funded by Dept. of Science, Technology and Environment, Govt. of Kerala)

Principal Investigator : Dr. V.N. Bhattathiri

Co-Investigators : Dr. P. Remani, Dr. Ravindran
Ankathil, Dr. B. Chandralekha, Mr.
C.A. Davis, Ms. Aleyamma Mathew

The objective of this project is to assess the three predictive assays, namely demonstration of micronuclei (MN) induction in tumour cell following delivery of first four fractions of radiotherapy and studying radiation induced lectin-binding alteration of tumour cell membrane early during a course of radiation. The project proposes to try and integrate these to develop an 'Index of radiosensitivity'. The study will include only well or moderately differentiated squamous cell carcinoma of the oral cavity (arising in gingiva, buccal mucosa, tongue or severe skin ulceration). All of them will be given the same schedule of radical radiotherapy and all three proposed tests will be done in each patient.

Project - 10

Multimodal assaying for prediction of intrinsic radiosensitivity of oral cancers (1993-1995)

(Funded by International Atomic Energy Agency)

Principal Investigator : Dr. V.N. Bhattathiri

Co-Investigators : Dr. P. Remani, Dr. Ravindran
Ankathil, Dr. T. Vijayakumar

This project aims to do (a) tumour tissue glutathione (TRGSH) measurement as a test of intrinsic capacity to withstand radiation (b) use of micronuclei assay in exfoliated tumour cells as a real time test of nuclear damage and (c) use of alterations in lectin binding pattern in exfoliated tumour cells as a real time test of cell membrane damage. These tests will help in knowing the particular way a tumour is resistant.

Project - 11

Expression of tumour associated genes in oral carcinogenesis - Evaluation of its potential in biological staging(1993-1995)

Investigators : S. Kannan, K. Raveendran Pillai, K.
Sujathan, Babu Mathew, K.R.
Nalinakumari

(Funded by Department of Science and Technology, Govt. of India)

The present study analyzed the expression pattern of tumour associated gene products, which are commonly implicated in the signal transduction pathways during the various stages of tumour progression in oral mucosa in order to identify some biological markers of oral carcinogenesis. The tumour progression stages analyzed were normal mucosa, non-dysplastic and dysplastic leukoplakias and frank invasive oral squamous cell carcinomas. The expression pattern of genes studied were egf, tgf-alpha, erb B-I, erbB-II (neu), tgf-beta, igf-Ir, ras, raf, bcl-2, myc, jun, fos, p53 and rb. In addition to these gene products, the present study also analyzed the proliferative status of the lesions, assessed by Ki-67, and studied the expression pattern of HPV-E6 proteins, in these lesions. Except egfr and p53 all other gene products studied were expressed inconsistently. Correlative analysis between the expression pattern of gene products and stage of tumour progression showed that egf, neu, tgf-beta, igf-Ir, myc, fos and p53 had significant correlation coefficient. Thus the present result indicates that these proteins may be considered as markers for biological staging of oral lesions. Now we are formulating a study with markers which showed significant association with tumour progression in the present results, on large sample size with rigorous follow-up to confirm the prognostic significance of these markers in oral carcinogenesis.

Project - 12

Telomerase activity in oral premalignant and malignant lesions (1995-1996)

Investigators : S. Kannan, Babu Mathew, K.R.
Nalinakumari

Collaborating : Professor Eiichi Tahara, First
Department of Pathology,
Investigator : Hiroshima University School of
Medicine, Hiroshima, Japan

In the processes of transformation of a cell from normal state to malignant, the key step is the immortalization. Recent evidence indicates that telomerase activation play an important role in immortalization of a cell and several studies have demonstrated a strong association between the carcinogenesis and reexpression of telomerase activity in various human tumours. In the present study we examined the telomerase activity in normal oral mucosa, oral leucoplakia and oral squamous cell carcinoma tissues by using TRAP assay. We also studied the correlation between the telomerase activity and clinico-pathological features of the malignant lesions. The telomerase activity was detected in normal oral squamous epithelium, 75% of oral leukoplakias and 75% of oral carcinomas. Telomerase activity found to have a relation with grade of tumour differentiation. All moderately or poorly differentiated squamous cell carcinomas displayed high telomerase activity while in well differentiated lesions only few exhibited high activity and around 35% of them were totally devoid of any activity. Besides this, the level of telomerase activity found to have an inverse correlation with the treatment response in the early stage tumours. The correlation between telomerase activity and stage of the lesions, showed that the majority of the early stage cases that responded to treatment had weak or negative activity, while early lesions with moderate or strong telomerase activity, responded poorly to the treatment. Moreover, telomerase showed a significant difference in their activity between the tumours in the intraoral sites of non-keratinizing mucosa and tongue. The correlation of telomerase activity with stage of the disease, treatment response and intraoral site of the lesion demonstrated that all early stage buccal cancers with negative or weak telomerase activity responded well to treatment, while cases with high activity of telomerase showed only poor response. In the late stage, irrespective of the level of telomerase activity, the treatment response was poor in majority of the lesions. In conclusion, the results of the present study showed that telomerase activity is present in normal oral squamous epithelium and maintains its expression in premalignant and malignant lesions of the oral mucosa in varying degrees. In oral malignant lesions, the degree of

telomerase activity varies depending upon the grade of tumour differentiation. The response of radiotherapy also correlated well with the level of telomerase activity, especially in early stage of disease. Hence telomerase activity can be an additional good tool as biomarker for assessing the prognosis or biological grade of the lesion.

Project - 13

Loss of heterozygosity in *rb*, *p53*, *apc* genes in oral cancers : Analyzed by PCR-RFLP and microsatellite assay (1995-1996)

Investigators : S. Kannan, Elizabeth K Abraham, K.
Jayasree, Paul Sebastian
Collaborating : Professor Eiichi Tahara, First
Department of Pathology,
Investigator : Hiroshima University School of
Medicine, Hiroshima, Japan

Frequent allelic deletion and other genetic abnormalities affecting individual tumour suppressor genes such as *p53*, retinoblastoma (*rb*) and APC have been demonstrated in a variety of human tumours. In certain instances, co-existent abnormalities of more than one tumour suppressor gene are found and cooperative roles for *p53* and *rb* have been proposed. In the present study, the loss of heterozygosity (LOH) in tumour suppressor gene loci such as *p53*, *rb* and *apc* were analyzed in oral cancer tissues with matched controls by employing PCR-RFLP and microsatellite assay. For PCR-RFLP we have used 5 sets of primers (2 for *p53*, 2 for *rb* and 1 for *apc*) to amplify different polymorphic marker sites. In these samples, the analysis showed a very low incidence of LOH in all the gene loci examined. LOH was found in 17%, 11% and 10% of cases with *rb*, *p53* and *apc* polymorphic markers respectively. Since we have found only a very low frequency of LOH in these tumour suppressor genes by PCR-RFLP, we have also studied LOH in *p53* and *apc* using primers specific to the microsatellite adjacent to these loci. The microsatellite assay also revealed only a low frequency of LOH in the oral cancer samples examined. Also we did not observe any correlation of LOH by PCR-RFLP and Microsatellite assay, which exhibited LOH in different cases and none of them showed LOH by both the methods. Thus the

present preliminary study indicates that the gene aberration by LOH may be an insignificant mechanism in oral carcinogenesis with respect to the major tumour suppressor genes or some tumour suppressor genes other than these may be more important in oral carcinogenesis.

Project - 14

p53 mutation pattern in oral leucoplakia and carcinoma and its relation with HPV infection (1995-1996)

Investigators : S.Kannan, Babu Mathew, K. R. Nalinakumari, K. Raveendran Pillai, K. Sujathan
Collaborating : Professor Eiichi Tahara, First Department of Pathology,
Investigator : Hiroshima University School of Medicine, Hiroshima, Japan

The loss of tumour suppressor genes or their function has been implicated in the etiology and natural history of a variety of human cancers. Of the tumour suppressor genes, p53 has been shown to be the most frequently altered gene in human malignancies. Gene mutation seems to be the predominant mechanism of p53 inactivation in these tumours. Recent studies in head and neck cancer have also shown a relationship with the alterations of p53 gene functions and HPV infections. The present study have analyzed the p53 mutation pattern in oral cancers by employing PCR-SSCP and direct sequencing. PCR-SSCP analysis showed a high frequency of band shifting in Exon 7 of p53 in oral carcinomas. In leucoplakia band shift frequency was very low. Sequencing data revealed a complex form of frameshift mutation in exon 7. Further study is on progress to confirm the frame shift mutation pattern in oral carcinomas. High incidence of HPV 16 & 18 infection have also been observed in these cases by PCR amplification using specific primers.

Project - 15

Aberrations of cell cycle regulator genes - G, cyclins, cyclin dependent kinases and cyclin dependent kinase inhibitors - in oral carcinoma (1995-1996)

Investigators : S. Kannan, K. Raveendran Pillai, K. Sujathan, Elizabeth K. Abraham
Collaborating : Professor Eiichi Tahara, First Department of Pathology,
Investigator : Hiroshima University School of Medicine, Hiroshima, Japan

Cell growth and differentiation are two fundamental aspects of multicellular existence, and intertwined with these processes is the phenomenon of unlimited growth which is the basis of the neoplastic state. The molecular regulation of the cell cycle maintains homeostatic balance between cell growth, differentiation, survival and death. Two families of proteins that form complexes play key roles in this process as positive regulators. They are the cyclins and cyclin-dependent kinases (cdks). The negative regulatory forces are provided by tumour suppressor proteins, notably those encoded by the tumour suppressor genes p53 and rb and a newly discovered family of proteins known as cdk inhibitors. In this study, the aberrations in genes such as cyclins A, B, D1, D2 and E, cdk 2,4 and 6, p16, p21, p27 will be studied at DNA, RNA and protein levels in oral premalignant and malignant lesions. The preliminary results on the alterations in genes of cyclins D1 and E, and CDK2, p16 and p21 in oral carcinoma tissues by employing Northern and Southern hybridization method showed that the 22% of the cases had amplification and overexpression of Cyclin D1. Further analysis on large number of samples is being carried out for more information regarding the mechanism of deregulation in cell proliferation during oral carcinogenesis.

Project - 16

Tumour cell kinetics in Gestational Trophoblastic Disease as a predictive index of tumour aggressiveness (1993-96)

(Funded by Indian Council of Medical Research)

Principal Investigator : Ms. Molykutty John
Co-investigators : Dr. Prabha Balaram, Dr. T.N. Hajalekshmi

Immunohistochemical localization of cell proliferative markers such as proliferating cell nuclear antigen (PCNA), Nuclear Organizer Region-associated proteins (AgNOR), and Ki-67 expression in 48 cases of Gestational Trophoblastic Diseases were carried out and compared with the picture in normal placenta. The status of the proliferative markers were correlated with the clinical profile, particularly the regression pattern of the tumour, the levels of β HCG and histological nature of the tissue with the aim of identifying high risk tumours i.e., those with potential for metastasis, malignant transformation and drug resistance.

The PCNA positive nuclei were found predominantly in the basal cytotrophoblast layer with few in the outer cyto and syncytiotrophoblasts. When compared to the normal placenta the percentage of positively stained cells for PCNA was significantly higher in GTD. Among the GTD cases the high risk group with persistent higher serum β HCG values showed greater number of positive cells in comparison with the low risk group. The percentage of silver stained nucleolar organizer regions in the nuclei of trophoblastic tissues were significantly higher in comparison with the normal placental tissues. In molar tissue, about 30% of the cells are positive for Ki-67. The molar placenta with higher grade of proliferation with increased β HCG values showed higher percentage of positive cells (70%). There was a significantly reduced number of positive cells in partial molar tissues. As the pregnancy advances, especially in the third trimester placenta, below 10% of trophoblasts were positive. The various parameters of aggressiveness of the tumour proposed in this study will be correlated with the histopathological and clinical findings and also with the serum β HCG values for determining the aggressiveness of the tumour.

Collaborative Projects

1. Cohort study on human papilloma virus and cervical neoplasia

Investigators : Dr. M. Krishnan Nair, Dr. Prabha Balaram, Dr. Sreedevi Amma, Dr. Cherian Varghese
 Foreign : Dr. Julian Peto, Institute of Cancer Research, Collaborator

Collaborator : Cancer Research Campaign, Sutton, UK.

2. Prevalence of Human Papilloma Virus infection of oral cavity in the general population

Investigators : Dr. M. Krishnan Nair, Dr. Prabha Balaram, Dr. Sreedevi Amma, Dr. Cherian Varghese
 Foreign : Dr. Julian Peto, Institute of Cancer Research
 Collaborator : Cancer Collaborator Research Campaign, Sutton, UK.

3. Implementation of NCI protocols MCP-841

Investigators : Dr. M. Krishnan Nair, Dr. V. P. Gangadharan, Dr. Kusuma Kumari, P, Dr. Prabha Balaram, Dr. Ravindran ankathil, Dr. Rajasekharan Pillai, Dr. Cherian Varghese
 Foreign Collaborator : National Cancer Institute, USA.

4. HPV in oral cancer

Investigators : Dr. Prabha Balaram
 Foreign Collaborator : Dr. Uli Bernard, Institute of Molecular and Cellular Biology, Singapore

5. Growth factors in Gestational Trophoblastic Diseases

Investigators : Ms. Molykutty John, Dr. Prabha Balaram
 Foreign Collaborator : Dr. Gregory Schultz, Institute of Wound Research, University of Florida, USA

Academic Credits

Dr. Prabha Balaram

1. **Award** - ICRET fellowship of UICC for training in evaluation of DNA damage repair mechanism at Johns Hopkins University, School of Hygiene, Baltimore, USA and to learn the technique of isolation of colon cells from stools at the U.S. Department of Agriculture, Beltsville, USA
2. **Examiner** - M.Sc. Degree examination in cell biology and Immunology - Cochin University of Science and Technology, Kerala
 - Ph.D - Mahatma Gandhi University, Kottayam
 - Ph.D - Calicut University
 - Ph.D - Bombay University
4. **Faculty** - Advanced courses in biology, Dept. of Life Sciences, University of Calicut
5. **Guest Lectures**
 1. Viral carcinogenesis
 2. Molecular aspects of carcinogenesis
 3. Immunological interactions in cancer
 4. Cell mediated and humeral immune responses; Evaluations and applications
6. **Positions held**
 - Referee - Indian council of Medical Research projects and publications
 - Department of Science and Technology, Projects
 - Vice President - Kerala Academy of Sciences
 - Joint Secretary - Life Sciences Chapter - Kerala Academy of Sciences

Dr. Ravindran Ankathil

Guest Lectures

- (1) Genetic aspects on cancer at the University Dept. of Botany, Kariavattom on August 21, 1995.

- (2) Lectures and practical demonstrations of Human karyotype analysis for the refresher course to college teachers of Calicut University, Jan 19-20, 1996.

Dr. S. Kannan

- Award** - One year International research training fellowship by International Agency for Research on Cancer (IARC), for training in molecular oncology at the First Department of Pathology, Hiroshima University School of Medicine, Hiroshima, Japan.

Trainings / workshops attended

- Dr. Prabha Balaram** - Workshop on Flow Cytometry at the Centre for Cellular and Molecular Biology, Hyderabad, India
- Ms. Molykutty John** - Workshop on characterization of lymphoid neoplasia and update on pathology of lymphomas and participated in a hands on training in molecular pathology at Tata Memorial Hospital, Bombay, 1996.

Routine investigations undertaken

- | | |
|--|-------|
| (1) Karyotyping from peripheral blood lymphocyte Microcultures | - 108 |
| (2) Bonemarrow karyotyping | - 66 |
| (3) Serum Immunoglobulin estimation | |
| IgG | - 285 |
| IgM | - 283 |
| IgA | - 291 |

Clinical Laboratory Services

Clinical Laboratory has established itself as a formidable contributor in diagnosis, treatment and follow up monitoring of patients.

The diagnostic aid is appreciated even in other hospitals as evidenced by the number of reference tests ordered by the physicians from the neighbouring hospitals. Ours is the only laboratory in the state doing immunohistochemical typing of haematopoietic disorders. The centre is also one among the very few hospitals participating in the external quality control programme with CMC, Vellore. To our long list of sophisticated equipments we have now added a fully automated haematology analyzer from Coulter Electronics with throughput of 1 sample per minute covering 20 parameters, an acid base analyzer from Corning UK and Computers linked to the main computer.

Investigations carried out during the year

Biochemical investigations				Haematological investigations	
Blood sugar	21000	RFT		Hb	65570
LFT		Blood urea	26210	Total WBC	64568
Serum bilirubin	17867	Serum Creatinine	24321	Total RBC	3560
SGOT	1795	Uric acid	4565	Platelets	64578
SGPT	18452	Creatinine clearance	2824	Diff. count	64120
Alkaline phosphatase	20123			ESR	12680
Total Protein	3568	Calcium	2860	PCV	45680
Albumin	3568	Phosphorus	1210	Bleeding time	5650
				Clotting time	5650
Cholesterol	950	Electrolytes		Prothrombin time	380
HDL cholesterol	210	Sodium	3750	Blood picture	20230
Triglycerides	240	Potassium	3750	Immunohisto. staining	
LDH	1360			Myelo peroxidase	960
Amylase	146	CSF		PAS	320
Magnesium	124	Sugar	405	Non spec. esterase	210
Acid phosphatase	1560	Protein	405	Leu. alk. phosphatase	356
Prostatic specific acid phosphatase	1220				
HBsAg	4325	Other fluids	210		
Electrophoresis	286	GTT	36		
Total			186525	Total	357722

Urine Analysis

Albumin	8230
Sugar	8210
Acetone	3300
Bile pigment	2865
Bile salt	1234
Urobilinogen	2645
Reaction	1234
Spec. gravity	325
Bence Jones protein	53
Microscopy	6548
Total	34644

Conferences etc. attended. (Chapter III)

Papers Published / Presented (Chapter IV)

DIVISION OF LABORATORY MEDICINE AND TUMOR BIOLOGY

Dr. M. Radhakrishna Pillai

Associate Professor

The Division of Laboratory Medicine & Tumor Biology completes its second year with this report. The key themes for which the Division was created continued to be fulfilled with increasing success. Research funding continues to increase and a number of post graduate and doctoral theses are being carried out. Our research is directed at increasing the ability to detect, regulate and create the basis to treat malignant cells more effectively and more selectively. The focus of investigations therefore concentrate on the fundamental mechanisms of neoplastic transformation, action and interaction of tumor associated genes, cell kinetics, invasion and metastases, genetic instability and the importance of programmed cell death. The division also provides a number of clinical laboratory investigations such as immunophenotyping of leukemias, assessment of hormone receptor status and various other specific biological markers.

We have had considerable progress in our ongoing research programs. One such investigation is on the importance of programmed cell death or apoptosis in the development of malignancy and in the management of the disease. The relative ratio between overall tumor proliferative compartment and the apoptotic compartment is being investigated during various phases of epithelial tumor progression using four model systems, cancer of the oral cavity, uterine cervix, ovary and breast. The molecular and genetic regulation of the cell cycle and the apoptosis pathways are also being studied and include analysis of regulatory genes, p53, bcl-2, bax, ras and c-myc. The importance of apoptosis induction as a criteria for response to radiotherapy, chemotherapy and hormone therapy is being investigated. We have been able to demonstrate in pediatric acute lymphoblastic leukemia (ALL) that the presence of a possibly mutated p53 protein correlated with the over-expression of a protein capable of inducing multidrug resistance. Such patients were also seen to over-express the anti-apoptotic protein bcl-2. This protein is capable

of preventing genetically damaged cells from undergoing apoptosis. We believe that this may be a mechanism of drug resistance in pediatric ALL. Further analysis also showed tumor cells from these patients to have defective programmed cell death, further confirming our hypothesis. Similar findings were evident in Non Hodgkins lymphoma, where there was a correlation between expression of bcl-2 and presence of a possibly mutated p53 with the histological grade of the tumor. While low grade tumors had increased expression of p53 and bcl-2, intermediate and high grade tumors had relatively lower levels of these apoptosis regulatory proteins. Clinical experience also shows that most low grade lymphomas respond poorly to chemotherapy. Preliminary analysis of apoptosis levels in these lesions show low grade lesions to have much lower levels compared to intermediate and high grade lesions. We have also been able to demonstrate the differential expression of these apoptosis regulatory proteins during tumor progression in the oral cavity. Expression of p53 was insignificant while bcl-2 was absent in hyperplastic leukoplakia lesions. Both proteins were expressed in lesions with apparent dysplasia while invasive oral cancer lesions showed high levels of expression of both p53 and bcl-2. Relative risk evaluation showed that lesions expressing p53 or bcl-2 had a high probability of having a histology of dysplasia or worse.

Other results of significance include elucidation of cytoskeletal alterations during tumor progression, mode of tumor invasion, cellular characterization of breast tumors, alterations in cell kinetics and cell regulatory proteins in relation to radiotherapy response and the analysis of multi-drug resistance in Non Hodgkins lymphoma. Many of these findings were presented at the 16 th Annual Convention of the Indian Association of Cancer Research held at BG Nagara, Karnataka in February 1995. Expression of the oncoproteins ras and c-myc was found to be characteristic in various grades of cervical lesions. Of the three ras proteins, only N-ras was found to be expressed in cervical lesions. This expression became more intense with increasing histological abnormality. In cervical cancer expression of this oncoprotein was found to correlate with a poor response to radiation therapy. Preliminary studies on the cellular characterization of breast tumors showed considerable intra group heterogeneity in tumors classified as a particular grade. Expression of p53, bcl-2, c-myc and c-erb2 showed characteristic profiles which could be related to the hormone receptor status of the tumor.

EXTRA MURAL RESEARCH GRANTS (1995-96)

1. Funding Agency : Dept. of Science & Technology, Govt of India
Project title : Role of Epidermal growth factor and human papillomavirus infection in cervical carcinogenesis.
2. Funding Agency : Indian Council for Medical Research
Project title : Detection and assessment of molecular markers associated with multidrug resistance in high grade Non-Hodgkin's lymphoma.
3. Funding Agency : Dept. of Atomic Energy
Project title : Human papillomavirus infection and tissue pathology.
4. Funding Agency : International Atomic Energy Agency
Project title : Development of a cell kinetic model to predict response to radiation therapy in cervical carcinoma.
5. Funding Agency : Council for Scientific & Industrial Research.
Project title : Growth factors in human tissue : relevance to tumor progression.
6. Funding Agency : Kerala State Committee for Science, Technology & Environment.
Project title : Growth factors in pancreatic malignancy.
7. Funding Agency : Kerala State Committee for Science, Technology & Environment.
Project title : The mutant p53 protein in breast cancer.
8. Funding Agency : Indian Council for Medical Research.
Project title : Cellular manifestations of p53 and bcl-2 expression in ovarian cancer.

DOCTORAL AND POST-DOCTORAL PROGRAMME

The Division has one post doctoral trainee and 6 research fellows working in the Doctoral Programme of the University of Kerala, and supported by fellowships from the Council for Scientific and Industrial Research and University Grants Commission.

- Dr. T.T. Sreelekha : Gene mutation and tumor response to radiotherapy
- Ms. S. Lakshmi : Biological factors in cervical oncogenesis
- Ms. S. Asha Nair : Cellular manifestations of tumor progression in the uterine cervix.
- Mr. G. Srinivas : Programmed cell death and the prognosis of Pediatric Acute Lymphoblastic leukemia.
- Ms. Lakshmi Kesari : Molecular evaluation of Indian Breast Cancer.
- Mr. D. Ravi : The genetic regulation of Programmed cell death in oral squamous cell carcinoma: effects on tumor progression and response to radiation therapy
- Mr.R. Radhakrishnan : Cellular and molecular profile of Non Hodgkins lymphoma.

M.D/ M. S THESES

- Dr. Jessey**
Dept. of Pathology,
Medical College Hospital : Molecular pathology of gastric cancer.
- Dr Sreekala**
Dept. of Obstetrics &
Gynecology
Medical College Hospital : Human papillomavirus infection and cervical cancer

- Dr VG Reghunathan : Clinical significance of p53 and tumor growth fraction in gastric cancer
Dept. of Surgery,
Medical College Hospital)
- Dr Pushkas : Human papillomavirus infection associated cellular alterations in laryngeal lesions
Dept. of E.N.T,
Medical College Hospital

AWARDS

T.T Sreelekha was awarded Ph.D in Chemistry from the University of Kerala for her thesis on Studies on Bio-active polysaccharides.

COLLABORATING FACULTY, PROJECT INVESTIGATORS AND CO-INVESTIGATORS

Professor M. Krishnan Nair	Director, Regional Cancer Centre
Dr. F. Joseph	Professor, Radiation Oncology
Dr. P.G. Jayaprakash	Associate Professor, Radiation Oncology
Dr. V.M. Pradeep	Associate Professor, Nuclear Medicine
Dr Jayaprakash Madhavan	Associate Professor, Radiation Oncology
Dr V.P Gangadharan	Associate Professor, Medical Oncology
Dr. P. Kusumakumari	Associate Professor, Medical Oncology
Dr. Iqbal Ahmed	Associate Professor, Surgical Oncology
Dr .K. Ramadas	Assistant Professor, Radiation Oncology
Mr. Arunkumar	Assistant Professor, Radiation Physics
Dr. K. Chitrathara	Assistant Professor, Surgical Oncology
Dr. K.R Nalinakumari	Lecturer, Dental Surgery
Dr. V.G. Chellam	Professor of Pathology, Medical College Hospital, Trivandrum.
Dr. P.A. Thomas	Professor of Surgery, Medical College Trivandrum.

Dr. Basanti Nair	Associate Professor of Pathology, Medical College Hospital, Trivandrum
Dr. T.N. Rajalekshmi	Associate Professor of Obstetrics & Gynecology, Medical College Hospital, Trivandrum
Dr. P.P Nair	Assistant Professor of Surgery, Medical College Hospital, Trivandrum

Conferences etc. attended. (Chapter III)

Papers Published / Presented (Chapter IV)

DIVISION OF ETHNOPHARMACOLOGY AND CELLULAR CHEMOTHERAPY

Dr. J. Stephen

Associate Professor

In this report year 25 more medicinal plant species were subjected to anticancer drug screening. Mouse bone marrow *in vivo* mitoclastic assay was used to study the action of the marrow cells. Extracts from six species caused higher percentage of M-phase arrest than that caused by *vinca rosea* extract at equivalent concentration. Two species caused drastic lowering of the mitotic index. Cytological abnormalities induced by these drug extracts on mouse bone marrow cells included micronuclei, pycnotic nuclei, nuclear polymorphism, nuclear lesions, stickiness of chromosomes, spindle abnormalities, atypical distribution of chromosomes, sticky as well as chromatid bridges at anaphase and telophase stages and abnormal cytokinesis.

All the above extracts were also tested upon HUT70 (lymphoma), HeLa (Cancer of the uterine cervix) and MCF7 (breast carcinoma) cell lines *in vitro* and the percentage of induced cell death was assessed by Trypan blue staining. Extracts from six species of drug plants caused the death of more than 80% of HUT70 lymphoma cells. Three of these were also capable of causing cell death in more than 80% of HeLa and MCF7 cell lines. In addition to these in the cases of MCF7, yet another plant extract and in the case of HeLa two other plant extracts caused the death caused by *vinca rosea* extract at equivalent concentration in these experiments ranged from 60 to 65% only. Hence these drug plants appear to be very promising anticancer drug sources. Alcoholic extracts from these plants have also been made and upon evaporation of alcohol the crude drugs have been recovered. These crude drugs recovered in this and previous years will soon be purified and tested on more types of human cancer cell lines *in vitro* and cytotoxicity will be assessed by *in vitro* autoradiography and alonogenic assay. Two research papers on anticancer drug screening have already been submitted for publication in international journals.

Mr. Thomas Abraham who was working under the joint guidance of Dr. J. Stephen and Dr. Prabha Balaram has been awarded Ph.D. degree by the University of Kerala for his thesis entitled "Biological markers of squamous cell carcinomas".

Guest Lecturer

Dr. J. Stephen gave two lectures on the cellular and molecular aspects of cancer at the U.G.C. refresher course for college Teachers held at the Department of Zoology, University College, Trivandrum.

DIVISION OF INFORMATION SYSTEMS

Kurien K Epen	Systems Manager (Till 22.07.95)
Jayasankar G	Systems Manager (From 01.08.95)
Jayanthi J K	Data Entry Operator
Suseela Devi B	Data Entry Operator

The division at present has the following infrastructure

EISA 80486 DX 25 MHz system, UNIX terminal server, 32 MB RAM, 2 GB Hard Disk storage with UNIX OS and INGRES RDBMS with 16 terminals and Ethernet capability.

Other Legal Softwares such as,

Windows 3.1, dBASE IV, Quatro Pro for Windows, Wordperfect for Windows and Paradox for Windows.

The following patient management modules are up and running at various sites with full support of the division and all co-operation extended by the users.

1. New Registration
2. Appointment & General Patient Information
3. Cytology
4. Histopathology
5. Pharmacy - Billing & Stock
6. Inpatient Admission

Apart from these other applications for data management are also being used for administration and other purposes such as

1. Stores
2. Purchase
3. CCL Scheme II
4. Besides other miscellaneous project and routine house keeping s/w and data have also been developed & implemented. Currently approximately 120 MB of data are available online for all the above purposes.

Projects Supported:

1. HCR - NCRP (ICMR)
2. HPV
3. NBRR - Karunagappally
4. PBCR - IARC
5. TOCS - Mangalapuram

DIVISION OF COMMUNITY ONCOLOGY

Dr. Babu Mathew

Professor

Dr. Ramani.S.Wesley

Assistant Professor

Sri.C. Sreekumar

Social Investigator

During the period under report, the thrust areas of the division were as follows:

1. Human Resource Development: Training of Doctors, Health workers, Members of Voluntary Organisations and General Public for cancer control activities.
2. Generation and distribution of Health education materials, and utilization of mass media for cancer awareness.
3. Anti-tobacco workshops and campaigns throughout the State with the support of voluntary agencies.
4. Establishment of Village Level Comprehensive Cancer Control Programmes and Early Cancer detection camps in the villages.
5. Community based cancer research in the form of Chemoprevention studies in prevention of Oral cancer by visual screening, Cervicoscopy for downstaging uterine cervical cancer and the utilization of trained House Surgeons for cancer survey and surveillance.
6. Management of Early Cancer Detection Clinic in the centre and maintenance of a pre cancer registry.

Professional Training and Health Education

- a) The training of House Surgeons posted in the (Community, medicine) department with the financial support of WHO (INDCAN 006) continued in the current year also. The four batches were trained during the period under report.
- b) Inservice training to Doctors: Three batches of Assistant Surgeons were given training on cancer control during their inservice training programme in the family planning centre, Trivandrum.

- c) Two batches of health inspectors and 2 batches of supervisory ANMS were given inservice training on cancer control during the period under report.
- d) Three workshops were given to the key Saksharatha Workers in connection with the ' World No Tobacco Day' at Pathanamthitta, Cannanore and Trivandrum.
- e) Thirty seven cancer awareness programmes given to members of the Voluntary Organisations, factory workers, Community volunteers and General public. The details of which be shown in Table No:1. It may be noted that due to Panchayath elections, the awareness programmes could not be held from 15th September to 31st November.

Generation and Distribution of Health Education Materials

A book in Malayalam (3000 copies) on cancer control was published for distribution among health workers and community volunteers. Six new display boards were added during the year.

Two programmes through AIR were broadcast and 4 programmes through ASIANET were telecast during the period under report. Six programmes were broadcast through Trivandrum station of All India Radio and one programme from Calicut and one programme from Kannur were telecast. The health education materials generated during the previous years and the current year were distributed among community volunteers and other target groups

Anti-tobacco Programmes and Campaigns

The World No Tobacco Day was observed by organising day long workshops on the theme of the day, and a rally at Pathanamthitta, Kannur and Trivandrum. The Regional Cancer Association, ADIC, India, IUHPE Kerala State Chapter, The Bharath Scouts and Guides Organisation, Malabar Cancer Society and the Anti Narcotic Council, Kerala State were collaborating with Regional Cancer Centre in organising these workshops. A talk show on the theme of the day was telecast through Doordarshan on 3rd June 1995. 18 villages where the VCCCP Programme is ongoing, also have reported the

observance of 'World No Tobacco Day' with public functions. Analysis of the result of the project 'One Lakh Tobacco Free Homes' is progressing.

Establishment of Village Level Comprehensive Cancer Control Programmes

12 new villages were inducted to the VCCCP programme of the Regional Cancer Centre. They are Kidangallore, Mannar, Koothuparambu, Sooranad, Mangattidam, Chembilode, Edathua, Sasthamcotta, Udayagiri, Peralasserri, Pallukal and Kattakkada. So far 58 villages have accepted this programme.

42 early cancer detection programmes were conducted during the period under report. The details of which be shown in Table No:2.

Community based Cancer Research

A major study with the financial support of IARC, Lyon France and Association for International Cancer Research, St. Andrews U.K. was initiated in the month of July. The aim of the study is to evaluate the efficacy of Oral visual inspection by trained investigators in the control of Oral cancer. The study is initiated in 13 panchayaths in Trivandrum district.

Another study on Evaluation of Chemoprevention of Oral Cancer, the long term administration of Vitamin A in subjects at high risk sponsored by IARC, Lyon France and John Hopkins University, Baltimore U.S.A was initiated in January 1996. However, following NCI alert on administration of Vitamin A, the study is shelved for the time being.

The study on the performance evaluation of Unaided Visual Inspection, Cervicoscopy and Papsmear in the detection of Cervical cancer and precancers was initiated in July 1996, for which the financial support is received from IARC.

A collaborative study with Department of Biochemistry, University of Kerala and John Hopkins University, Baltimore, U.S.A on the role of Omega 3 Fatty Acids on the population of Kerala was initiated in January 1996.



Shri. A. K. Antony, Chief Minister of Kerala inaugurating the Early Cancer Detection Centre Kannur. Others present are Shri. D. K. Pai, President Malabar Cancer Care Society, Shri. Mulleppally Ramachandran MP, Dr. Babu Mathew and Shri. K. Ramakrishnan, M.L.A. Kannur.



Shri. K.M. Mani, Minister for Revenue and Law inaugurating the "World No Tobacco" day at R.C.C. Trivandrum.

Analysis of the data on the collaborative project on Chemoprevention of Oral cancer with Human Nutrition Research Centre, John Hopkins University, Baltimore, U.S.A is going on.

Data collected by Community volunteers on tobacco and alcohol consumption from various parts of Kerala is being analyzed under the Preventive Oncology Scheme of ICMR.

The project sanctioned under INDCAN 006 utilising trained house surgeons for cancer survey and surveillance in the Pangappara Primary Health Centre is going on.

The study on the nutritional and developmental status of pre-school children with and without vitamin supplementation and deworming has been completed. 472 children were investigated and the data is being analyzed.

Early Cancer Detection Clinic of RCC

An early cancer detection clinic of RCC is functioning to examine persons with warning signals of cancer, even in off OP hours and by prior appointment. 239 number of persons were examined during the period under report.

Details from 52 number of oral precancer cases detected during the year were fed into the oral precancer registry to study the natural history of development of precancerous lesions during this period. 12 cases of cancers were detected through ECDC.

Other important activities

An Early Cancer Detection Centre was inaugurated at Kannur by the Hon.Chief Minister of Kerala, Sri. A. K. Antony on February 1996. The centre is under the auspices of Malabar Cancer Care Society. The technical support for training early detection and palliative care is given by the Community Oncology Division.

A project office for community based cancer research activities was opened at Mangalapuram. Regular clinics are held here on all Saturdays for screening oral and cervical cancer patients.

Table No.1
Cancer Detection Camps 1995-96

Sl.No	Place	Date	Organised by	Total	New cancers	Old cancers	Oral pre cancers	Other pre cancers
1	2	3	4	5	6	7	8	9
1	Kidangaloor	1-4-95	Kidangaloor Panchayath	393	1	0	21	10
2	Karamana	7-4-95	Women's Association	17	0	0	0	0
3	Mannar	8-4-95	Lion's Club Mannar	674	3	0	38	25
4	Neendakara	24-4-95	Catholic Association	59	1	1	1	0
5	Pallimukku	1-5-95	St.Mary's Church	161	0	0	5	0
6	Peroorkada	2-5-95	ESI Hospital	45	0	0	0	0
7	Poojapura	5-5-95	S.B.T.Poojappura	167	0	0	2	1
8	Koothuparambu	14-5-95	Malabar Cancer Society	310	6	0	25	15
9	Azhoor	25-5-95	Coir workers	75	1	0	5	8
10	P.T.P Nagar	28-5-95	RCA	15	0	0	0	0
11	Peroorkada	30-5-95	Director, ESI	30	0	0	5	0
12	Sooranad	4-6-95	Surabhi	648	3	2	63	12
13	Veli	7-6-95	Director, ESI	155	0	0	3	0
14	Peroorkada	26-7-95	Director, ESI	31	0	0	4	0
15	Ambalathara	2-8-95	Milma	36	0	0	0	0
16	Mangattidam	12-8-95	Malabar Cancer Society	804	3	0	60	15
17	Kadakkal	17-8-95	IMA	213	0	0	8	1
18	Ambalathara	22-8-95	Milma	24	0	0	0	0

1	2	3	4	5	6	7	8	9
19	Chembilode	31-8-95	Malabar Cancer Society	316	1	0	28	14
20	Peroorkada	31-8-95	Director, ESI	41	0	0	2	0
21	Kallara	25-9-96	P.H.C Kallara	121	2	1	4	3
22	Peroorkada	26-9-95	Director, ESI	37	0	0	0	0
23	Kallara	24-10-95	P.H.C. Kallara	88	2	1	4	3
24	Vazhacaud	30-10-95	DMO, Malappuram	1112	5	16	18	5
25	Panimoola	11-11-95	B.Sc Nursing Students	82	2	0	4	5
26	Kallara	24-11-95	P.H.C Kallara	47	1	0	5	3
27	Peroorkada	28-11-95	Director, ESI	31	0	0	0	0
28	Peroorkada	5-12-95	Director, ESI	28	0	0	0	0
29	Edathua	12-12-95	YMCA & Y's men's club	151	0	0	3	8
30	Edavacode	16-12-95	P.H.C Pangappara	59	0	0	0	0
31	Mancha	28-12-95	Mar Ivanios College	65	0	3	3	0
32	Peroorkada	2-1-96	Director, ESI	34	0	0	0	0
33	Sasthamkotta	21-1-96	NSS, Sasthamkotta College	105	1	0	0	0
34	Venjaramood	24-1-96	Priyadarshini Arts Club	12	1	0	0	0
35	Varkala	31-1-96	SNDP	38	0	0	0	0
36	Manvila	6-2-96	Keltron	144	1	0	0	0
37	Poonthura	10-2-96	Y's men club	40	-	-	11	2
38	Udayagiri	18-2-96	Malabar Cancer Society	987	3	0	33	10
39	Kattakada	25-2-96	National Integration Society	87	0	2	10	7
40	Peroorkada	27-2-96	Director, ESI	18	0	0	1	1
Total				7464	37	26	366	148

Table

DETAILS OF CANCER AWARENESS PROGRAMMES 1995-96

Sl. No.	Date	Place	Organised	No. Attended	Type of Particulars
1	2	3	4	5	6
1	2/4/95	Kidangalloor	Malabar Cancer Society	108	Community Volunteers
2	5/4/95	Karamana	RCA	48	House Wives
3	3/5/95	Nooranad	Surabhi	894	Lay Public
4	27/5/95	P.T.P. Nager	RCA	15	Colony Residents
5	14/6/95	Chatham	G.H.S. Kottayam	40	Teachers
6	7/6/95	Veli	British India Clay Ltd	45	Factory Workers
7	25/6/95	Chempilode	Malabar Cancer Society	385	Youth Volunteers
8	26/6/95	Mangattidam	Malabar Cancer Society	321	Youth Volunteers
9	15/7/95	Jawaharnager	RCA	21	Colony Residents
10	2/8/95	Ambalathara	Ambalathara	36	Factory Workers
11	3/8/95	Vattiyoorkave	H.R.D	44	Lay Public
12	22/8/95	Ambalathara	Milma	25	Factory Workers
13	28/8/95	Trivandrum	Lion's Club	45	Members of Lion's Club
14	16/9/95	Konni	Marthomma Savik Sangam	281	Lay Public
15	1/11/95	Vellayambalam	Bishop House Vellayambalam	156	Community Volunteers
16	23/11/95	Manvila	Keltron	184	Employees

1	2	3	4	5	6
17	17/12/95	Udayagiri	Malabar Cancer Society	405	Community Volunteers
18	21/12/95	Thycaud	Family Welfare Centre	15	Health Workers
19	26/12/95	Manvila	Malabar Cancer Society	208	Factory workers
20	22/12/95	Trivandrum	Bharath Sevak Samaj	72	Lay Public
21	24/12/95	Chathannur	S.N. College	210	Students
22	3/1/96	R.C.C	Loyolo College	50	Students
23	7/1/96	Thannur	Malabar Cancer Society	105	Lay Public
24	7/1/96	Kodinji	Malabar Cancer Society	806	Lay Public
25	11/1/96	Kayamkulam	Co-Operative College	450	Students
26	13/1/96	Pattuvam	Malabar Cancer Society	438	Community Volunteers
27	17/1/96	Thycaud	Family Planning Centre	22	Health Inspectors
28	24/1/96	Nilamel	Nilamel College	176	College Students
29	27/1/96	Pattoor	Savasangam	65	Teachers
30	14/2/96	Kattakkada	National Integration Society	205	Lay Public
31	17/2/96	Peralassery	Malabar Cancer Society	411	Volunteers
32	20/2/96	Palayam	YWCA	54	YWCA Members
33	24/2/96	Mukkola	St. Thomas School	21	Teachers
34	26/2/96	Kulathoor	Keltron	283	Company Staff
35	28/2/96	Statue	A.G's Office	261	Employees
36	9/3/96	Trivandrum Hotel	Y's Men's Club	51	Members of Y's Men's Club
37	26/3/96	Palukal	Kanyakumari Social Service Society	71	Animators

DIVISION OF E.C.D.C., ERNAKULAM

Dr. B. Syamala Kumari Cytopathologist

The institution is running two projects successfully during the reporting year.

There is definite increase in the work in all types of investigations done here except Histopathology which is received only by screening and taking Tumour Pathology only, since otherwise it can affect the quality of work done here.

The Colposcopy directed biopsies are done by the newly introduced LEEP procedure and has proved much beneficial, easier and safe.

During this year we have trained a group of Voluntary workers of the HOPE foundation. They are involved in group activities like prevention of TB, Cancer etc. Their idea is to set out a new plan for Cancer Detection/Prevention work by regular house visiting in this district. Two medical officers from Taluk Head Quarters Hospital North Parur were given training here as to early cancer detection procedures.

So far 956 cases of Cervicocopy were done out of which 202 cases were followed by Colposcopy.

A pain Clinic was started here on 10-06-95 as a part of the District Cancer Control Programme and is going on very well. So far 10 pain clinics were conducted.

The work done in the centre during the year is given in detail.

Resume of Work Done 1995-96

Sl. No.	Particulars of work done	ECDC	DCCP	Total
1.	Persons Screened	7085	6230	13315
2.	Cervical Smears	3379	4196	7575
3.	Oral Smears	226	371	597
4.	Sputum	141	--	141
5.	Fine Needle Aspirations	1709	371	2080
6.	Histopathology	198	--	198
7.	Colposcopy	193	--	199
8.	Colposcopy directed Biopsy	43	--	43

Gynaecological Cytology

Sl. No.	Lesion	Centre	Follow up	Total
1.	Normal	227	46	273
2.	Inflammation	2015	654	2669
3.	Atypical Squamous Metaplasia	2	1	3
4.	Trichomonas Infection	97	20	17
5.	T. V. with Mild Dysplasia	12	--	12
6.	T. V. with Mild Dysplasia	1	--	1
7.	Fungal Infection	6	--	6
8.	Human Papilloma Virus Infection	19	4	23
9.	Herpes Simplex Virus Infection	23	3	26
10.	T.V and Virus Infection	1	--	1
11.	Virus Infection with Mild Dysplasia	1	--	1
12.	Virus Infection with Moderate Dysplasia	1	--	1
13.	Glandular Cell Hyperplasia	5	1	6
14.	Glandular Cell Atypia	67	14	81
15.	Reserve Cell Hyperplasia	2	--	2
16.	Endometrial Cell Hyperplasia	3	--	3
17.	Mild Dysplasia	51	18	79
18.	Moderate Dysplasia	5	3	8
19.	Severe Dysplasia	5	3	8
20.	Carcinoma in-situ	2	1	3
21.	Invasive Squamous Cell Carcinoma	45	--	45
22.	Adenocarcinoma	2	--	2
23.	Autolytic Atrophy	--	1	1
24.	Radiation changes	3	--	3
25.	Miscellaneous	3	1	4
Total		2610	769	3379

Non Gynaecological Lesions

Sl.No.	Lesion	Total
Oral		
1.	Benign	58
2.	Pre-malignant Lesions	63
3.	Malignant	104
4.	Miscellaneous	1
Total		226
Breast		
1.	Non malignant lesions	579
2.	Suspicious	2
3.	Malignancy	94
4.	Miscellaneous	3
Total		678
Thyroid		
1.	Benign	347
2.	Suspicious	7
3.	Malignancy	6
4.	Miscellaneous	3
Total		363
Lymphnode		
1.	Benign	227
2.	Suspicious	3
3.	Malignancy	
a.	Primary	2
b.	Secondary	54
4.	Miscellaneous	6
Total		292
Salivary Gland		
1.	Benign	32
2.	Suspicious	1
3.	Malignancy	6
Total		39
Liver		
1.	Benign	4
2.	Malignancy	7
3.	Miscellaneous	1
Total		12

Other Site

1. Benign	150
2. Suspicious	4
3. Malignancy	25
4. Miscellaneous	17

Total**196****Body Fluids**

1. Ascitic fluid	
a. No malignant cells	11
b. Malignancy	1
Total	12
2. Pleural fluid	
a. No malignant cells	16
b. Malignancy	3
Total	19
3. Pericardial fluid	
a. No malignant cells	3
b. Malignancy	1
Total	4
4. Gastric fluid	
a. No malignant cells	32
b. Malignancy	2
c. Miscellaneous	4
Total	38

Nipple Discharges

1. Benign	42
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Urine

1. Benign	1
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Lungs

1. Benign	6
2. Malignancy	5
3. Miscellaneous	2
Total	13

Sputum Cytology

Sl.No.	Lesion	Centre
1.	No malignant cells	111
2.	Fungal Infection	4
3.	Atypical & Suspicious	3
4.	Squamous Cell Carcinoma	12
5.	Adenocarcinoma	1
6.	Mucoepidermoid Carcinoma	2
7.	Miscellaneous	8
Total		141

Histopathological Examination

Sl.No.	Specimen	Benign	Malignant	Total
1.	Gynaecological	57	12 in-situ 9	78
2.	Breast	33	9	42
3.	Oral	11	7	18
4.	Others	34	24	58
5.	Miscellaneous	---	---	2
Total		135	61	198

**Ernakulam District Cancer Control Programme
Work During July 1993 - March 1996**

Total Number of Clinics		357
Total Number of Persons Screened		19,740
	Male	3,875
	Female	15,865
Oral	Non-Malignancy	688
	Pre-Malignant (Clinical+Cytological)	695
	Malignancy	51
	Miscellaneous	35
	Total Oral Smears	1,011
Breast	Non-Malignancy	182
	Malignancy	9
	Suspicious of Malignancy	1
	Miscellaneous	151
	Total Breast Aspirations	343
Cervix	Non-Malignancy	11,280
	Pre-Malignant	605
	Malignancy	36
	Total Cervical Smears	11,921
Thyroid	Benign	360
	Malignancy	1
	Suspicious	1
	Atypia	5
	Miscellaneous	68
	Total Thyroid Aspirations	442
L.N	Benign	53
	Granulomatous	15
	Suspicious	0
	Miscellaneous	4
	Malignancy	10
	Total L.N Aspiration	82
Other Sites	Benign	106
	Suspicious	2
	Malignancy	11
	Miscellaneous	221
	Total Other Sites	340

Awareness Programme 1995-96

Date	Place	Sponsors
22-06-95	Abad Plaza, Ernakulam	Workshop on Health Care conducted by Cochin Habitat Project
10-02-96	ECDC, Ernakulam	Hope foundation volunteers
05-03-96	Palluruthy	Talk conducted by TATA Tea.
12-02-96	ECDC, Ernakulam	Training given to two Medical Officers under DCCP Programme.

DIVISION OF E.C.D.C., PALAKKAD

Dr. R. Ananda Kamath

Cytopathologist

Activities

During the reporting year the centre continued the activities undertaken in yester years, namely examination of persons attending the centre (clinical and cytological) referral of diagnosed cases to Regional Cancer Centre or elsewhere, follow up of treated cases and organisation of and participation in cancer detection camps. A noteworthy feature of this year is the starting of a Pain and Palliative Care Clinic in the centre in the month of July 1995. Dr. Vasudevan Mappat of Regional Cancer Centre has started regularly visiting the centre on third saturday of every month and examines patients and administers medicines including oral morphine according the WHO guide lines.

Dr. R. Ananda Kamath gave a talk on All India Radio, Trichur in Malayalam on Early Diagnosis and chances of cure in Cancer and it was broad cast on 28-11-95.

TABLE 1

Break up of Cytological Smears during 1995-1996

Sl. No.	Specimen	Centre	Camp	Cancer cases		Total
				Centre	Camp	
1	Cervical Smears	856	982	18	1	1638
2	Buccal Smears	103	29	26	1	132
3	Breast	52	5	7	1	57
4	Sputum	218	-	12	-	218
5	Pleural Fluid	6	-	3	-	6
6	Others	47	17	8	2	64
	Total	1082	1033	74	5	2115

TABLE 2

Analysis of Gynaecological Smears 1995-1996

Cervical Smears	Centre	Camp	Total
Normal	112	329	441
Inflammation	334	428	776
Inflammation with squamous metaplasia	45	63	108
Trichomonas Vaginalis infection	104	142	246
Mild Dysplasia	3	3	6
Mild-Moderate Dysplasia	1	-	1
Moderate Dysplasia	2	1	3
Moderate-Severe Dysplasia	-	1	1
Severe Dysplasia	1	-	1
Ca - In-situ	11	7	18
Nuclear Atypia	1	1	2
Suspicious	18	1	19
Malignancy	4	1	5
N-M C	1	-	1
Autolytic Atrophy	1	-	1
Reserve Cell Hyperplasia	1	-	1
Others	-	2	2
Total	656	982	1638

TABLE 3
Analysis of Non-Gynaecological Smears 1995-96

Specimen	Centre	Camp	Total
Buccal			
Non-Malignant	76	28	104
Suspicious	1	-	1
Malignant	26	1	27
TOTAL	103	29	132
Breast			
Non-Malignant	44	4	48
Suspicious	1	-	1
Malignant	7	1	8
TOTAL	52	5	57
Sputum			
Non-Malignant	204	-	204
Suspicious	2	-	2
Malignant	12	-	12
TOTAL	218		218
Fluids			
Non-Malignant	2	-	2
Suspicious	1	-	1
Malignant	3	-	3
TOTAL	6		6
Miscellaneous			
Non-Malignant	38	15	53
Suspicious	1	-	1
Malignant	8	2	10
TOTAL	47	17	64

TABLE 4
Details of Camps conducted during the year 1995-96

Sl. No.	Date	Place	Sponsors
1.	14-05-95	Koothuparambu - Kannur Dist.	Lions Club & Malabar Cancer Care Society
2.	21-05-95	Vathanapally - Trichur Dist.	Sathyasayisevasamithi Vatanapally
3.	28-05-95	Orkkattiri - Kozhikode Dist.	Malabar Cancer Care Fondation
4.	12-08-95	Mangattidam - Kannur Dist.	Deshabandhu Vayanasala & M.C.C.S
5.	13-08-95	Chempilod - Kannur Dist.	Gramapanchayath Chembilode & M.C.C.S.
6.	08-10-95	Kairaly - Palakkad Dist.	St. Mary's Church, Amalagiri
7.	30-10-95	Vazhakkad - Malappuram Dist.	District Medical Officer of Health
8.	03-12-95	Omchiyam - Kozhikode Dist.	Malabar Cancer Care Foundation
9.	17-12-95	Idiyankara - Kozhikode Dist.	M C C F
10.	13-01-96	Ponpara - Palakkad Dist.	Resmi Mahila Samajam Ponpara Nehru Yuva Kendra Palakkad
11.	11-02-96	Peruvanarnughi - Kozhikode Dist.	Malabar Cancer Care Foundation
12.	18-02-96	Udayagiri - Kannur Dist.	Malabar Cancer Care Society
13.	21-02-96	Nallippally - Palakkad Dist.	DYFI Nallippally
14.	03-03-96	Kollankode - Pallakkad Dist.	P.T.A Dhathri G.H.S. Kollankode
15.	04-03-96	Elamarum - Malappuram Dist.	Government of Kerala
16.	05-03-96	Mundurnughi - Malappuram Dist.	Government of Kerala
17.	06-03-96	Vayhakkad - Malappuram Dist.	Government of Kerala
18.	07-03-96	Vallilapuyhu - Malappuram Dist.	Government of Kerala
19.	08-03-96	Vazhayoor - Malappuram Dist.	Government of Kerala
20.	24-03-96	Sreekrishnapuram Hospital - Palakkad Dist.	Hospital Management

DIVISION OF LIBRARY AND INFORMATION SERVICES

Shri. M. Chandrakumaran Nair Senior Librarian

With the widening of research programmes, improvement on the standards of research, increased number of research projects undertaken by the Centre, and the demand for more clinical information, the library and information services had to be strengthened further during the report year. The library continued all its activities providing effective information support for the patient management, successful accomplishment of research projects and various other academic activities of the Centre. As in the previous years, apart from the internal users, the library resources were increasingly used by several doctors, researchers, students from Medical Colleges, University departments, research institutes and other research organisations. The library remained open on all the days from Monday to Saturday 9 am to 5 pm except on ten national holidays.

Collection

Access to information rather than possession, as far as possible, has been the guiding principle for collection development. However, in spite of budgetary constraints high priority has been accorded to subscription to the journals. For the year 1995, the library subscribed to 102 journals of which most of them were foreign in origin. On the basis of the review by the Library Committee, 12 journals were added and 5 journals were discontinued. The other additions were as follows:

	Added during the period 1995-96	Collection as on March 1996
Books, monographs and back volumes	401	4736
Current periodicals	12	102
Reports & Reprints	332	2030
Audio video cassettes	25	70

Database Search Services

Database search facilities involving the CD ROM and online databases were used extensively during the report year. The library continued to subscribe the CD ROM databases, ONCODISC which was used heavily in the context of patient management. Online search facilities were provided using the NICNET connectivity where the RCC Library was continued to function as a dial up user. Several databases of MEDLARS system and the UNION CATALOGUE of biomedical journals were accessible online. The Indian Medlars System of NIC has extended the retrospective data coverage of MEDLINE back to 1975 during the year. In addition to internal users, this facility was also used by several users from Medical Colleges, University departments, Research Institutes like Tropical Botanical Garden and Research Institute and Amala Cancer Institute, etc.

Computerisation of Library Operations

In house databases for books and monographs, theses and conference proceedings have been created and the work is in good progress for the generation of the database of reprints and reports. Steps have been initiated to procure an integrated software for the automation of other operations.

RCC Publications

During the report year, 40 papers contributed by academic staff were added with informative abstract to the existing database. This database contains citations with abstracts of the R.C.C. publications from 1981 onwards. Data relating to the various conferences, symposia and seminars attended to by the staff were also added to the concerned database. The micro CDS/ISIS Ver.3, the powerful retrieval software, is used for creating these databases.

Multimedia

In view of the increasing interest in the recently emerged information technology the 'Multimedia Information System's, the Library Computer was upgraded with the necessary components.

Other documentation and Information Services

A fortnightly current contents bulletin carrying the contents pages of journals and other documents added to the collection was distributed. On the basis of our users profile, the database search services provided by BARC library and information services division using the INIS databases was utilised for rendering the SDI service to our concerned community. Quarterly Press Clippings Service on Oncology and allied areas covering the popular English dailies in India was also continued. Copies of articles and reprints that are not available in the library were collected on demand from various other centres. Entire professional, official and project photocopying requirements of all the divisions were met by the library. The inter library loan arrangements with the libraries like British library were also continued.

In the preparation of manuscripts for publications, necessary support was rendered to the academic community and there were active interaction with other divisions.

Fellowships

Mr. M. Chandrakumaran Nair, Senior Librarian has been awarded the UICC ICRET Fellowship for one month to do a project/undergo training on oncology information management at International Agency for Research on Cancer (WHO) in Lyon, France. As part of this programme, he has also visited other major centres like Institute Gustav Roussey, Pasteur Institute, UNESCO Central Library and National Library of France, etc. in Paris.

Other Academic Activities

Mr. M. Chandrakumaran Nair, Senior Librarian has worked as academic counsellor for the B.L.I.Sc and M.L.I.Sc programme of the IGNOU.

CONFERENCES / SEMINARS / TRAINING WORKSHOPS ETC. ATTENDED BY VARIOUS STAFF

Dr. Gladys Jeevy,
Prof. of Anaesthesiology

Medical Cases hospital pipelines and initial Assoc. monitoring in Anaesthesia, April, 1995. Workshop in Anaesthesiology, Madras.

Dr. V. P. Gangadharan,
Assoc. Prof. of Medical oncology.

GCP Symposium (GEMCITABINE), New Delhi, May 1995.

Dr. V. P. Gangadharan,
Assoc. Prof. of Medical oncology.

American Society of Clinical oncology, Los Angeles, U.S.A May, 1995.

Shri. Brinda, T.P.,
Lab. Technician.

Training of Lab Technician, TMH, Bombay, May, 1995.

Dr. R. Ananda Kamath,
Cytopathologist, ECDC, Palakkad.

Workshop on Bone concepts in scenography, BACON'S 95, May 1995.

Dr. Suresh Chandra Dutt,
Asst. Prof. of Radiotherapy

AROI Karnataka Chapter, Bangalore June, 1995.

Dr. Francis V. James,
Asst. Prof. of Radiotherapy

Annual meeting of Urology Club, Calicut, June, 1995.

Dr. B. Rajan,
Prof. of Radiotherapy

Fellowship of the Institute of Cancer Research, RMH, London, July 1995.

Shri. Thayal Singh Elias,
Asst. Prof. of Radiation Physics

1st Indian "Hands on" workshop on stereotactic neurosurgery and radiosurgery, Christian Medical College & Hospital, Vellore July 1995.

Shri. C. A. Davis,
Assoc. Prof. of Radiation Physics

1st Indian "Hands on" workshop on stereotactic neurosurgery and radiosurgery, Christian Medical College & Hospital, Vellore July 1995.

Dr. Rojimon Jacob,
Lecturer in Radiotherapy

Dr. Rema Jyothirmayi
Lecturer in Radiotherapy

Mr. Chandrakumaran Nair,
Librarian

Dr. Rachel Cherian Koshy,
Asst. Prof. of Anaesthesiology

Dr. V.N. Bhattathiri,
Assoc. Prof. of Radiotherapy

Dr. P. Madan Mohan,
Lecturer in Surgical Oncology

Dr. M.M. Jacob,
Lecturer in Cancer Surgery

Dr. Paul Sebastian,
Assoc. Prof. of Cancer Surgery

Dr. Jom Prabhakar,
Lecturer in Surgical Oncology

Dr. V. N. Bhattathiri,
Assoc. Prof. of Radiotherapy

Dr. P. Remani,
Lecturer in Cancer Research

Shri. C. A. Davis,
Assoc. Prof. of Radiation Physics

UICC-ICRETT Fellowship, Royal
Marsden Hospital, London July 1995.

UICC-ICRETT Fellowship, Royal
Marsden Hospital, London July 1995.

ICRETT Fellowship Award, IARC,
Lyon, France August, 1995.

Management of Cancer Pain,
Bangalore, August, 1995.

Conference on Interferon in Head and
Neck cancer, Madras, August, 1995.

National Conference of Association of
Plastic Surgeon of India, Trivandrum,
August, 1995

National Conference of Association of
Plastic Surgeon of India, Trivandrum,
August, 1995.

National Conference of Association of
Plastic Surgeon of India, Trivandrum,
August, 1995.

National Conference of Association of
Plastic Surgeon of India, Trivandrum,
August, 1995.

WHO fellowship, Germany. 10th
International Congress of Radiation,
U.K. August, 1995.

CME programme in molecular
approaches in the management of
cancer. Adayar Cancer Institute,
Madras, August, 1995.

Workshop on computerised treatment
Planning and Xlth Annual State
conference of AROI, Apollo Hospital,
Madras, September, 1995.

Shri. Arun Kumar,
Asst. Prof. of Radiation Physics

Dr. Gangadevi,
Assoc. Prof. of Radiotherapy

Dr. Vijaya,
Chief Nursing Officer

Dr. Gladys Jeevy,
Assoc. Prof. of Anaesthesiology

Dr. Usha. P.,
Lecturer in Anaesthesiology

Dr. Rachel Cherian Koshy,
Asst. Prof. in Anaesthesiology

Dr. Ravindran Ankathil,
Asst. Prof. Cancer Research

Dr. Molykutty John,
Lecturer in Cancer Research.

Shri. C.A.Davis,
Assoc. Prof. of Radiation Physics.

Dr. K.Ramachandran,
Asst. Prof of Nuclear Medicine.

Workshop on computerised treatment
Planning and Xlth Annual State
conference of AROI, Apollo Hospital,
Madras, September, 1995.

AROI Conference Tamil Nadu Chapter,
Madras, September 1995.

1st National Conference on Cardiac &
Neuro Nursing, SCTIMST, Trivandrum,
October, 1995.

XXth Annual Conference Indian
Society of Anaesthetist, Kerala State
Branch, Thiruvalla, October, 1995.

Annual Conference Indian Society of
Anaesthetist, Kerala State Branch,
Thiruvalla, October, 1995.

Annual Conference Indian Society of
Anaesthetist, Kerala State Branch,
Thiruvalla, October, 1995.

12th Asia Pacific Cancer Conference,
Singapore, October, 1995.

XVI Annual conference of IABMS-95 at
University of Calcutta, Calcutta,
November, 1995.

Workshop on Brachytherapy and
Roentgen Centenary celebrations &
49th National Congress of the Indian
Radiological and Imaging Association;
Bangalore, November 1995.

Workshop on Brachytherapy and
Roentgen Centenary celebrations &
49th National Congress of the Indian
Radiological and Imaging Association,
Bangalore, November 1995.

Dr. V. Padmanabhan, Prof. of Radiation Physics	XVIth Annual Conference on Medical Physics, Jodhpur, November, 1995.	Smt. Aleyamma Mathew, Asst. Prof. in Computer Statistics & Epidemiology	Annual conference of Indian Society for Medical statistics, Madras, November, 1995.
Dr. R. Ananda Kamath, Cytopathologist, ECDC, Palakkad	Workshop on Brachytherapy and Roentgen Centenary celebrations & 49th National Congress of the Indian Radiological and Imaging Association, Bangalore, November 1995.	Dr. Vasudevan, M., Anaesthetist.	Inauguration of Pain and Palliative Care Clinic, Calicut, November, 1995.
Dr. Alex K. Ittyavirah, Assoc. Prof. of Imageology	Workshop on Brachytherapy and Roentgen Centenary celebrations & 49th National Congress of the Indian Radiological and Imaging Association, Bangalore, November 1995.	Dr. Suresh Chandra Dutt, Asst. Prof. of Radiotherapy.	7th Canadian Bio Ethics Society conference at Vancouver, Canada, November, 1995.
Dr. Suresh Chandra Dutt, Asst. Prof. of Radiotherapy.	IMA State Level Conference, Perinthalmanna, November 1995.	Dr. P.G. Jayaprakash, Asst. Prof. of Radiotherapy	8th International Brachytherapy conference, Nice, France, November 1995.
Dr. V. Padmanabhan, Prof. of Radiation Physics.	Roentgen Ray Centenary Celebration School of Medical Education, Gandhi Nagar, Kottayam, November, 1995.	Dr. V. Padmanabhan, Prof. of Radiation Physics	X-ray centenary celebrations, Medical College, Trichur, November 1995.
Smt. Sreekala K.A, Cytotechnologist	Silver Jubilee Conference of Indian Academy of Cytologists. pre congress workshops on Cytopathology, Bombay November, 1995.	Dr. Thayal Singh Elias, Asst. Prof. of Radiation Physics	XVIIth AROI Conference, Lucknow, December, 1995.
Sri. Sujathan, Cytotechnologist	-do-	Dr. Rejimon Jacob, Lecturer in Radiotherapy	-do-
Sri. Raveendran Pillai, Cytotechnologist	-do-	Dr. G. Ramadas, Asst. Prof. of Radiotherapy	-do-
Smt. Veena V.S, Cytotechnologist	-do-	Dr. K. Ratheesan, Asst. Prof. of Radiotherapy	-do-
Dr. P. Kusumakumary, Assoc. Prof. of Paediatric Oncology	Haemopoetic Stem Cell transplantation, New Delh, November, 1995.	Dr. N.V. Seethalekshmy, M.O, Medical Oncology Division	36th Annual Conference of ISHBT, Bangalore, December, 1995.
Dr. Prabha Balaram, Addl. Prof. of Cancer Research	44th Annual IAPM Conference (Indian Association of pathologists & Microbiologists), Madras, November, 1995.	Dr. R. Remani, Asst. Prof. of Cancer Research.	International Symposium on Radio-modifier in Human health, Kasturba Medical College, Manipal, December, 1995.
		Dr. Ravindran Ankathil, Asst. Prof. of Cancer Research.	International Symposium on Radio-modifier in Human health, Kasturba Medical College, Manipal, December, 1995.

Dr. V.N. Bhattathiri, Assoc. Prof. of Radiotherapy.	International Symposium on Radio- modifier in Human health, Kasturba Medical College, Manipal, December 1995.	Dr. Boban T.G., Research Fellow, Karunagappally.	-do-
Smt. Aloyamma Mathew, Lecturer in Computational statistics	Eight Kerala Science Congress Ernakulam, January, 1996.	Dr. K. Raveendran Pillai, Cytotechnologist.	Fellowship of the office of International affairs, National Cancer Institute, U.S.A. January, 1996.
Dr. V. Padmanabhan, Prof. of Radiation Physics	-do-	Dr. Prabha Balaram, Addl. Prof. of Cancer Research.	Refresher course for College of university Teachers, Kozhikode, January, 1996.
Dr. P. Remani, Asst. Prof. of Cancer Research.	-do-	Dr. J. Geetha, Asst. Prof. of Medical Oncology.	Indo-UK workshop on Hospital Infection in ICUS and control, SCTIMST, Trivandrum, January, 1996.
Smt. R. K. Sreeja, Jr. Research Fellow	-do-	Dr. B. Kusumakumary, Assoc. Prof. of Paediatric Oncology.	Indo-UK workshop on Hospital Infection in ICUS and control, SCTIMST, Trivandrum, January, 1996.
Smt. L. Bindhu, Sr. Research Fellow.	-do-	Dr. N. Sreedevi Amma, Prof. of Cytopathology & Deputy Director.	CME on Gynaecological cancer Tamil Nadu, Chapter of IAPM, Madras, January, 1996.
Smt. Geetha C. S., Research Fellow.	-do-	Dr. Ravindran Ankathil, Asst. Prof. of Cancer Research.	UGC Refresher Course, Calicut, January, 1996.
Shri. Jyothish. B., Sr. Research Fellow.	-do-	Dr. G. Jayasankar, Systems Manager.	First All India Ingres users convention, Coimbatore, January, 1996.
Mr. P. Gangadharan, Emeritus Scientist, ICMR	-do-	Dr. N. Sreedevi Amma, Prof. of Cytopathology & Deputy Director	Head & Neck surgery workshop, Centre for Earth Sciences & RCC, Trivandrum, January, 1996.
Dr. Ravindran Ankathil, Asst. prof. of Cancer Research	-do-	Dr. B. Rajan, Prof. of Radiotherapy.	Head & Neck surgery workshop, Centre for Earth Sciences & RCC, Trivandrum, January, 1996.
Dr. Prabha Balaram, Addl. Prof. of Cancer Research.	-do-	Smt. Sally Abraham, Staff Nurse.	Nursing Management of patients in the critical care unit, College of Nursing , Trivandrum, January, 1996.
Smt. Molykutty John, Lecturer in Cancer Research.	-do-	Smt. Elsamma Joseph, Staff Nurse.	Nursing Management of patients in the critical care unit, College of Nursing , Trivandrum, January, 1996.
Smt. Jayalekshmi. P., Scientific Asst., Karunagappally.	-do-		
Shri. Jayadevan.S., Sr. Research Fellow, Karunagappally.	-do-		

Shri. Thayal Singh Elias, Asst. Prof. of Radiation Physics.	Hands on Workshop on Stereotactic Neurosurgery and Radiosurgery, CME, Vellore, February, 1996.	Shri. Joe D'Cruz, Radiographer.	WHO sponsored workshop on quality control in Nuclear Medicine, Bangalore, February, 1996.
Dr. B. Chandralekha, Prof. of Cytopathology.	CME on Fine Needle Aspiration Cytology, Medical College, Alleppey, February, 1996.	Dr. Jayasree K., Asst. Prof. of Cytopathology.	An update on Fine Needle Aspiration Cytology, Alleppey, February, 1996.
Dr. N. Sreedevi Anma, Prof. of Cytopathology & Deputy Director.	CME on Fine Needle Aspiration Cytology, Medical College, Alleppey, February, 1996.	Dr. Rekha A. Nair, Lecturer in Cytopathology.	-do-
Smt. Jayalekshmi.P, Scientific Assistant, Karunagappally.	IIIrd International Conference on Palliative Care, Cuttak, February, 1996.	Dr. Prabha Balaran, Asst. Prof. of Cancer Research.	Workshop on flow cytometry appli- cation CCMB, Hyderabad, February, 1996.
Dr. Vasudevan Mappat, Anaesthetist.	-do-	Dr. Ananda Kamath, Cytopathologist, ECDC, Palakkad.	(MUSKCON'96) Annual conference of Medical Ultrasound Society of Karnataka, Bangalore, February, 1996.
St. Vijaya, Chief Nursing Officer & Assoc. Prof. of Nursing	-do-	Dr. M. Radhakrishna Pillai, Assoc. Prof. of Laboratory Medicine & Tumour Biology.	15th Annual Convention of the Indian Association for Cancer Research, Karnataka, February, 1996.
Dr. Rachel Cherian Koshy, Asst. Prof. of Anaesthesiology.	-do-	Shri. T.T. Sreolekha, Research Assistant.	-do-
Dr. Rajasekharan Pillai, Assoc. Prof. of Cytopathology.	National Haematology Oncology CME workshop and workshop on chara- cterization of Lymphoid neoplasia and update on pathology of Lymphoma, TMH, Bombay, February, 1996.	Dr. R. Manuja, Resident Medical Officer.	VIIth Biennial National Conference of the Indian Society of Oncology (ISO), Lucknow, March, 1996.
Dr. Rekha A. Nair, Lecturer in Cytopathology.	-do-	Smt. Aleyamma Mathew, Asst. Prof. in Computer Statistics & Epidemiology.	VIIIth Biennial National Conference of the Indian Society of Oncology (ISO), Lucknow, March, 1996.
Smt. Molykutty John, Lecturer in Cancer Research.	-do-	Dr. Ravindran Ankathil, Asst. Prof. of Cancer Research.	-do-
Dr. N. Geetha, Asst. Prof. of Medical Oncology.	-do-	Dr. N. Geetha, Asst. Prof. of Medical Oncology.	-do-
Dr. B. Rajan, Prof. of Radiotherapy.	Atlas Trial on Carcinoma Breast, TMH, Bombay, February, 1996.	Dr. Kalavathy M.C., Medical officer.	-do-
		Shri. Chandrakumaran Nair, M., Senior Librarian.	Orientation programme for MLISC at Bharat Education Society, Bangalore, march 1996.

Sr. Vijaya,
Chief Nursing Officer.

Dr. Vasudevan Mappat,
Anaesthetist.

Dr. V.P. Gangadharan,
Assoc. Prof. of Medical Oncology.

Mr. Meera Sahib,
Technical Assistant.

Dr. Jayalakshmi. P,
Blood Bank Officer.

Mr. Meera Sahib,
Technical Assistant.

Psycho-Oncology, NIMHANS,
Bangalore, March, 1996.

-do-

Association Gynaecologist of India-
Kerala Chapter, March, 1996.

Annual Conference of the Indian
Society of Blood Transfusion and
Immuno haematology, Madras
September, 1995.

4th Annual Conference of the Kerala
chapter of the Indian Society of Blood
Transfusion and Immuno haematology,
Kottayam, February 11, 96.

4th Annual Conference of the Kerala
Chapter of the Indian Society of Blood
Transfusion and Immuno haematology,
Kottayam, February, 11, 96.

PAPERS PUBLISHED

Ankathil R, Mathew A, Joseph F and Nair MK. Is oral cancer susceptibility inherited? Report of five oral cancer families, Oral Oncol, Eur J Cancer, Vol 32B, No 1, 63-67, 1996.

Aleyamma Mathew and Krishnan Nair M.: Prognostic factors of epithelial ovarian cancers. Proceedings in eighth Kerala science congress, 243-245, 1995.

Ankathil R, Kumar A, Nair MK. Genetherapy, K M J ; 37:20, 1996.

Babu Mathew, Sankaranarayanan R, Wesley R, Joseph A and Krishnan Nair M. Evaluation of Utilisation of Health Workers for Secondary Prevention of Oral Cancer in Kerala, India. Oral Oncol, Eur J. Cancer, Vol.31B, No.3, pp.193-196, 1995.

Babu Mathew. Tobacco Control Activities in Kerala, Source book on Environmental hygiene and Promotion, Publisher International Union for Health Promotion and Education, pp.40-44, 1995.

Babu Mathew, Sankaranarayanan R, Wesley R and Krishnan Nair M. Evaluation of mouth self-examination in the control of Oral cancer. British journal of Cancer, Vol 71, pp. 397-399.

Babu Mathew, Sankaranarayanan R, Nair PP, Somanathan T, Varghese C, Jyothirmayi R and Krishnan Nair M. Chemoprevention of Cancer of Head and Neck. Chemoprevention in cancer control. Eds. M. Hakama, V. Beral Buiatti, J. Fairre and D.M. Parkin. IARC Scientific Publication No.136, pp.27-35, 1996.

Benjamin S and Stephen J. Mitoclastic and clastogenic effects of aspirin on mouse bone marrow cells in vivo. Cytologia (Tokyo) 61: 27-32, 1996.

Babu N and Stephen J. Antimitotic and Clastogenic effects of palgin. J Cytol Genet 31: 111-117, 1996.

Bhattathiri VN, Bindu L, Remani P, Chandralekha B, Davis CA and Krishnan Nair M. Cytological assay of micronucleus induction by radiation in oral cancer. Proc. of 8th Kerala Science Congress, pp 261-263, 1996.

- 11 Bhattathiri VN, Sreelekha TT, Remani P, Vijayakumar T and Krishnan Nair M. Plasma and blood glutathione in patients with cancer of the head and neck. Proc. of 8th Kerala Science Congress, pp 295-296, 1996.
- 12 Boban T G, Ranimol M S, Padmanabhan V, Krishnan Nair M, Nambi K S V. Radiation measurements in High Natural Background Radiation regions in Kerala. Proc. of 8th Kerala Science Congress, Kochi 86, Jan. 1996.
- 13 Bhattathiri VN, Bindu L, Remani P, Chandralekha B, Davis CA, Krishnan Nair M. Cytological assay of micronucleus induction by radiation in oral cancer. Proc 8th Kerala Science Congress pp 261-263, 1996.
- 14 Bhattathiri VN, Sreelekha TT, Remani P, Vijayakumar T and Krishnan Nair M. Plasma and blood glutathione in patients with cancer of Head and Neck. Proc. 8th Kerala Science Congress 295-296, 1996.
- 15 Bhattathiri V N, Bindu L, Remani P, Chandralekha B, Davis CA, Krishnan Nair M. Cytological assay of micronucleus induction by radiation in oral cancer - 8th Kerala Science Congress, Ernakulam 27-29, Jan 96.
- 16 Chandrakumaran Nair M: Access to health science information: current technology and its applications. "Progress in information technology", ed by G.Devarajan, New Delhi, ESS Publications, 1996. p 79-99.
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- 18 Heinzl PA, Chan SY, Ho I, O'Connor M, Prabha Balaran, Campo MS, Fujinaga K, Kiviat N, Kuypers J, Pfister H, Steinberg BM, Tay SK, Villa LL and Bernard HU: Variation of human papilloma virus type 6 (HPV6) and HPV 11 genomes sampled throughout the world. J.Clin. Microbiol. 33: 1746-1754, 1996.
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- Glimpses of Indian Ethnopharmacology. Eds. P. Pushpangadan, Ulf Nyman, V. George. Denmark pp. 275-282, 1995.
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- 21 Jacob R, Jyothirmayi R, Kumar A, Rajan B, Nair MK. Metastasis from carcinoma of penis. Br J Radiol, 68: 1367, 1995.
- 22 Kusumakumary P, Mani Nainan, Chellam VG., Rojymon Jacob, MK Nair. Wilm's tumor in a child with Down syndrome. Journal of paediatric Oncology - 17 (3) 276, 1996.
- 23 Kusumakumary P, Chellam VG., Rojymon J, Hariharan S clear cell sarcoma kidney -Late recurrence: Accepted for publication in Medical and Paediatric Oncology.
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ABSTRACTS

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ADMINISTRATION

MEMBERS OF THE GOVERNING BODY OF THE REGIONAL CANCER CENTRE SOCIETY

- | | | |
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| 1. | Sri. A.K. Antony
Hon'ble Chief Minister of Kerala
Thiruvananthapuram. | Chairman |
| 2. | Sri. V.M. Sudheeran
Hon'ble Minister for Health
Government of Kerala. | Vice-Chairman |
| 3. | Sri. Gopalakrishnan Pillai, IAS
Secretary to Govt.,
Health & Family Welfare Dept.
Govt. of Kerala. | Alt. Vice-Chairman |
| 4. | Sri. K.M. Chandrasekhar, IAS
Secretary to Govt.
Finance Department,
Govt. of Kerala. | Member |
| 5. | Sri. K.V. Nambiar, IAS
Secretary to Govt.
Planning Department,
Govt. of Kerala. | Member |
| 6. | Dr. M.A. Aleykutty
Director of Medical Education
Thiruvananthapuram. | Member |
| 7. | Dr. P. Sivasankara Pillai
Principal, Medical College
Thiruvananthapuram | Member |
| 8. | Dr. S.C Gupta
Eminent Scientist | Member |
| 9. | Dr. M.S. Valiyathan
Eminent Scientist | Member |

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| 10. | Sri. P.S. Bhatnagar
Addl. Secretary
Health & Family Welfare Department
Government of India. | Member |
| 11. | Dr. P.S. Kohli
Dy. Director General (NCD)
Directorate of Health Services
Government of India. | Member |
| 12. | Dr. P.K. Iyyengar
Chairman, Science, Technology &
Environment Department,
Thiruvananthapuram. | Member |
| 13. | Dr. M. Krishnan Nair,
Director,
Regional Cancer Centre,
Thiruvananthapuram. | Convener |

Members of the Executive Committee of the Regional Cancer Centre Society

- | | | |
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| 1. | Sri Gopal Krishna Pillai, IAS
Secretary to Govt.
Health & Family Welfare Dept.
Govt. of Kerala | Chairman |
| 2. | Sri K.M. Chandrasekhar, IAS
Commissioner & Secretary to Govt.
Finance Dept., Govt. of Kerala | Member |
| 3. | Sri K.V. Nambiar, IAS
Secretary to Govt., Planning Dept.
Govt. of Kerala | Member |
| 4. | Dr. M.A. Aleykutty
Director of Medical Education
Thiruvananthapuram | Member |
| 5. | Dr. P. Sivasankara Pillai
Principal, Medical College
Thiruvananthapuram. | Member |
| 6. | Dr. M. Krishnan Nair
Director, Regional Cancer Centre
Thiruvananthapuram. | Convener |

Building Committee Members of the R.C.C.

- | | | |
|----|---|----------|
| 1. | Sri.K. Sarat Kumar
Chief Engineer
PWD, Thiruvananthapuram | Chairman |
| 2. | Sri. T. Chandran
Chief Architect
PWD, Thiruvananthapuram | Member |
| 3. | Dr. P. Sivasankara Pillai
Director of Medical Education
Thiruvananthapuram | -do- |
| 4. | Dr. B. Umadethan
Principal
Medical College
Thiruvananthapuram | -do- |
| 5. | Dr. M. Krishnan Nair
Director
Regional Cancer Centre
Thiruvananthapuram | -do- |
| 6. | Sri.K.R. Bhaskaran Nair
Controller of Finance
Regional Cancer Centre
Thiruvananthapuram | -do- |
| 7. | Sri. G. Raveendranathan Nair
Chief Construction Engineer
Regional Cancer Centre
Thiruvananthapuram | Convener |

MAJOR DECISIONS OF THE EXECUTIVE COMMITTEE DURING 1995-96

The Executive Committee resolved to depute Dr. Prabha Balaram, Assoc. Prof. of Cancer Research under ICRETT Fellowship supported by N.C.I, USA at the Department of Biochemistry, John Hopkins University, Baltimore, USA.

The Committee resolved to depute Dr. Elizabeth K. Abraham, Assoc. Prof. of Pathology for training in Canada under UICC Fellowship.

The Committee resolved to approve the tour of Dr. M. Krishnan Nair, Director, RCC to Jakarta to attend an International Cancer Conference.

The Committee resolved to ratify the action of the Director in having given duty leave with salary from 16-23 May, 1995 to Dr. V.P.Gangadharan, Assoc. Prof. of Medical Oncology to enable him to attend a training and conference at the Lilly Research Laboratories, Indiana, U.S.A.

The Committee resolved to extend the term of deputation of Sri. G. Raveendranathan Nair, Executive Engineer, Irrigation Department in the post of C.C.E in the RCC till completion of the second stage building.

The Committee resolved to create 3 posts of Electrician and one post of Electronics Technician in the scale of pay of 775-1060.

The Committee noted the fact that Dr. K. Ratheesan has been working in the post of Asst. Prof. temporarily from 01-10-90 and that his temporary appointment could not be regularised for want of a regular vacancy. In view of this, the Committee resolved to create one post of Asst. Prof. of Radiotherapy and to regularise the appointment of Dr. K. Ratheesan as Asst. Prof. of Radiotherapy.

The Committee resolved to change the designation of Sr. Vijaya, Chief Nursing Officer as Assoc. Prof. of Nursing and to place her in

the pay scale of 2500-4000 in view of her responsibilities in Nursing services and Nursing education.

The committee resolved grant promotions to Dr. T. Gangadevi, Dr. Elizabeth K. Abraham, and Dr. Prabha Balaram as Additional Professors, Ms. Aleyamma Mathew, Dr. P. Remani and Dr. N. Geetha as Assistant Professors, Dr. Iqbal Ahamed and Dr. K. Ramachandran as Associate Professor, Dr. B. Rajan as Professor, Dr. Thomas Koilparambil and Dr. V. Francis V. James as Assistant Professors, Dr. M. Radhakrishna Pillai as Associate Professor, Sri. M. Chandrakumaran Nair as Sr. Librarian and Sri. G. Jayasankar as System Manager during this year.

The Committee resolved to redesignate the following staff in view of their responsibilities.

1. Dr. N. Sreedevi Amma, Prof. of Cytology as Dy. Director
2. Sister Vijaya, Chief Nursing Officer as Assoc. Professor of Nursing (with upgradation)
3. Sri. R. Raveendran nair, Medical Records and Clinical Services Officer as Administrative Officer (Clinical Services) with upgradation.

The Committee resolved to ratify the action of the Director in having availed a term loan of Rs. 21 lakhs from the Federal Bank for purchase of spares for the C.T. Scanner. The Committee noted the fact that an amount of Rs.19 lakhs has already been repaid.

The Committee resolved to give administrative sanction for the purpose of Tissue processor and Cytocentrifuge at a cost of approximately Rs. 6 lakhs.

The Committee resolved to agree to place the supply orders with M/s. Theratronics International Ltd. , Canada for the supply of 25 items of spares at a total cost of Canadian Dollar 31,267.96 (approx. 7.5 lakhs).

MAJOR DECISIONS OF THE GOVERNING BODY DURING 1994-95

The Governing Body approved inclusion of Dr. P.K. Iyyengar, Former Chairman AEC and presently Chairman, Science & Technology and Environment Committee, Trivandrum in the Governing Body. As the number of members in the Governing Body is restricted to 13, the Governing Body resolved to replace the senior most Pathologist with an Eminent Scientist and to nominate Dr. P.K. Iyyengar.

ENGINEERING DEPARTMENT

The Civil Works for the in-patient Tower Block is nearing completion. M/s.P.R.S. Builders, the Civil Contractor has taken great pains to give this prestigious building an excellent finish. The Library, Cancer Research Department, Palliative Care Unit and Conference Complex in the 7th and 8th Floors are being set up according to the latest design and requirements. Water connection, drainage works are also in progress. The Electrification work being carried out by M/s. Harrisons Malayalam Limited is in the process of completion. Electrical equipments like main Switchboards, Rising Mains and different electrical panels supplied by various agencies have arrived at site. The 200 TR Centrifugal Chiller imported from York U.S.A is being installed and tested. M/s. Blue Star Limited are doing the Airconditioning works. Installation of 3 passenger-cum-bed Lift and 1 speed lift for hospital staff, by M/s.Kone Elevators India Limited is under way. Fire detection, fire protection and fire fighting system works are being carried out by M/s.Steelage Industries Limited. An Incinerator supplied by M/s. Pyrolator India Limited has been installed and is functioning. Landscaping, Site development works etc. are in progress. Rs.822 lakhs has been spent for Civil Works and Rs.204 lakhs has been spent for Electrification works. While Rs.153 lakhs has been spent for Airconditioning, Rs.24 lakhs for fire detection, fire protection & fire fighting system works and for lifts Rs. 53 lakhs, Rs.9 lakhs and Rs.17 lakhs for Telephones and Medical gas installations respectively. The hospital building will be ready for occupation in all respects by middle of 1996 and when completed will be the largest Cancer complex in India.

The Building Committee met 2 times and took timely decisions regarding the second phase of construction programme.

LIST OF STAFF

Dr.M. Krishnan Nair	Director
Dr. N. Sreedevi Amma	Deputy Director
Dr. T. Gangadevi	Superintendent
Prof. A.Joseph	Hon. Secretary (Academic)

Radiotherapy

Dr. M. Krishnan Nair	Director & Professor
Dr. F. Joseph	Professor
Dr. B. Rajan	Professor
Dr. T. Gangadevi	Addl. Professor
Dr. C.S. Rafeeka Beegum	Assoc. Professor
Dr. S. Parameswaran	"
Dr. P.G. Jayaprakash	"
Dr. V.N. Bhattathiri	"
Dr. Jayaprakash Madhavan	"
Dr. Ramadas	Assistant Professor
Dr. Suresh Chandra Dutt	"
Dr. K. Ratheesan	"
Dr. Thomas Koilparambil	"
Dr. Francis V. James	"
Dr. Rojimon Jacob	Lecturer
Dr. Rema Jyothirmayi	"

Dental Wing

Dr. K.R. Nalinakumari	Lecturer
Smt. M. Suolochana Bai	Dental Hygienist

Imageology

Dr. K. Sasidharan	Professor
Dr. Alex K. Ittyavirah	Assoc. Professor
Dr. K. Ramachandran	Asst. Professor
Dr. A.S. Krishnakumar	"
Smt. B. Vimala	Radiographer
Smt. S.I. Sathyalekha	" (Long Leave)
Sri. T. Radhakrishnan Nair	"

Sri. J.S. Sherif
 Sri. S. Pradeep
 Sri. S. Pradeep
 Sri. K.R. Udayakumar
 Sri. P.P. Prasad
 Sri. K.N. Shaileshkumar

Nuclear Medicine

Dr. V.M. Pradeep
 Sri. Raghuram Nair. K.
 Smt. Sheela
 Sri. Joe D' Cruz
 Smt. B.R. Suja
 Smt. S.R. Sheeja
 Smt. K. Miniamma
 Smt. B. Bindhu
 Smt. P. Sindhu

Radiation Physics

Dr. V. Padmanabhan
 Sri. C.A. Davis
 Sri. Thayal Singh Elias
 Sri. L.S. Arunkumar
 Sri. N. Sadasivan Nair
 Sri. C. Viswanathan
 Smt. P. Seetha
 Smt. S. Suseelamma
 Smt. T.G. Radhamony Amma
 Smt. M. Leela
 Sri. P. Ramalhadran
 Smt. C. Anitha
 Smt. Ambily Govind
 Smt. Mariamma Jacob
 Smt. R. Sreekala
 Smt. T. Prameela Devi
 Sri. S. Sunilkumar
 Smt. K. Geethamma
 Smt. C.G. Jayasree
 Smt. P.G. Viddiullatha
 Smt. D.R. Sheeba

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 "

Assoc. Professor
 Asst. Professor.
 Sr. Radiographer
 "
 Radiographer
 "
 R.I.A Technician
 "
 "

Professor
 Assoc. Professor
 Asst. Professor
 "
 Sr. Radiographer
 Radiographer
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Smt. P. Geetha
 Sri. Santhan. H.
 Smt. D. Sreekala

Cytopathology

Dr. N. Sreedevi Amma
 Dr. B. Chandralekha
 Dr. Elizabeth K. Abraham
 Dr. Rajasekharan Pillai
 Dr. K. Jayasree
 Dr. Rekha A. Nair
 Dr. Anitha Mathews
 Smt. J. Ambikakumari
 Sri. K. Raveendran Pillai
 Sri. K. Sujathan
 Smt. T.P Brinda
 Smt. S. Najeeya
 Smt. A. Saina
 Smt. S. Sulochana
 Sri. A. Nataraj

"
 "
 Mould Room Technician
 Professor
 Professor
 Addl. Professor
 Assoc. Professor
 Asst. Professor
 "
 Lecturer
 Sr. Scientific Officer
 Cytotechnologist
 "
 Lab. Technician
 "
 "
 "
 "
 Cytotechnician

Surgical Oncology Division

Dr. Gladys Jeevy
 Dr. Paul Sebastian
 Dr. Iqbal Ahmed
 Dr. K. Chithrathara
 Dr. Rachel Cherian Koshy
 Dr. Cherian M. Koshy
 Dr. Jem Prabhakar
 Dr. Berylson Edward
 Dr. Manoj Pandey
 Sri. R. Harikumar
 Sri. Thankappan Chettiar
 Sri. P.S. Suresh
 Sri. B. Mohanan Pillai

Assoc. Professor
 "
 "
 Asst. Professor
 "
 "
 "
 Lecturer (On leave)
 "
 Chief Anaesthesia
 Technician.
 Helper
 "
 Theatre Technician

Paediatric Oncology

Dr. P. Kusumakumari
 Dr. T. Priyakumari

Assoc. Professor
 Lecturer

Community Oncology

Dr. Babu Mathew
Dr. Remani S. Wesley
Sri. C. Sreekumar

Professor
Asst. Professor
Social Investigator

Cancer Research

Dr. Prabha Balaram
Dr. S. Kannan
Dr. Raveendran Ankathil
Dr. Thomas Abraham
Dr. P. Remani
Smt. molykutty John
Smt. A. Leela

Addl. Professor
Asst. Professor
" Scientific Officer
Asst. Professor
Lecturer
Animal House Keeper Cum
Attender

Sri. Vikraman Nair.

"

Medical Oncology

Dr. V.P. Gangadharan
Dr. N. Geetha

Assoc. Professor
Asst. Professor

Clinical Laboratory

Smt. Padmavathy Amma
Smt. J. Usha
Smt. P. Renuka
Sri. S. Hariharan
Sri. K.R. Rajesh Kumar
Smt. B. Helen
Smt. S. Anitha
Sri. T. James

Technical Officer
Sr. Lab Technician
Lab Technician

"

"

"

"

"

Blood Bank

Sri. P. Meera Sahib
Smt. C. Gangadevi
Sri. D. Sanjai
Smt. V. Renukadevi.

Asst. Technical Officer
Sr. Lab Technician
Lab Technician (On Leave)
Lab Technician

Palliative Care

Dr. Vasudevan Mappat

Anaesthesiologist

Ethnopharmacology Division

Dr. J. Stephen

Assoc. Professor

Laboratory Medicine and Tumour Biology

Dr. M. Radhakrishna Pillai

Assoc. Professor

Pharmacy

Sri. K. Sivasankara Pillai

Pharmacist

Cancer Epidemiology and Clinical Research (Hospital Cancer Registry)

Dr. R. Sankaranarayanan

Assoc. Professor of Cancer
Epidemiology & Clinical
Research (On Leave)

Dr. Cherian Varghese

Asst. Professor of Cancer
Epidemiology & Clinical
Research (On Leave)

Sri. R. Raveendran Nair

Administrative Officer
(Clinical Service)

Smt. G. Padmakumari Amma

Medical Statistician

Dr. Aleyamma Mathew

Asst. Professor of
Computational Statistics
and Epidemiology

Smt. P.T. Latha

Social investigator

Smt. Anita Nayar

"

Sri. G. Rajasekharan Nair

Medical Records Officer
Clerk

Smt. V. Jalajakumari

Coding Clerk

Smt. D. Chandrika

"

Sri. B. Sreekumar

"

Smt. P. Jayalekshmy

Research Assistant
Cashier

Smt. P.G. Saraladevi

"

Smt. R. Sheelakumari

"

Sri. C. Mohanachandran Nair

Clinical Research Assistant

Sri. K. Anil kumar

"

Smt. Siju R. Nair

"

Smt. S. Sreelatha

"

Smt. M.A. Mariamma

"

Sri. K. Thankappan Nair

Telephone Operator Cum
Receptionist

Sri. S. John
Sri. V. Surendran nair

Clerk
Asst. Public Relations Officer

Information Systems Division

Sri. G. Jayasankar
Smt. Jayanthi. J.K
Smt. Suseeladevi.B

Systems Analyst
Data Entry Operator

Security Services

Sri. S. Vijayan Nair
Sri. K. Thankappan Nair
Sri. N. Achuthan Nair
Sri. G. Sukumaran Nair
Sri. P. Sornasekharan Nair
Sri. K.P. Rajeswaran
Sri. B. Stellas
Sri. B. Sahadevan
Sri. V.K. Krishnan Nair
Sri. Sasikumaran Nair

Sergeant
Security Guard

Library

Sri. M. Chandrakumaran Nair
Smt. Sreedevikutty. C
Sri. G. Surendran

Sr. Librarian
Typist
Sr. Helper

Director's Office

Sri. N. Ramaswamy Iyer
Sri. S. Gopakumar
Smt. B. Savithri Amma
Sri. P. Antony

Secretary & C.A to Director
Sr. Personal Assistant
Sr. Helper

Administrative Office

Sri. K.J. Zacharias
Sri. K.R. Bhaskaran Nair
Sri. K.H. Rajendran
Sri. G. Gnanaswaran
Sri. Selvaraj
Sri. S.V. Sasikummar
Smt. B. Lalitha
Smt. N. Beena

Administrative Officer
Controller of Finance
Finance Officer
Accounts Officer
Office Assistant
Sr. Office Assistant

Smt. K.M. Jumailathu Beevi.
Smt. C. Shylaja
Sri. K. Sasikummar
Smt. C.K Remila
Smt. V. Usha
Sri. X. Johnson
Smt. S. Mallikadevi
Smt. Sudevi. R
Smt. S. Anitha
Sri. R. Sasikumaran Nair
Sri. P. Krishnan Nair
Sri. P. Sreekumaran Nair
Sri. T.P Krishnadasan
Sri. N. Sasidharan
Sri. M. Subair
Sri. K. Devaraja Panicker
Sri. R. Anil Kumar
Sri. S. Rajayyan
Sri. C. Hari
Sri. K.G. Balachandran
Sri. L. Balachandran
Smt. P.S. Soethalekshmy
Smt. M. Amrithamma
Sri. C.S Santhoshkumar
Sri. P.P John Evidus
Sri. A. Krishnankutty
Sri. K. Sivankutty
Sri. S. Senan
Sri. C. Vijayakumar
Sri. S. Suliman

Office Assistant
Cashier
Office Assistant
Data Entry Operator
Cashier Cum Receptionist
Confidential Assistant
Jr. Personal Assistant
Helper cum Watchman
Sr. Driver
Driver
Sr. Helper
Helper
(on leave)

Engineering Wing

Sri. G. Raveendranathan Nair.
Sri. A. Rajan
Sri. L. Vijayakumar
Sri. R. Asokan Nair
Sri. A.R. Santhoshkumar
Sri. N. Sasidharani

Chief Construction Engineer
Maintenance Engineer
(Electrical)
Asst. Maintenance Engineer
(Mechanical)
First Grade Oversear
Electrical Supervisor

Sri. A.R. Rajendran	"
Sri. B. Rajeevan	"
Sri. Venugopalan nair	Electrician
Sri. P.S. Giji	"
Sri. Abraham T. Chacko	"
Sri. L. Sivarajan	Electronics Technician

Early Cancer Detection Centre, Ernakulam

Dr. B. Syamalakumari	Cytopathologist
Smt. Mercy Joseph	Cytotechnologist. Gr. I
Sri. K.S. Jayalal	Cytotechnician
Smt. M. Gracy	Staff Nurse
Sri. P.M. Abdul Rahiman	Sr. Helper
Sri. G. Dass	Helper

Early Cancer Detection Centre, Palakkad

Dr. Ananda Kamath	Cytopathologist
Smt. C. Radha	Cytotechnologist. Gr. I
Sri. James Thomas	Cytotechnician
Smt. K.C. Nirmala	Staff Nurse
Sri. V. Soman	Helper
Sri. T.C. Louis	Helper

Nursing Services

Sr. Vijaya	CNO & APN
Aleyamma M. Kunnappally	Head Nurse
Aleykutty P.M	"
Annamma T.A	"
Geetha .S	"
Graceamma Joseph	.. (long leave)
Lizyamma Jacob	"
Mariamamma James	"
Modesty	"
Saraswathy Amma	"
Ani C.N	Staff Nurse
Aniamma Joseph	"
Anitha.T	"
Ajitha P.K	"
Aleyamma Mathew	"
Ambika T.B	"

Beena Rani.S	"
Biji Kunjachan	"
Christeen.V.	"
Elsamma Joseph	"
Girija. C	"
Geetha P.T	"
Girijadevi C.S	"
Jaya T.S	"
Jayakumari. K	"
Jayasree.S	"
Jikky.M	"
Lissy C.V	"
Letha M.B	"
Lalimma V.J	"
Leelavathy.S	"
Mercy K. Varghese	"
Minilal K.M	"
Meena.V	"
Nissa. S	"
Nirmala Kumari. T	"
Prasannakumari. S	"
Pushpalettha V.K	"
Philomina Joseph	"
Rajila Beegum	"
Sheela Ródguez	"
Sunithakumari. R	"
Sulekha Beevi.P	"
Sobha.S	"
Susan Albert	"
Sasikala Amma. P	"
Sheeba S.V	"
Sisy Das	"
Saly Abraham	"
Shema. C	"
Suneethi M.S	"
Sindhu. S	"
Sasikala T.K	"
Sindhu G.S	"
Sreeletha R	"
Sreevidya. A	"

Shamla Beevi	..
Geethakumari B.S	..
Vijaya A.K	..
Syamala S	..
Mariamamma Ulahannan	..
Margrett Mary P.R	..
Laly George	..
Gracy. M	..
Santhakumari Amma. P	..
Swapna M.A	..
Preethalekshmy L.S	..
Sivakumari P.R	..
Sheena K Damodaran	..
Anitha T	..
Anitha Paulin	..
Bensamma Varghese	..
Vasanthakumari	..
Saraswathi. P	..
Girija. K	..
Thankamma O.N	..
Jeena Issac	..
Vijayalekshmy Ammal. M	..
Sukumaran. G	..
Saraswathy Amma. P	..
Beena Shabu	..

ACKNOWLEDGEMENTS

Government of India, Ministry of Health & Family Welfare.
 Government of India, Department of Science and Technology.
 Government of Kerala, Department of Health & Family Welfare.
 Chief Secretary to Government of Kerala.
 Indian Council of Medical Research, New Delhi.
 World Health Organisation, New Delhi.
 Dr. Jan Stjernsward, Chief, Cancer Unit, WHO.
 International Union Against Cancer (UICC) Geneva, Switzerland
 British Council Madras.
 American Cancer Society, New York.
 National Cancer Institute, Bethesda, Maryland, U.S.A.
 Allegheny General Hospital, Pittsburg, U.S.A.
 Christie Hospital & Holt Radium Institute, Manchester.
 Chester Beatty Research Institute, London.
 University of British Columbia- Environmental Carcinogenesis Unit,
 Vancouver, Canada.
 Bhabha Atomic Research Centre, Bombay.
 Director General of Health Services, Government of India, New Delhi.
 Director, Vikram Sarabai Space Centre, Trivandrum.
 Director, Sree Chitra Thirunal Institute of Medical Sciences &
 Technology, Trivandrum.
 Kerala State Committee on Science, Technology and Environment,
 Trivandrum.
 Director of Medical Education, Kerala.
 Director of Health Services, Government of Kerala, Trivandrum

Principal, Medical College, Trivandrum.
Superintendent, Medical College, Hospital, Trivandrum.
Superintendent, Sree Avittam Thirunal Hospital for Women and Children, Trivandrum
Dean, Dental College, Trivandrum.
Dr. P.K Iyengar, Chairman, Atomic Energy Commission.
Sr. T.K. Das, Joint Secretary to Health & Family Welfare, Government of India.
Dr. Federico Welsch, National Cancer Institute, Maryland, U.S.A.
Dr. Calvin Zippin, Director, Cancer Patient Data Programme, University of California, San Francisco.
Dr. A.S. Paintal, Director General, Indian Council of Medical Research, New Delhi.
Dr. Usha K. Luthra, Sr. Deputy Director General, Indian Council of Medical Research, New Delhi.
Dr. V.Shanta, Director, Cancer Institute, Madras.
Dr. P.B. Desai, Director, Tata Memorial Centre, Bombay.
Dr. R.S. Rao, Director, Tata Memorial Centre, Bombay.
Dr. B.D. Gupta Postgraduate Institute, Chandigarh.
Controller of Stationeries, Government of Kerala, Trivandrum.
Director of Census of Operations, Kerala.
Director, Bureau of Economics and Statistics, Kerala.
Managing Director, Travancore-Cochin Chemicals, Alwaye.
M/s Instrumentation Ltd., Palghat.
Vice-Chancellor, University of Kerala.
Dr. M.V. Pillai, Naval Hospital, Bethesda, USA.
Dr. N.E.Day, Director, MRC Biostatistics Unit, Cambridge.
Mr. Stephen W. Duffy, Scientific Officer, MRC, Biostatistics Unit, Cambridge.

Board of Directors, Susan Daniel Memorial Cancer Relief Fund, Irvine, California.
JAICA Team, Government of Japan.
Drugs Controller, Trivandrum.
Director, College of Pharmaceutical Sciences, Trivandrum.
Dr. P.P. Nair, Johns Hopkins University, USA.
Dr. John L Young, California State Health Dept. USA.
International Agency for Research on Cancer (IARC), Lyon, France.
Commonwealth Scholarship Commission, London.
Dr. David Erio Lee, Dr. Linda Rever, Dr. Tersesa Ulrey, Dr. Sudha A. Ved,
Dr. Karen Colton, Dr. K. Vinayakom, Georgetown University Medical Centre, Washington.
Kerala Transport Development Finance Corporation Limited.
Sir Rattan Tata Trust, Bombay.

REGIONAL CANCER CENTRE SOCIETY, TRIVANDRUM
(REG. No 67/81)
BALANCE SHEET AS AT 31ST MARCH, 1996

PREVIOUS YEAR		LIABILITIES	CURRENT YEAR		PREVIOUS YEAR		ASSETS	CURRENT YEAR	
Rs.	Ps.		Rs.	Ps.	Rs.	Ps.		Rs.	Ps.
178,462,057.39		CAPITAL FUND	233,265,567.89		135,432,053.89		FIXED ASSETS		164,532,361.71
801,365.90		SPECIFIC FUNDS	1,243,262.90						
6,604,430.39		UNUTILISED GRANTS	9,113,347.04		41,885,459.77		CAPITAL WORK IN PROGRESS		62,991,091.45
350,000.00		STAFF WELFARE FUND	882,070.00						
		RADIOTHERAPY RESEARCH FUND	314,043.75		27,310,387.00		INVESTMENTS		29,856,918.00
25,056,464.10		CANCER CARE FOR LIFE FUND	28,099,180.10						
		ADVANCE RECEIVED FOR RESEARCH PROJECTS	4,167,160.17				CURRENT ASSETS, LOANS AND ADVANCES:		
2,235,349.02		SECURED LOANS	9,201,826.00						
8,635,325.82									
		CURRENT LIABILITIES AND PROVISIONS:			2,955,354.44		Closing stock		4,971,990.28
					915,151.00		Interest accrued on deposits		1,492,441.00
		CURRENT LIABILITIES:			1,603,159.72		Advances to projects		1,740,105.42
		Sundry Creditors	9,681,509.01		12,151,515.82		Advances- Others		10,617,083.57
8,552,768.74		Other Liabilities	4,504,512.02		362,175.00		Deposits		362,175.00
3,696,594.95					1,039,220.65		Balance with banks		6,264,093.20
					95,309.50		Cash In hand		43,361.71
					2,500,000.00		Grant In transit		2,500,000.00
55,537,854.53		PROVISION FOR DEPRECIATION	68,252,479.53		61,665,724.11		INCOME AND EXPENDITURE ACCOUNT		85,168,855.43
287,932,090.90		TOTAL	368,541,078.75		287,932,090.90		TOTAL		368,541,078.75

NOTES ON ACCOUNTS (SCHEDULE-I)

Vide our report of even date

for M/s. VIJAYAKUMAR & EASWARAN
 CHARTERED ACCOUNTANTS

Place : Trivandrum,
 Dated : 20.03.1997.

DIRECTOR
 (Dr.M.KRISHNAN NAIR)

(S.VIJAYAKUMAR)
 PARTNER

**REGIONAL CANCER CENTRE
(REG. No.
INCOME AND EXPENDITURE ACCOUNT**

PREVIOUS YEAR		Expenditure	CURRENT YEAR	
Rs.	Ps.		Rs.	Ps.
2,675,534.25		Opening stock	2,880,848.24	
17,339,677.37		Purchases	23,544,798.15	
20,972,844.25		Salaries and Allowances	23,698,540.22	
26,850.00		Consultation Service fee	75,300.00	
132,497.40		Uniform and Liveries	262,556.50	
292,413.00		Rent, Rates and taxes	301,405.50	
458,022.00		Postage, Telephone & Telegram	490,993.44	
505,517.20		Travelling expenses	328,153.00	
325,547.35		Printing and Stationery	473,863.45	
108,091.00		Advertisement	161,100.50	
1,622,853.70		Electricity & Water charges	1,877,216.00	
25,000.00		Remuneration to Auditors	27,000.00	
4,768,721.21		Repairs & Maintenance	4,344,130.33	
390,485.70		Service contract charges	1,131,910.00	
1,298,931.00		Interest & Bank charges	616,513.50	
23,376.50		Training expenses	9,600.00	
141,782.55		Conference, Seminar and Work shop	243,153.92	
166,632.50		Computer expenses	97,803.00	
3,017.00		Books & Periodicals	3,008.00	
31,100.60		Landscaping and Gardening	40,238.10	
412,991.90		Proportionate Share of N.T.R.	393,002.20	
552,777.00		Project Expenses	39,355.88	
137,094.70		Miscellaneous expenses	69,132.90	
602,250.00		Software	33,716.00	
9,864,023.66		Depreciation	12,724,825.00	
62,878,031.84		TOTAL	73,868,163.83	

NOTES ON ACCOUNTS (SCHEDULE-I)

Place : Trivandrum,
Dated : 20.03.1997.

DIRECTOR
(Dr.M.KRISHNAN NAIR)

**SOCIETY, TRIVANDRUM
567/81)
FOR THE YEAR ENDED 31ST MARCH, 1996**

PREVIOUS YEAR		Income	CURRENT YEAR	
Rs.	Ps.		Rs.	Ps.
14,320,479.18		Grant-in-aid	12,194,610.65	
17,786,238.70		Investigation fees	22,112,254.00	
2,296,605.00		Ward charges	2,350,500.00	
6,389,231.80		Sale of Medicines	9,005,868.80	
155,857.00		Interest Income	45,369.00	
31,359.00		Training fees	55,168.00	
23,101.00		Donation	10,500.00	
170,425.06		Miscellaneous Income	62,779.85	
2,880,848.24		Closing stock	4,971,990.26	
		Excess of expenditure		
18,823,886.86		Over income	23,059,123.27	
62,878,031.84		TOTAL	73,868,163.83	

Vide our report of even date

for M/s.VIJAYAKUMAR & EASWARAN
CHARTERED ACCOUNTANTS

(S.VIJAYAKUMAR)
PARTNER

**REGIONAL CANCER CENTRE
(REG. No.**

CANCER CARE FOR

INCOME AND EXPENDITURE ACCOUNT

PREVIOUS YEAR		Expenditure	CURRENT YEAR	
Rs.	Ps.		Rs.	Ps.
48,500.00		Salaries and Allowances	63,000.00	
10,100.00		Advertisement and Publicity	10,000.00	
34,500.00		Printing & Stationery	113,780.00	
30,000.00		Postage, Telephone & Telegram	40,000.00	
		Repairs & Maintenance-Vehicle:		
15,212.00		-Fuel charges	18,704.00	
21,043.00		-Maintenance	2,791.00	
-		-Insurance	6,236.00	
7,913.00		-Spare parts	4,605.40	32,336.40
		Cost of Medicine & Expenses		
1,123,428.50		reimbursed to patients	1,788,507.00	
27,655.00		Miscellaneous expenses	8,000.00	
638,143.00		Commission to Federal Bank	301,745.00	
1,844,797.60		Excess of Income over Expenditure	1,575,991.95	
3,801,292.10		TOTAL:	3,933,360.35	

Place : Trivandrum,
Dated : 20.03.1997.

DIRECTOR
(Dr.M.KRISHNAN NAIR)

**SOCIETY, TRIVANDRUM
567/81)**

LIFE SCHEME

FOR THE YEAR ENDED 31ST MARCH, 1996

PREVIOUS YEAR		Income	CURRENT YEAR	
Rs.	Ps.		Rs.	Ps.
		Interest on Fixed deposits and		
3,108,985.85		Other Investments	3,173,082.10	
692,306.25		CCL Membership fee not invested	760,278.25	
3,801,292.10		TOTAL	3,933,360.35	

Vide our report of even date

for M/s.VIJAYAKUMAR & EASWARAN
CHARTERED ACCOUNTANTS

(S. VIJAYAKUMAR)
PARTNER

REGIONAL CANCER CENTRE
(REG. No.

SCHDULE OF FIXED

PARTICULARS	GROSS BLOCK		
	COST AS ON	SALE/	COST AS ON
	1.4.1995	ADJUSTMENTS	31.3.1996
BUILDINGS (OLD)	860,110.25		860,110.25
BUILDING	26,865,795.41	403,245.00	27,269,040.41
BUILDING-RT	16,154,315.70	1,304,570.00	17,458,885.70
BOUNDARY WALL	127,118.63		127,118.63
WATER SUPPLY (DRAINAGE)	1,261,193.93	291,007.00	1,552,200.93
FURNITURE & FITTINGS	4,469,731.16	52,260.88	4,521,991.84
OFFICE EQUIPMENTS	910,703.69	108,176.54	1,018,880.23
TELEPHONE EQUIPMENTS	854,884.00		854,884.00
HOSPITAL & LAB EQUIPMENTS	54,516,783.67	2,382,462.90	56,899,246.57
ELECTRICAL INSTALLATION AND FITTINGS	10,330,589.90	11,126,338.00	21,456,927.90
FIRE DETECTION	612,162.00	2,142,114.00	2,754,276.00
AIR CONDITIONING	10,874,848.35	3,783,802.00	14,658,650.35
COMPUTER (HARDWARE)	1,745,623.00	278,534.00	2,024,157.00
GAS PLANT & CYLINDERS	969,311.15	2,278,134.00	3,247,445.15
VEHICLES	379,329.60		379,329.60
LIBRARY BOOKS	2,823,512.45	462,882.70	3,286,395.15
LIFT/ELEVATOR	1,338,429.00	4,487,381.00	5,825,810.00
ASSETS RECEIVED AS DONATIONS	337,612.00		337,612.00
TOTAL	135,432,053.89	29,100,907.82	164,532,961.71

SOCIETY, TRIVANDRUM
567/81)

ASSETS AS ON 31-03-96

UPTO	DEPRECIATION BLOCK		NET BLOCK		
	SALE/	TOTAL UPTO	AS ON	AS ON	
	ADJUSTMENTS	31.3.1996	31.3.1996	31.3.1995	
31.3.1995	ADDITIONS				
319,527.95	27,029.00	346,556.95	513,553.30	540,582.30	
6,574,546.64	1,034,725.00	7,609,271.64	19,659,768.77	20,291,248.77	
1,482,616.69	798,813.00	2,281,429.69	15,177,456.01	14,671,699.01	
38,345.68	4,439.00	42,784.68	84,333.75	88,772.75	
696,064.63	128,420.00	824,484.63	727,716.30	565,129.30	
1,417,208.36	310,478.00	1,727,686.36	2,794,305.48	3,052,522.80	
399,314.56	92,935.00	492,249.56	526,630.67	511,389.13	
485,263.70	54,993.00	540,256.70	311,627.30	366,620.30	
31,541,725.06	3,803,628.00	35,345,353.06	21,553,893.51	22,975,058.61	
4,772,605.65	2,502,648.00	7,275,253.65	14,181,674.25	5,557,984.25	
220,164.10	380,117.00	600,281.10	2,153,994.90	391,997.90	
4,266,551.40	1,558,815.00	5,825,366.40	8,833,283.95	6,608,296.95	
1,001,939.80	408,887.00	1,410,826.80	613,330.20	743,683.20	
349,785.65	434,648.00	784,433.65	2,463,006.50	619,522.50	
274,769.56	20,912.00	295,681.56	83,648.04	104,560.04	
957,151.25	349,386.00	1,306,537.25	1,979,857.90	1,866,361.20	
631,068.35	779,211.00	1,410,279.35	4,415,630.65	707,360.65	
106,002.30	34,741.00	140,743.30	196,858.70	231,609.70	
55,537,654.53	12,724,825.00	-	68,262,479.53	96,270,452.18	79,894,399.36

SCHEDULE- I

NOTES FORMING PART OF ACCOUNTS

1. Out of the grant received from Government of Kerala during the financial year 1995-96 amounting to Rs.407 lakhs an amount of Rs.285.05 lakhs have been transferred to Capital Fund representing Fixed Assets acquired or constructed during the year and the balance of Rs.121.95 lakhs have been treated as revenue grant and taken to Income and Expenditure Account in absence of any stipulation as regard the nature of grant.
2. During the year an amount of Rs.1,79,19,000/- was received from Director of National Savings under the Scheme "Savings-Cancer Care-Assistance". Out of which Rs.1,96,452.85 was utilised for the project "One lakh Tobacco Free Homes" and the balance Rs.1,77,22,547.15 transferred to Capital Fund.
3. Investment against Cancer Care for Life Fund Account has been reconciled subject to a difference to Rs.7,497/- which has been shown as Term deposit suspense under investment in the Balance Sheet.
4. An amount of Rs.3,50,000/- representing unidentified credit in the account with State Bank of Travancore brought forward from previous year has been taken into account by crediting Bank Suspense Account.
5. The land assigned by the State Government vide GO/619/88-RD dated 28.7.1988 measuring 69 cents at Palghat and the building constructed there has not been brought to the accounts since clear documents of title has not been received.
6. Land at Pulayanarkotta measuring 17 acres assigned by the Government of Kerala vide Order No.GO(MS)No.1054/22/RD dated 17.11.1982 has not been brought to the accounts since the clear document of Title has not been received.
7. Claim made by the Executive Engineer, Special Building, P.W.D. amounting to Rs.3,45,615/- for deposit works carried out for RCC

has not been acknowledged as debt and hence treated as contingent liability and not provided for in the accounts.

8. Capital commitments pending execution as at 31st March, 1996 works out Rs.207 lakhs which represents building work phase-II.
9. Stationery is accounted on cash basis and no stock in hand is taken into account as on 31st March, 1996.
10. The balance in party accounts are subject to confirmation.
11. Previous year figures have been re-grouped wherever necessary.

Place: Trivandrum,
Dated: 20.03.1997.

for M/s.VIJAYAKUMAR & EASWARAN
Chartered Accountants

DIRECTOR
(Dr.M.KRISHNAN NAIR)

(S.VIJAYAKUMAR)
PARTNER

VIJAYAKUMAR & EASWARAN
Chartered Accountants

Cheruvilakom
Sasthamangalam
Trivandrum-10
Phone:(O)324580,328727
(R)361769

AUDIT REPORT

We have examined the attached Balance Sheet of the **REGIONAL CANCER CENTRE SOCIETY, REGN. No.567/81, THIRUVANANTHAPURAM** as at 31st March, 1996 and the Income and Expenditure account for the year ended on that date annexed thereto and report that:

1. The said Balance Sheet, Income and Expenditure account and the Schedules thereon are in agreement with books of accounts maintained by the society.
2. We have obtained all the information and explanation which to the best of our knowledge and belief were necessary for the purpose of our audit.
3. In our opinion, proper books of accounts have been maintained by the society.
4. In our opinion and to the best of our information and according to the explanations given to us, and subject to the following:
 - (i) Internal control in respect of fixed assets, stores and engineering items are not commensurate with the size and magnitude of the society.
 - (ii) Accounts relating to various Research Projects were not audited by us.
 - (iii) Allocation of grant of Rs.407 lakhs received from Government of Kerala between Capital and Revenue at Rs.285.05 lakhs and Rs.121.95 lakhs respectively are made on the basis of the addition to fixed assets or construction of building during the year 1995-96 as referred to in Note-2.
 - (iv) The land assigned by the State Government vide GO/619/88 RD dated 28.7.1988, measuring 69 cents at Palghat

and the building constructed thereon for which the receipts of Patta has not been received as referred to in Note-5.

- (v) Land at Pulayanarkotta measuring 17 acres in Sy. No.2122 assigned by the Government of Kerala vide order No.GO/MS/1054/22/RD dated 17.11.1982 has not been brought to the accounts for want of clear documents of Title as referred to in Note No.6.
- (vi) The difference in the investment made against CCL FUND ACCOUNT amounting to Rs.7,497/- has been shown as Term Deposit Suspense Account as referred to in Note No.3 and
 - i. The Balance Sheet read together with notes thereon gives a true and fair view of the state of affairs of the society as at 31st March, 1996, and
 - ii. The Income and Expenditure Account read together with notes thereon give a true and fair view of the deficit of the society for the year ended 31st March, 1996.

for M/s.VIJAYAKUMAR & EASWARAN
Chartered Accountants

Place: Trivandrum,
Dated: 20.03.1997.

Sd/-
(S.VIJAYAKUMAR)
PARTNER

VIJAYAKUMAR & EASWARAN
Accountants

Cheruvilakom Chartered
Sasthamangalam
Trivandrum-10
Phone : (O)324580 328727
(R)361769

UTILISATION CERTIFICATE

Certified that the grant of Rs.4,07,00,000/- (Rupees Four crores seven lakhs only) received during the Financial year 1995-96 by the **REGIONAL CANCER CENTRE SOCIETY, TRIVANDRUM** (Regn. No.567/81) from the **HEALTH AND FAMILY WELFARE DEPARTMENT, GOVERNMENT OF KERALA** as per the Government Orders:

	Rs.in lakhs
G.O. (Rt)1228/95 Dated 17.04.1995	90.00
G.O. (Rt)1827/95 Dated 21.06.1995	40.00
G.O. (Rt)3267/95 Dated 04.08.1995	90.00
G.O. (Rt)3860/95 Dated 19.10.1995	90.00
G.O. (Rt)4322/95 Dated 19.12.1995	89.00
G.O. (Rt)708/96 Dated 25.03.1996	8.00
Total	407.00

have been utilised by the Society during the Financial year 1995-96 for the purpose of overall development and maintenance of the institution and other working expenses, implementation of projects, construction of building, functioning of Early Cancer Detection Centre and National Tumour Registry.

for M/s.VIJAYAKUMAR & EASWARAN
Chartered Accountants

Sd/-

(S.VIJAYAKUMAR)
PARTNER

Place: Trivandrum,
Dated: 20.03.1997.

VIJAYAKUMAR & EASWARAN
Chartered Accountants

Cheruvilakom
Sasthamangalam
Trivandrum-10
Phone:(O)324580, 328727
(R)361769

UTILISATION CERTIFICATE

Certified that an amount of Rs.47,72,179.00 (Rupees Forty Seven Lakhs Seventy Two thousand one hundred and seventy nine only) has been utilised out of the following grants:

	Amount (in rupees)
Grant received during the Financial year 1995-96 vide letter No.V-22015/2/95-R dated 18.12.1995 & 29.3.96 from Ministry of Health and Family Welfare, Government of India New Delhi	50,00,000.00
Add: Unutilised Grant of the year 1994-95	23,32,279.64
	<u>73,32,279.64</u>
Less: Unutilised grant carried to 1996-97	25,60,100.64
UTILISED GRANT DURING 1995-96	47,72,179.00

by the Regional Cancer Centre Society, Trivandrum during the financial year 1995-96 for acquiring equipments and spare parts of equipments for the development of the society.

It is also certified that an amount of Rs.25,60,100.64 (Rupees twenty five lakhs sixty thousand one hundred and paise sixty four only) has been unspent during the financial year 1995-96 including the unspent balance brought forward from previous year.

for M/s.VIJAYAKUMAR & EASWARAN
Chartered Accounts

Sd/-

(S.VIJAYAKUMAR)
PARTNER

Place: Trivandrum,
Dated: 20.03.1997

VIJAYAKUMAR & EASWARAN
Chartered Accountants

Cheruvilakom
Sasthamangalam
Trivandrum-10
Phone:(O)324580, 328727
(R)361769

CERTIFICATE

It is certified that an amount of Rs.65,59,246.40 (Rupees sixty five Lakhs fifty nine thousand two hundred and forty six and forty paise only) has been unutilised as on 31.3.1996 by REGIONAL CANCER CENTRE SOCIETY, THIRUVANANTHAPURAM out of the grant received from Department of Atomic Energy, Government of India.

	Amount (in rupees)
Grant received during the year	25,00,000.00
Add: Unutilised Grant brought forward from 1994-95	<u>40,59,246.40</u>
	<u>65,59,246.40</u>
Less: Utilised during the year 1995-96	NIL
Unutilised portion of Grant carried to 1996-97	<u>65,59,246.40</u>

for M/s.VIJAYAKUMAR & EASWARAN
CHARTERED ACCOUNTANTS

Sd/-

Place: Trivandrum,
Dated: 20.03.1997

(S.VIJAYAKUMAR)
PARTNER

CANCER CARE FOR LIFE

Modern medical management of cancer is expensive on account of the enormous cost for diagnosis and treatment. As such a number of patients especially of the weaker section do not comply with the stringent requirements of modern treatment. The RCC sought to relieve the problem to a certain extent by offering a welfare scheme called "Cancer Care for Life". It was introduced in June, 1986. Anyone who not a cancer patient could become a member of the scheme making a one-time remittance of Rs. 101/- to a designated bank. No medical examination prior to enrolment in the scheme was prescribed. A membership card is issued to those joining the scheme. The membership in the scheme entitles the applicant to receive cancer diagnostic and treatment facilities free of cost at the R.C.C., Trivandrum in the unfortunate even of getting cancer anytime during his life-time after 2 years from the date of enrolment. In addition during the course of the treatment, reimbursement of expenses for stay as per the Rules of the centre is also made.

In view of the escalation in the cost of medicines, diagnostic procedures and treatment modalities, enrolment in the scheme had to be discontinued in 1991. As there was demand from the public to allow enrolment in the scheme it was reintroduced in August, 1992, with a membership fee of Rs.500/- per person and a discount for family membership. Enrolment in the scheme continued during 1995-96.

Details of working of the scheme during 1995 - 96 are as follows.

1. No. of persons enrolled as on 31-03-96 :	2.23 lakhs
2. Investment under the scheme :	Rs. 298.59 lakhs
3. No. of new patients who have claimed benefits under the scheme during the year :	130
4. Expenditure incurred on granting benefits :	Rs. 17.79 lakhs