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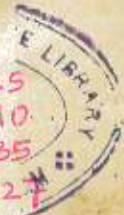
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REGIONAL CANCER CENTRE

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REPORT OF ACTIVITIES 1987-'88

24

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INTRODUCTION

In spite of the initial difficulties, this centre has achieved modest progress in various fields of activities. It has successfully developed basic facilities like building, equipment and personnel required for comprehensive cancer care.

Perhaps to raise the cancer treatment results to the level of those attained by some of the international centres, should be our next immediate objective. In order to achieve this the inputs required are highly expensive and beyond the means of the most of the cancer centres in developing countries. Through certain indirect measures it may be possible to improve the treatment results without substantially enhancing the financial commitment. This will depend on consensus development in the medical profession on uniform methods of management for similar types of cancers treated in different institutions, development of good surveillance methodology to monitor application of therapy protocols and measurement of end results. Nevertheless these measures will have only marginal influence in the improvement of overall survival of cancer patients when compared to early detection and prevention. Even in United States it is estimated that the National Cancer Institute had been able to improve the overall survival of patients by 5-10% only.

The time honoured finding that cancer if detected early could possibly be treated and cured in majority of patients had not reached its application in a deserving fashion in this country. The experience of other developed countries especially the British Columbia Cancer Control Agency, Canada and the Pap. Smear programmes in some western countries point substantially to the fact that early detection can make most of the cancers curable. Giving paramount importance to this philosophy and for the control and prevention of cancer a Community Oncology division and two Early Cancer Detection centres were started by this centre. The reports of these divisions reveal, very encouraging results especially as a contrivance for cancer detection and prevention. Further this centre has played a pioneering role in this country, by utilising the services of N. S. S. volunteers (College students) in early cancer

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DEPARTMENTAL ACTIVITIES

DIVISION OF RADIOTHERAPY

Dr. M. Krishnan Nair	-	Director & Professor
Dr. T. K. Padmanabhan	-	Professor & Superintendent
Dr. F. Joseph	-	Assoc. Prof. of Radiotherapy
Dr. B. Rajan	-	Assoc. Prof. of Radiotherapy
Dr. T. Gangadevi	-	Assoc. Prof. of Radiotherapy
Dr. C. S. Kuttappan	-	Assoc. Prof. of Radiotherapy
Dr. P. G. Jayaprakash	-	Asst. Prof. of Radiotherapy
Dr. C. S. Rafeeka Begum	-	Asst. Prof. of Radiotherapy
Dr. V. N. Bhattathiri	-	Asst. Prof. of Radiotherapy
Dr. Jayaprakash Madhavan	-	Asst. Prof. of Radiotherapy
Dr. A. Sudhakaran	-	Tutor in Radiotherapy
Dr. C. S. Madhu	-	Tutor in Radiotherapy
Dr. P. R. Sasindran	-	Tutor in Radiotherapy
Dr. R. Gireesan	-	Tutor in Radiotherapy
Dr. K. Ratheesan	-	Lecturer in Radiotherapy

Dr. B. Rajan rejoined duty in August 1987 after higher training in Radiotherapy and Oncology in Royal Marsden Hospital London (UK).

CLINICAL ACTIVITIES

No. of New cases	—	5108
Total No. of patients seen in the OP	—	36099
Inpatient admission	—	3242
No. of cases treated with brachytherapy	—	655
Interstitial implants	—	103
Mould treatment	—	13

detection and prevention. Similarly the services of multi purpose health workers were fruitfully harnessed for cancer control work of oral cancer and anti-tobacco campaigns. The State Cancer Control Advisory Board has been constituted for escalating the community oncology activities in this State and it is hoped that with proper guidance and facilities this could be implemented fetching excellent dividend. However if necessary assistance and encouragement are given along with facilities for early cancer detection, automation of clinical cancer research, hospital administration, epidemiological studies, patient services, academic activities and clinical information updating this centre will attain results comparable to those of international repute. This centre also requires more modern facilities in areas such as blood component therapy, brachytherapy, chemotherapy and critical care. If these amenities are made available, time is not far away for this centre to provide patient services of an international standard.

The new Regional Cancer Centre building in the Medical College Campus has almost been completed at a cost of Rs. 301 lakhs. The Early Cancer Detection Building at the Instrumentation Ltd. campus, Palghat has already been completed at a cost of Rs. 2.5 lakhs.

During the year under report we could send 3 of our academic staff for foreign training and with that during the last five years 18 of our junior staff underwent training in internationally well reputed centres.

Modern equipment purchased at a cost of Rs. 176 lakhs have been already installed and used for patient care. This has considerably improved the diagnostic and therapeutic capabilities of this centre.

This report for the year 1987-88 contains details of activities of all divisions, administration and a statement of accounts.

Intracavitary treatment Oesophagus	—	35
Intracavitary Radium application Gynaecological tumours	—	101
Selectron treatment	—	403
No. of patients treated with chemotherapy	—	7352

There is an overall increase in work load of 10–20% compared to previous year.

ACADEMIC ACTIVITIES

Noon clinics were conducted on all working days where interesting and problem cases were discussed. Paediatric tumor board was conducted every Monday. A separate Head and Neck clinic was also conducted on every Tuesday. Journal Club and symposia were held on Saturdays. CPC was conducted regularly once in a month.

ONGOING TEACHING PROGRAMMES

- MD. Radiotherapy
- Diploma in Medical Radiation Therapy
- MD Radiodiagnosis
- MD General Medicine
- MD Onstrectics & Gynaecology and DGO
- MS General Surgery
- MS Orthopaedics and D Ortho
- MS ENT and DLO
- MBBS Third year clinics
- MBBS Final year lecture
- B. Sc. Nursing

CRA (Certified Radiological Assistants) course and Hospital Orientation Course of DRP students for BARC, Bombay for 2 Weeks and Rotating House Surgency were also conducted.

Postgraduates in Obs. & Gynaecology were posted by rotation in the Radiotherapy OP for 1 month. Postgraduates in Paediatrics were posted in the Paediatric Oncology Division by rotation for a period of 2 months.

MEDICAL ONCOLOGY

In order to start a fullfledged Medical Oncology Division, steps were taken, and Dr. K. V. Krishna Das, former Director and Prof. of Medicine, Medical College, Trivandrum has been appointed as Hon: Professor. Work has already been started under his guidance to organise, the haematology and lymphoreticular services, blood transfusion services, investigative facilities for medical oncology and emergency services.

PAPERS PUBLISHED

1. Padmanabhan, T. K., Prabha Balaram and Vasudevan. D. M. Role of Levamisole immunotherapy as an adjuvant to radiotherapy in oral cancer. I. A three year clinical follow up. *Neoplasma*, 1987, 34, 5, 627–632.
2. Krishnan Nair, M., Sankaranarayanan, R. and Padmanabhan, T. K. Local Control of carcinoma of the oral tongue by Radium needle implantation. *Endocurietherapy / Hyperthermia Oncology*, 1987 3, 127–129.
3. Radhakrishna Pillai, M., Prabha Balaram, Padmanabhan, T. K. and Krishnan Nair, M. Monoclonal antibody defined phenotypes of peripheral blood lymphocytes in cancer of the uterine cervix. *American Journal of reproductive immunology and Microbiology*. 1987, 14: 141–143.
4. Krishnan Nair, H., Sankaranarayanan, R. and Padmanabhan, T. K. Evaluation of the role of radiotherapy in the management of carcinoma of the buccal mucosa. *Cancer* 1988. 61:1326–1331.

5. Krishnan Nair, M., Sankaranarayanan, R., and Padmanabhan, T. K. Preloaded brachytherapy of early cancer of the busccal mucosa. Endocurietherapy/Hyperthermia Oncology, 1988 34: 7-9.
6. Krishnan Nair, M., Sankaranarayanan, R., Padmanabhan, T.K. and Madhu, C. S. Oral Verrucous carcinoma – Treatment with radiotherapy. Cancer 1988 61: 458-461.

DIVISION OF SURGICAL ONCOLOGY

Dr. Thomas Cherian	: Assistant Professor
Dr. Paul Sebastian	: Lecturer
Dr. Iqbal Ahamed	: Lecturer
Dr. Jayakumar, K. L.	: Resident Surgeon
Dr. Sivaramakrishan, P.	: Resident Surgeon
Dr. Gladys Jeevy	: Anaesthesiologist

Inspite of several constraints this division during the year under report made impressive progress in Cancer Surgery and Research. All cases registered in Regional Cancer Centre requiring surgery and some cases coming to Medical College Hospital also were attended in this section. Surgical OP in 6 days and routine follow up of operated cases were carried out as in the previous year. Most of our patients are those requiring salvage surgery following radical XRT alone or with chemotherapy.

This division continued the developing of newer surgical techniques. Even though more than 70% of the cases taken up for surgery are extensive residual or recurrent tumours following radical treatment with XRT and patients in poor general conditions and in advanced stages requiring long hours of surgery, operative mortality till date was nil, average post-operative stay was about ten days and the wound infection rate is low. This division achieved remarkable results comparable with those of other institutions in developed countries.

The cases done in 1987 — 1988

A.

Sl.No.	Site	No.
1	Ca. Buccal Mucosa	69
2	Tongue	58
3	Alveolus	37
4	Lip	9
5	Floor of the mouth	5
6	Thyroid	6
7	Salivary gland	2
8	Parapharyngeal	1
9	Ca. Eyelid	1
10	Radical Neck dissection	7
11	Ca. Breast	14
12	Soft tissue Sarcoma	4
13	Inguinal Block Dissection	3
Total		216
B. Minor cases		202
Total		428
Per operative Mortality		0
Peri operative mortality		6

Majority of these cases were time consuming extensive surgeries involving extensive radical clearance at the primary site, radical neck dissection and primary re-construction.

Review of the cases done in R.C.C. from 1983 to 1988

A. Major

Sl.No	Site	No.
1	Ca. Buccal mucosa	130
2	Ca. Tongue	127
3	Ca. Lower Alveolus	86
4	Ca. Upper Alveolus	5
5	Ca. Floor of the mouth	15
6	Ca. Lip	45
7	Radical Neck Dissection	31
8	Salivary gland tumors	5
9	Ca. eye lid (upper)	1
10	Ca. Thyroid	11
11	Parapharyngeal tumor	1
12	Closure Orocutaneous fistulae	6
13	Ca. Breast	90
14	Radical Axillary clearance	6
15	Radical Ileo Inguinal Block Dissection	3
16	Soft Tissue Sarcoma	11
Total		573
B. Minor cases		648
Grand Total		1221

Site wise Results:

Lip Site	No.	Surgery primary	Salvage	Reopir pri. cl.	Reconstruc-tion	Tumor cl at the margins base	Recurrence
Upper lip	4	1	3		4	4	3
Lower lip	41	17	28	15	30	41/45 (91.1%)	4

It may be noted that, of the 45 cases in 41 cases we were able to achieve microscopic clearance at the margins and base. 7 patients had recurrence during this period, excluding a few patients lost to follow up. The tumor free survival at the end of this period is 71.1%.

Carcinoma Lower Alveolus

Mode of treatment	No.
Primary surgery alone	14
Primary surgery + Post-operative XRT	6
Pre-operative XRT + surgery	33
Salvage surgery after XRT	33
Total	86

Complications:

K wire extrusion	4
Orocutaneous fistulae	6
Flap necrosis	4

These were all managed conservatively.

Tumour clearance

Microscopic tumour clearance were achieved all round the tumour is 76/86 = 88.37%

Recurrence

Site	No.	%
Primary	20	
Nodal	3	27/86 = 31.3%
Primary + Nodal	2	
Distant Metastasis	1	
Primary + Dis. Metastasis	1	
Total	27	

Buccal Mucosa

Mode of Treatment	No.
Primary surgery	20
Salvage surgery	110
Total	130

Complications

Complications	No.	%
Wound infection with delayed wound healing	19	19/130 = 14.6%
Partial flap necrosis	10	10/130 = 7.6%
Total flap loss	2	2/130 = 1.5%
Orocutaneous fistulae	9	9/130 = 6.5%
Parotid fistuale	1	1/130 = 0.7%

Tumour clearance:

We have been able to achieve tumor clearance all round the tumour in 119/130 cases = 91.5%.

It was interesting to note that in many cases where tumor clearance was achieved microscopically at the margins, but

the mucosa showed severe dysplastic changes, many returned with second recurrence primary. But where the tumor was extending upto the cut margin microscopically and the mucosa did not show much dysplastic changes, none of them had local recurrence.

Recurrence	No.	%
Primary site	21	16.1%
Nodal	6	4.6%
Primary + Nodal	5	5/130 = 3.8%
Total	32	32/130 = 24.6%

Reconstructive Procedures used:

1. Tongue flaps	11
2. Nasolabial flaps	36
3. Sternomastoid myocutaneous flaps	76
4. Platysma Myocutaneous flaps	11
5. Pectoralis major myocutaneous flaps	35
6. Deltopectoral flaps	36

CARCINOMA TONGUE

No. of cases	127
Evaluated	94
Surgery	
Primary	31
Salvage surgery	63
Surgery at the primary	51

Surgery primary site + neck dissection	43
Reconstruction of tongue	30

Complication:

Post operative mortality	2
Total flap loss	2
Partial flap loss	5
Microscopic tumor clearance at the margins base	85/94 = 90.42%

Recurrence:

Primary site	14	14/94	= 14.89%
Nodal	30	30/94	= 31%
Primary + nodal	4	4/94	= 4.2%
Distant metastasis	2	2/94	= 2.1%

A total of 127 cases of carcinoma of the tongue were treated with surgery. Many were extensive recurrence following radiation or radiation with chemotherapy. As a policy we do not do prophylactic neck dissection. But when regional nodes are clinically suspicious, when small, F. N. A. cytology followed by surgery if positive. Of the 14 cases where tumour recurred in the primary site 3 were salvaged by surgery, but fresh lesions appeared in the residual tongue later and could not be salvaged. All these cases had severe submucous fibrosis, atrophic glossitis involving entire buccal mucosa showing severe dysplastic changes at the margins of the excision, though free of tumours.

Of the 30 cases of nodal recurrence 22 could not be salvaged. But 8 were subjected to further surgery of which 3 cases had recurrence again and succumbed to it. Of these 30 cases of nodal recurrence 5 were on the contralateral side. In the two cases of distant metastasis, one had pleural effusion, another in the opposite mandible and soft tissue.

It was very interesting to note that over these 5 year period, we had nearly ten cases where, we achieved tumour control

both at the primary and regional nodal areas in cases of oral and salivary tumours, but patient lived long enough to develop distant metastasis, predominant sites being ribs, pleura, lung and pelvis.

PAIN CLINIC

This department continued the functioning of the pain clinic as well as allied researches. Dr. Gladys Jeevy and Dr. Paul Sebastian were in charge of the pain clinics. 101 new patients were registered and total of 403 patients were seen in the clinic during 1987-88.

Oral analgesis were employed in all the patients for relieving pain. Treatments were given with Step I and Step II drugs i.e. with the only available non-narcotics and mild narcotics during this period. 30 percent of patients had acceptable pain relief with non-narcotics and when codeine was also added, 50 percent of the patients were benefitted.

A WHO Expert Advisory Panel on Cancer Pain Relief consisting of Dr. Fumikazu Takeda and Mr. George Heidrich visited our institution and expressed their appreciation in the activities of the pain clinic of the division. We are indebted to them for the guidance given to us for conducting better pain clinics and researches.

Academic Activities:

Being academically attached to Medical College, Trivandrum we were actively involved in the teaching and training of the undergraduates and post graduate students. The Division takes active part in the academic activities, like Seminars, Noon-clinics, Workshops etc held in the Regional Cancer Centre.

Training:

Dr. Iqbal Ahmed visited the Christie Hospital and Holt Radium Institute, Manchester for 3 months, under the auspices of the British Council and had training in Head and Neck surgeries under the supervision of Mr. Clive Orton and Mr. Neil Gleave.

Conferences & Seminars and Workshops attended:

- Dr. Thomas Cherian : Attended the 5th National Cancer Conference of the Indian Association of Surgical Oncologist, Pune, August, 1987.
- Dr. Iqbal Ahmed
Dr. Paul Sebastian
- Dr. Thomas Cherian : IX Congress Association of Radiation Oncologists of India Srinagar October 1987.
- Dr. Iqbal Ahmed : Workshop on New Frontier of Surgical Oncology, Cancer Institute, Adayar, December 1987.
- Dr. Gladys Jeevy : III Biennial Conferences of Indian Society of Oncology, Bangalore, February 1988.
- Dr. Paul Sebastian : III Biennial Conferences of Indian Society of Oncology, Bangalore, February 1988.

Papers presented:

1. Dr. Thomas Cherian, Dr. Paul Sebastian, Dr. Iqbal Ahmed, Dr. Jayakumar, Dr. Sivaramakrishnan, A simple technique of primary Reconstruction of lateral defects of the lips. A better alternative for the Abb-Eslander technique. 5th National Cancer Conf. Indian Assoc. of Surgical Oncologist-Pune, August, 1987."
2. Dr. Thomas Cherian, Dr. Paul Sebastian., Dr. Iqbal Ahmed, Dr. Jayakumar, Dr. Sivaramakrishnan. A simple techniques for the Reconstruction of the total loss of lower lip following wide excision for CA-A primary Reconstruction 5th National Conf. Pune, August 1987.
3. Dr. Thomas Cherian, Dr. Paul Sebastian, Dr. Iqbal Ahmed, Dr. Jayakumar, Dr. Sivaramakrishnan. "Reconstruction for a functional tongue following Glossectomy for Ca. Tongue. IX Congress Assoc. of Radiation Oncologist of India, Srinagar. October 1987.

New techniques:

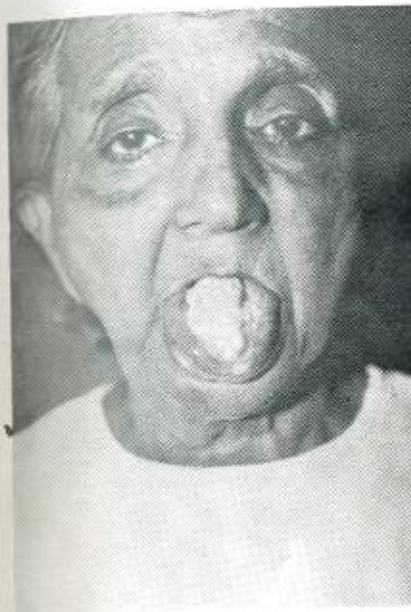
We have involved a few more surgical techniques and successfully carried out them in our patients.

1. Reconstruction of a functional tongue — 30 cases
2. Reconstruction of the complete Naso-Oral diaphragm (Palate) following Maxillectomy for Ca. of the Maxilla. — 3 cases

The patients don't have to wear a prosthesis and have a good functional palate with acceptable cosmetic result.

3. Reconstruction of the mandible with good aesthetic and functional results following Mandibulectomy — 4 cases

Some surgical achievements using Regional Cancer Centre Techniques



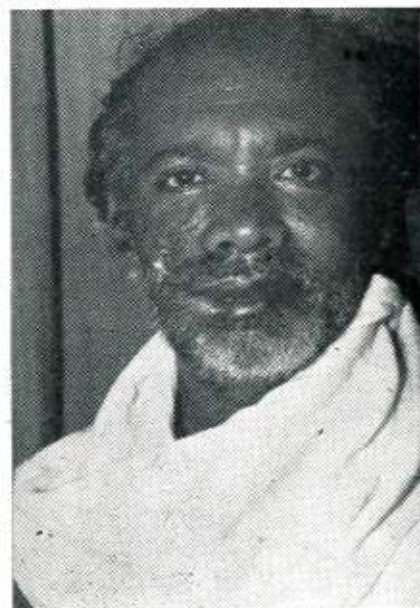
A Woman with extensive recurrent carcinoma of the tongue following radical XRT



The same after total glossectomy and reconstruction five years hence in good functional results.



A case extensive carcinoma of the lower lip and buccal mucosa.



The same after wide excision and primary reconstruction using our single stage repair techniques.

DIVISION OF PAEDIATRIC ONCOLOGY

Dr. P. Kusuma Kumary : Lecturer

During the year under report this division despite constraints witnessed steady progress in all activities specially in haematological clinics and research. All the paediatric cases below age of 14 years were registered in this division. The total no. patients seen in the OP division was 2158 and the inpatient admission was 271. 180 cases were registered in the following categories.

Leukaemias	: 61 (33.88%)
Brain tumor	: 28 (15.55%)
Lymphomas	: 13 (7%)
Wilm's tumor	: 12 (6.6%)
Soft tissue sarcoma	: 13 (7%)
Retinoblastoma	: 9 (5%)
Neuroblastoma	: 9 (5%)
Bone tumors	: 7 (3.8%)
Hepatoma	: 4 (2.2%)
Histiocytosis	: 4 (2.2%)
Germ Cell tumors	: 4 (2.2%)
Miscellaneous	: 16
Male : Female —	112 : 68

Out of this 180 cases 42.7% ie. 77 cases were under the age of 5 years. The cases of leukaemias were more and brain tumors were less this year when compared to those previous years. There were 44 cases of Acute lymphoblastic Leukaemia (72%), 14 cases of Acute myeloblastic leukaemia (22%) and 3 cases of chronic myelogenous leukaemia. 28 cases of All were referred to us prior to treatment and the rest 16 cases

were reported to us after getting some treatment from some other hospitals. There were 13 cases of lymphomas out of which 8 cases were Nonhodgkins lymphomas and 5 cases were Hodgkin's lymphoma.

Out patient clinic in paediatric oncology was held on all days except Sundays. Detailed diagnostic work up of all the patients were done. About 200 bone marrow aspirations and 400 lumbar punctures were done last year.

Chemotherapy was the main modality of treatment in cases of haematological malignancies. Multimodal treatment with surgery, radiolotherapy and Chemotherapy were given for all solid tumors. About 80 patients received chemotherapy and radiotherapy, 50 patients received chemotherapy alone and another 50 patients received radiotherapy alone. Chemotherapy and radiotherapy were given to both inpatients and outpatients. Arrangements for blood transfusions were done and 400 transfusions were given to both inpatients and outpatients.

As in previous years major management decisions were made by the multidisciplinary team consisting of Paediatric surgeon, Paediatric Pathologist, Paediatric oncologist and radiation oncologists. This team met every Monday at 12.00 noon without any failure. The Chemotherapy drugs were given free of cost to majority of the patients.

The division imparted teaching and training to MD (RT) DMRT, MD(Paediatrics) students of Medical College, Trivandrum.

Preparatory steps have been taken up for conducting separate haematology clinic and research work. Analysis of the data of the cases treated in this division during the last 4 years is nearing completion and a few standard scientific papers will be published soon.

Conference attended:

1. Dr. Kusumakumary attended the III Biennial Conference of Indian Society of Oncology held in Bangalore during February 8-12th, 1988.

2. Dr. P. Kusumakumary returned from Manchester after successful training in Paediatric Oncology especially Leukaemia. She had her training under the guidance of Dr. Dorothy Pearson on Christie Hospital, Manchester and Dr. Patricia Morris Jones in Royal Manchester Children's Hospital, Pendelbery. She attended a symposium international Haematology update held in Glasgow and a one day international research symposium "Chromosomes and genes in leukaemia" held in London during this period.

DENTAL WING

- | | |
|------------------------|------------|
| Dr. L. Sudha | : Tutor |
| Dr. K. R. Nalinakumari | : Lecturer |

The main activities of this division were centred round, taking biopsies, extracting teeth, preparing bite blocks, preparing moulds, management of pre-cancerous and other oral lesions, participation in research projects and attending detection camps and awareness camps.

During the year under report the following services were rendered:

1. No. of sittings by patients	—	2750
2. No. of Biopsies	—	663
3. No. of. Bite blocks	—	108
4. No. of Extractions	—	1844
5. Miscellaneous	—	125
6. No. of new cases seen	—	814

Biopsies:

The types of biopsies done in the division are,

Excision biopsy, Incision biopsy and Punch biopsy etc.

Details of site and no. of biopsies:

1. Buccal Mucosa cases	—	275
2. Commissures	—	14
3. Tongue	—	161
4. Lower alveolus	—	60
5. Upper alveolus	—	16
6. Palate	—	29
7. Retromolar area	—	27
8. Upper lip	—	10
9. Lower lip	—	40
10. Floor of mouth	—	17
11. Upper sulcus	—	4
12. Lower sulcus	—	10

This division helped in the preparation Bite Blocks for all cases requiring them. We also prepared moulds for cases requiring radium brachytherapy in sites like cancer of the hard palate, maxillary antrum and lip.

Dental wing also attended to precancerous lesions like leukoplakia, submucous fibrosis and other oral lesions like lichenplanus.

Health education on oral hygiene, oral prophylaxis and modified diet was given to the patients with cancer and pre-cancer.

This division participated in the cancer detection camps, dental camps and awareness programmes conducted in the rural areas.

The staff of the division are involved in the research on antitumor antibodies and electron microscopic studies on cancerous and pre-cancerous lesions. They are co-workers in the research project in collaboration with The University of British Columbia, Vancouver, Canada.

DIVISION OF IMAGEOLOGY

Dr. P. Ramachandran Nair	—	Associate Professor
Dr. K. Sasidharan	—	Associate Professor
Dr. V. Padmanabhan	—	Assistant Professor
Dr. V. M. Pradeep	—	Lecturer
Mr. Raghu Ram K. Nair	—	Lecturer
Dr. K. Ramachandran	—	Lecturer

Activities

18,846 new cases were registered in the department during the year 1987-88.

Nuclear Medicine	—	7035
Ultrasound	—	11761
Mammography	—	50
Total		<u>18846</u>

This is an increase of 991 cases over the last year. It may be pointed out that in the year 1980, the total cases seen in the department were only 520 for the whole year, an increase of 36 times. In the Gamma Camera 754 cases had been studied. The break-up of the isotope studies done were as follows:

Liver	—	317
Bone	—	263
Renal	—	164
Brain	—	10
Total		<u>754</u>

The quantum of work in in-vitro Nuclear Medicine has shown a phenomenal increase over the years. In the year ended March 31, 88, 5909 blood samples were assayed.

Thyroid hormones	—	4517
B-HCG	—	1292
Prolactin	—	100

Total		5909

In the case of Thyroid hormones the 4517 samples represent over 11,000 separate tests since for all the samples at least two tests and for about half the samples all three tests (T3, T4 & TSH) had to be done.

More than half the patients who come for ultrasound examination are for Obstetric work-up. This year we started doing transrectal ultrasound examination for prostate and cervix uterii. This Division took up interventional procedures like renal cyst aspiration, percutaneous nephrostomy, drainage of liver abscess and encysted ascitis.

We started using the screen film combination for mammography. This has resulted in reducing radiation dose to patients substantially and marked improvement in image quality.

Radioactive Iodine Therapy was administered to 105 cases of thyrotoxicosis. As an integral part of this and in the evaluation of some other thyroid disorders, 468 Radioiodine Uptake studies were done.

Academic Activities

The Department has been imparting training in Ultrasonography as well as radioimmunoassay techniques to a limited number of trainees in addition to the routine teaching of undergraduate and postgraduate medical students, CRA students and Nursing students.

Seminars are conducted on selected topics on Saturday afternoons.

Under the co-guideship of Dr. P. Ramachandran Nair and Dr. Pradeep, V. M. two MD Thesis were completed. Another four students are also getting guidance and facilities for their thesis work.

Dr. Sasidharan delivered a lecture in the CME Programme on Nephrology held at Kottayam.

Mr. Joe D'Cruz was awarded the DMRIT by the University of Bombay. He had his training at the Radiation Medicine Centre, Bombay.

Dr. K. Sasidharan attended the IRIA Annual Conference at Coimbatore.

Dr. P. Ramachandran Nair attended the 2nd National Conference of the thyroid Association of India.

DIVISION OF RADIATION PHYSICS

1. Dr. T. P. Ramachandran : Associate Professor
2. Shri. P. G. Gopalakrishna Kurup : Associate Professor
3. Shri. C. A. Davis : Assistant Professor
4. Shri. T. S. Elias : Lecturer

Patient Services

For patients undergoing teletherapy and brachytherapy treatment planning and related dose computations were carried out routinely. The number of cases thus planned is as follows:

External beam therapy	: 4863
Intracavitary treatment using Selectron Remote Afterloading System	: 403
Interstitial Implants	: 103
Intracavitary treatment for carcinoma Oesophagus	: 13
Intracavitary radium treatment for carcinoma cervix	: 101
Mould treatment	: 13

Plaster of paris shells were made for patients undergoing radical external beam therapy for head and neck cancers. Preparation of moulds for brachytherapy was also undertaken. Some of the treatment plans for teletherapy were checked with the computerised Treatment Planning System (TPS).

In patients undergoing external beam therapy, random monitoring of dose delivered was carried out to check the accuracy of dose delivery. Measurements of dose to critical organs like eye were carried out in some patients.

Quality assurance of Radiotherapy Equipment:

Linear Accelerator 4 MV	— 1
Cobalt-60 Teletherapy machines	— 3

Radiotherapy simulator	— 1
Selectron Remote Afterloading System	— 1
Computerised Treatment Planning System	— 1
Radium sources	603 mg.

All the machines were routinely checked and maintained for proper radiotherapy. This has reduced the downtime of these equipment considerably. Daily measurement of output and checking of energy are done in the accelerator. The daily measurements for the last two years show that the output and the beam energy are quite stable. Quality assurance tests are periodically undertaken in all machines.

We are regularly participating in the postal dose inter-comparison programme of the Radiation Standardisation Laboratory of BARC, Bombay.

This division has the following equipment for dosimetry and related works.

1. Secondary Standard Dosimeters	— 3
2. X and gamma Ionisation Meter	— 1
3. Victoreen Condenser Meter	— 1
4. Clinical Dosimeter (Rectal Dosimeter)	— 2
5. TLD Readers	— 2
6. Sr-90 check source	— 1
7. Densitometer	— 1

Radiation Safety Activities:

Personnel monitoring is done by using film badge and about 90 personnel of the Regional Cancer Centre, Radio-diagnostic Department, SAT hospital and Dental College are monitored this way. Radiation protection surveys conducted periodically in the teletherapy and brachytherapy section ensure safety of radiation workers and the public.

This division extends the necessary physics support to the Department of Radiodiagnosis of the Medical College Hospital, Trivandrum by way of acceptance tests on newly installed machines, periodic quality assurance tests, inspection and possible repairs of these equipment.

The staff of the department have also carried out inspection of certain X-ray machines, and the check up and calibration of Cobalt-60 machine under the Health Services Directorate.

Academic Programmes:

Physics teaching and training were imparted to the following categories of students:

M. D. (Radiodiagnosis and Radiotherapy)

DMRD

DMRT

CRA

III Year M. B. B. S.

As in the previous years, a one month field training was imparted to three students of the Diploma in Radiological Physics course of the BARC, Bombay.

The University of Kerala has given sanction to start the 2 year M. Sc. Medical Physics degree course.

Dr. T. P. Ramachandran has been approved by the University of Kerala as Research Guide in the subject Physics Applied to Medical Sciences.

IX Conference on Medical Physics:

The national conference of the Association of Medical Physicists of India was organised and held under the auspices of the Regional Cancer Centre, Trivandrum and Trivandrum Medical College during 10-12 December 1987 in which about 200 delegates from different Centres of India and abroad participated. His Excellency the Governor of Kerala, Sri P. Ramachandran inaugurated the conference on 9th December 1988

in the Medical College Auditorium. There were 74 scientific presentations out of which 7 were invited talks, 8 were invited panel talks, 28 oral papers, 28 poster papers and 3 invited refresher course lectures. The refresher courses were on 'Fundamentals of Nuclear Magnetic Resonance Imaging', 'Radiobiological basis of low dose effects' and 'Achieving accuracy in Radiotherapy'. Panel discussions were arranged on 'Medical Physics as a Profession and Discipline' and 'Physical and Clinical aspects of Remote Afterloading Applicators for Cancer of the cervix uteri.' Regular Scientific sessions were on Beam Therapy, Radiation Protection and TLD applications, Brachytherapy, Instruments and devices, Miscellaneous aspects of non-radiation Medical Physics, Nuclear Medicine and Imaging.

Research Project:

The Atomic Energy Regulatory Board (AERB) has sanctioned a research project 'Dose to thyroid and eyelens in radiotherapy especially in the cancer of the upper trunk and head and neck regions with Dr. T. P. Ramachandran as the Principal Investigator.

Visitors:

Dr. Rajendra Kurup Ph.D. of the Department of Radiation Physics, University of Texas System Cancer Centre, MD Anderson Hospital and Tumour Institute, Texas Medical Centre, U S A visited this Centre in July 1987 and gave a lecture on "Electron Arc Therapy for treating post mastectomy patients".

Papers Presented/Published:

'Patient Dose Monitoring in beam therapy with 4 MV accelerator' T. P. Ramachandran, T. S. Elias, P. G. G. Kurup and C.A. Davis, paper presented in the IX Conference on Medical Physics, Trivandrum, 10-12, December, 1987.

The abstract of the above was published in AMPI Medical Physics Bulletin Vol.12, No. 4, Oct-Dec. 1987.

DIVISION OF CYTOPATHOLOGY

1. Dr. N. Sreedevi Amma — Professor from Sept. 1st 1987 onwards
2. Dr. B. Chandralekha — Associate Professor
3. Dr. Elizabeth K. Abraham — Assistant Professor
4. Dr. G. Rajasekharan Pillai — Assistant Professor
5. Smt. J. Ambikakumary — Senior Scientific Officer
6. Sri. G. Reghunathan Nair — Cytologist

ACTIVITIES:

The important activities during the said period were:—

1. Screening of symptomatic women attending gynaecologic out patient of SAT Hospital, Trivandrum for detection of precancerous and early cancerous lesions of the uterine cervix.
2. Assessment of hormonal status of early pregnant women attending the SAT Hospital, especially in those with bad obstetric histories like repeated abortions, spotting in the early months etc.
3. Cytodiagnostic aspirations and their interpretation from patients attending the Regional Cancer Centre, MCH, SAT Hospital, SCD Hospital, Pulayanarkottah, Dental College, and few nearby Govt. Hospitals viz. General Hospital, W&C Thycaud etc.
4. Peripheral smear & Bonemarrow examination and reporting of cases of Regional Cancer Centre and occasional referred cases from haematology unit of MCH.
5. Examination of sputum for malignant cells from patients suspected to have carcinoma of the lung. Patients are referred from RCC, SCD Hospital and MCH mainly.
6. Population screening for cervical cancer from Thrikkadavoor, Quilon & from various medical camps.

7. Histopathological examination of surgical specimen and review of histopathology slides from RCC.
8. Teaching and training

Cytology Services rendered to the various department

Gynaec Smears

Unit	No. of cases	% of total
01	1069	13.35
02	1637	20.44
03	1340	16.73
04	1491	18.61
05	1066	13.31
06	979	12.22
CR	58	0.72
FPOP	69	0.86
G.H.	85	1.06
Camp	216	2.70
Total	8010	100.00

Non Gynaec. & aspiration cytology including fluids

Maximum number of cases were received from surgical units of MCH (22.16%). Next in frequency was radiotherapy (12.56%) Other units were ENT (11.11%), Medical Gastroenterology (9.66%) and Medical units of MCH (8.86%). The following table gives details of the cases received from various departments.

Departmentwise distribution of cases
(Non-Gynaec. Cytology).

<i>Department</i>	<i>No. of cases</i>	<i>Percentage of total</i>
Surgical	1023	22.16
Radiotherapy	580	12.56
ENT	513	11.11
Medical gastroenterology	446	9.66
Medical	409	8.86
SCD Pulayanarkotta	220	4.77
Medical paediatrics	195	4.22
Gynaecology	178	3.86
Endocrinology	110	2.39
Urology	100	2.17
Surgical paediatrics	67	1.45
Orthopaedics	52	1.13
Surgical gastroenterology	35	0.76
Other Departments including Dental & General Hospital.	151	3.27
Unit not mentioned	537	11.63
Total	4616	100.00

This is the total number in the Register out of which 307 cases were repeat aspirations. Hence in the analysis of lesions, only 4309 cases were taken excluding the repeat samples from the total registered.

Gynec. Cytology

During the year cervical smears were examined from 8010 women. 7954 from SAT H. & 58 from RCC. 85 from GH & 216 from camps. A detailed analysis of the lesion shows the following findings.

Normal smears	—	1940
Hyperkeratotic cervix	—	231
Nonspecific Inflammation	—	3573
Trichomonas infection	—	245 (37 cases were asso : with dys- plastic changes)
Herpes virus infection	—	4
Fungal infection	—	22
Mild dysplasia	—	881
Moderate dysplasia	—	76
Severe dysplasia	—	31
CIS	—	6
Invasive squamous carcinoma	—	139
Adenocarcinoma	—	7
Reserve cell hyperplasia	—	11
Endocervical Regn.	—	92
Squamous metaplasia	—	243
Suspicious of malignancy	—	26
Suggestive of malignancy	—	3
Atypical cells	—	35
Granulomatous inflammation	—	2
Carcinoma Endometrium	—	4
Sarcoma	—	1
Miscellaneous	—	325

Hormonal Cytology

Hormonal cytology was done in 1080 cases during the year 87-88. These included mainly cases of early pregnancy with suspected hormonal deficiency, a few cases from primary & secondary amenorrhoeas, cases of sterility, carcinoma breast etc. Compared to last year there is a reduction of 500 cases in this category.

Population screening

Smears used to be received from the Thrikkadavoor, project. A total of 1123 smears were received. The number is less due to various reasons, transfer of trained staff etc & the LMO has joined for her P. G. course.

Non Gynaecological and aspiration cytology

During 1987-88 aspirates of solid tumours and fluids were examined from 4309 cases. 3-4 smears were examined from each case. Out of these 870 malignancies were reported. Maximum number of cases were lymphnodes, thyroid, breast, ascitic fluid, liver, pleural fluid, G. I. T., ENT, C. S. F., urinary tract in the order of frequency. Good number of cases were also obtained from other sites like female genital system (71) bone joint (47) parotid (41) skin and subcutaneous tissue (33). Few samples were also obtained from various other sites like abdominal masses, Epigastric mass, ileac fossa, scalp, abdominal wall, thigh, pericardial fluid, retroperitoneal masses, spleen etc. Buccal smears were also examined for sex chromatin.

Analysis of lesions of major sites at a glance

Site of Aspiration	Total No. of cases	Benign	Malignant
Lymphnodes	806	595	211
Thyroid	652	605	47
Breast	487	391	96
Ascitic fluid	427	373	54
Liver	307	211	96
Pleural fluid	273	209	64
G. I. T.	238	178	60
ENT	220	133	87
CSF	200	193	7
Urinary Tract	181	166	15
Respiratory system	127	82	45
Female genital system	71	55	16
Bone and joints	47	28	19
Parotid	41	34	7
Skin & S/C tissue	33	22	11
All other sites	199	164	35
Grand total	4309	3439	870

Some Highlights of Nongynaec Cytology

Lymphnodes:

Majority of the lymphnode lesions were metastasis from various sites. Out of the 211 reported malignancies lymphoma constituted only 22 cases, 15 cases of NHL and 7 cases of HD. Others were metastatic carcinomas from various sites and one synovio sarcoma and 2 cases of malignant melanoma.

Thyroid:

Majority of the classifiable malignant lesions were papillary carcinoma (18 cases). Follicular carcinomas were only 9. 11 cases were reported as carcinoma thyroid without further specifying the type. Rare lesions include one case of Medullary carcinoma and 2 cases of anaplastic carcinomas.

Breast

Majority were infiltrating duct carcinomas. Rare lesions include one case of Pagets disease and one case of lymphoma.

Liver

Most of the cases were hepatomas. Rare lesions include 3 cases of hepatoblastomas & one case of lymphoma.

G. I. T.

Rare lesions include one case each of sarcoma, lymphoma and undifferentiated carcinoma.

E. N. T.

Majority were squamous cell carcinoma. Rare lesions include 5 cases of undifferentiated carcinoma, 2 cases of lymphoma/ Leukaemias, and one case each of adenoid cystic carcinoma, spindle cell sarcoma, ameloblastoma and muco-epidermoid carcinoma. Maximum cases were from tonsil (33) larynx (25) maxilla (18) and nasopharynx (16).

Respiratory system:

Out of the 127 cases 102 were bronchial washings and brushing & 25 were needle aspirates of lung lesions.



Rare lesions reported from other sites include 2 cases of mucous secreting adenocarcinoma from abdominal wall and one case of adenocarcinoma from pericardial fluid and one case of plasmacytoma from iliac fossa mass.

Sputum Cytology

During the period under study a total number of 61 smears were examined from 3071 samples collected from 8 patients, 308 patients more than that the previous year. 6 cases of malignancies were diagnosed. The detailed analysis is shown below:

Normal	—	404
Dysplasias of squamous epithelium.	—	223
Fungal infections	—	116
Paragonimus Ova	—	1
Atypical/suspicious cells	—	29
Squamous cell carcinoma (keratinising)	—	24
Sq. cell ca. (Nonkeratinising) (Poorly differentiated)	—	3
Adenosquamous carcinoma	—	1
Adenocarcinoma	—	22
Small cell carcinoma	—	13
Unclassified malignancies	—	22
Total	—	858

Bone Marrow & peripheral smear

Were examined from 448 cases. An average of 4 smears from each case of Bone marrow were examined. Hence the

total number of slides studied is 2240. This is 82 cases (328 slides) more than that of the previous year. These were mainly from cases of leukaemia, lymphoma, neuroblastoma, myeloma etc.

HISTOPATHOLOGY

Histopathologic examination is mainly carried out for surgical specimens received from R. C. C. This section also deals with review of H. P. slides of patients referred to RCC from various hospitals whose biopsies are done by the referring hospitals. These review slides sometimes involve recutting of the blocks for better staining or special staining & sometimes even processing of fresh bits from the tissue if available.

Total cases

During 87-88, histopathologic exam. was done in 2057 cases out of which 1574 were from RCC & 483 were review slides.

Histopathology at a glance.

System	Total cases	Benign	Malignant
Oral cavity & Pharynx	880	281	599
Female genital system	569	51	518
Breast	108	21	87
Haemopoietic system	225	72	153
G. I. T. including liver	39	3	36
Skin	23	8	15
Soft tissue	21	4	17
Thyroid	18	2	15
Bone & joints	16	1	15
Male genital (Testis & penis)	15	0	15
Kidney and urinary tract	8	0	8
Nervous system	6	2	4
Lung & mediastinum	5	0	5
Others	124	—	—
Total	2057	—	—

Some Highlights of Histopathology

Oral cavity & Pharynx

Maximum number of cases were from oral cavity & pharynx. In this region majority of the lesions occurred in the buccal mucosa. Squamous cell carcinomas were the predominant histological type. 31 cases of verrucous carcinomas were diagnosed at various sites like buccal mucosa, lips, tongue alveolus etc.

Rare lesions diagnosed at the above sites included a single case each of NHL and granular cell myoblastoma of tongue.

F. G. S.

Next in frequency were lesions of female genital tract where cervical malignancies were the predominant ones. Squamous cell carcinomas of varying differentiation was the predominant histological type. 9 cases of carcinoma in situ were diagnosed, out of which one showed micro invasion.

Breast

Breast lesions were also common. Majority being infiltrating duct carcinomas. Rare lesions included one case each of colloid carcinoma, squamous cell carcinoma & malignant cytosarcoma phylloides. We also came across a very rare case of immunoblastic lymphoma of the breast.

Haemopoietic system

Lymphnode lesions were maximum & majority were metastasis from various sites. Out of the lymphomas NHL predominated (41 case) over HL (23 cases). By the end of 1987 we could start Bone Marrow biopsy processing in our limited set up utilising the experience gained by Dr. Elizabeth Abraham during her training in Tata Memorial Hospital, Bombay. Out of 6 biopsies 3 showed lymphoma infiltration.

G. I. T. including liver & pancreas

There were 39 cases from various sites. Rare lesions included 3 cases of lymphomas (NHL) of intestine and one basiloid carcinoma.

Skin tumours included squamous and Basal cell carcinoma, basosquamous carcinoma, malignant melanoma & secondary deposits.

Soft tissue tumours were different types of sarcomas and malignant fibrous histiocytoma.

Thyroid

Papillary carcinomas were the predominant lesion.

Bone & joints

Majority of the bone tumours were osteogenic sarcoma, Ewings tumour, synoviosarcoma and metastatic adenocarcinoma were also reported. One case of extraskeletal Ewings tumour was also reported.

Testicular tumours

were mainly germ cell tumours.

Few tumours were also received from sites like kidney and urinary tract, nervous system, lung etc.

Teaching & Training

The division is involved in the routine teaching programme of the Medical College. MBBS students are regularly posted in the Cytology lab during their rotation posting in clinical pathology. The pathology postgraduates are posted for 3 months. Pathology P. Gs of Kottayam Medical College were also given 2 weeks training. Training is also imparted to students of paramedical courses like DMLT, B. Sc MLT and ANMs who were posted in the laboratory at different periods of time.

Post graduates of other departments are given guidance in their thesis work which involve cytological aspects. One P. G. of the Dermatology & Venereology Department was given guidance by Dr. B. Chandralekha in thesis work on "genital Herpes" which involved cytological study. As a means of continuing education regular oncocytohistopathological CPCs are being conducted every month.

Full time training courses are also conducted for cytotechnicians (6 months) and cytotechnologists (1 year) based on set objectives and specified curriculum. The fourth batch of cytotechnicians has passed out in February 1988.

Research

Some of the studies of the previous years are being continued. Besides a comparative study of the value of colposcopy and cytology in detecting early malignant and premalignant lesions of the uterine cervix is started in November 87 in collaboration with Dr. Radhakumary of the Department of Obst. & Gynaecology, is being continued. One of the P. G. students in Obstetrics & Gynecology is allotted a thesis on this subject.

Conferences attended:

Dr. Chandralekha and Dr. Elizabeth K. Abraham attended the continuing Medical Education programme on Non Hodgkin lymphoma held by Kerala chapter of IAPM on 25-1-87 at Medical College Trivandrum.

Dr. B. Chandralekha and Dr. G. Rajasekharan Pillai attended IAPM Kerala Chapter held in Alleppey in June 1987. Dr. N. Sreedevi Amma attended the annual conference of NCRP held in New Delhi in Nov. 1987.

Dr. Elizabeth K. Abraham attended the annual conference of IAPM held at Hyderabad in Dec. 1987. Dr. N. Sreedevi Amma, Dr. Elizabeth K. Abraham and Dr. G. Rajasekharan Pillai attended the Kerala chapter of the IAPM held in Kottayam in Nov. 1987. Dr. N. Sreedevi Amma was a judge for the prize paper. Dr. Elizabeth attended the Kerala Chapter of IAPM in Calicut in March 1988.

Training of staff

Dr. Elizabeth K. Abraham underwent six months training in tumour histopathology/cytology in Tata Memorial Hospital Bombay from March to Aug. 1987. She also attended a workshop on aspiration cytology of breast & prostate gland at Sethe G. S. Medical college & KEM Hospital Bombay on 1-8-87 conducted by Indian Academy of Cytologists.

Papers presented & published:

Dr. Elizabeth K. Abraham presented a case report on "Immunoblastic lymphoma of breast" at Kerala chapter meeting of IAPM held in January 1987 in Medical College, Trivandrum. Dr. Elizabeth K. Abraham presented a slide quizz on histopathology & cytology in the Kerala Chapter of IAPM in Kottayam in Nov. 87. Dr. Elizabeth K. Abraham presented a paper on Bone marrow Biopsy in Non Hodgkins Lymphoma in the Annual conference of IAPM held in Hyderabad in Dec. 1987. This paper was based on her work at Tata Memorial Hospital Bombay during her training period there.

Sri. R. Murali, Cytotechnologist published three articles in Malayalam in Vijnanakairali as a means of cancer education to public.

1. What is cancer Education? How? in vijnanakairali of April-May 1987.
2. "Tobacco-the danger of third world" in Vijnanakairali of Aug.-Sept-1987.
3. The deadly disease in Malayalam in MED-LAB-TECH Janu. 1988.- A quarterly Bulletin of Kerala Government Medical Laboratory Technician Association.

Other Activities

The cytology Division helped and co-operated in the activities of the early cancer detection centres of Ernakulam and Palghat.

The staff of this division also co-operated and participated in the various cancer detection camps organised by the RCC, National Service Scheme, and other voluntary organisations and were given facilities to collect cervical smears & FNAC at the camp sites.

DIVISION OF RESEARCH

1. Prof. A. Joseph : Officer-in-Charge
2. D. Prabha Balaram : Associate Professor
3. Dr. K. K. Vijayan : Lecturer
4. Mr. Thomas Abraham : Scientific Officer
5. Mr. Raveendran Ankathil : Scientific Officer
6. Mrs. B. Padmavathy Amma : Technical Officer

The research activities of the division centered round the biochemistry, immunochemistry, cytogenetics and immunological aspects of human cancers as in the previous years.

Lectin isolation from various plant seeds, assessment of their tissue binding capacity and characterisation formed the major work in biochemistry. 25 plant products were collected for lectin isolation. The preliminary screening for Lectin activity was carried out by the method of Vijayakumar and Forrester (1986). The seven plant seeds which gave positive results were studied for further sugar inhibition by hemagglutination. The lectin from the seeds of *Trichosanthus anguina* (snake gourd) was found to agglutinate human red cells of the A, B, and O groups upto a titre of 16000 using a sample of concentration of 1mg/ml. Purification by affinity chromatography on immobilised N-Acetyl-D-galactosamine and carbohydrate analysis by GC-MS detected the presence of D-glucosamine; glucose and mannose in this lectin.

The use of Jack Fruit Lectin (JFL)-HRP complex as histochemical probe was assessed in lymphoreticular disorders, thyroid carcinoma and breast carcinoma. The analysis and evaluation of histochemical studies have been carried out in collaboration with Dr. Joy Augustine, Asst. Prof. of Pathology, Medical College, Trivandrum. In lymphoreticular disorders, the binding pattern of JFL-HRP was studied in paraffin sections of the following:

1. Non-Hodgkin's Disease (10) of which 6 belonged to diffuse lymphoma and 4 to follicular lymphoma.

2. Hodgkin's Disease (8) - 6 cases of lymphocyte predominant mixed cellularity and 2 cases of lymphocyte depletion type. 3. Granulomatous lymphadenitis (2) and, 4. Reactive follicular hyperplasia (2). Imprint smears were used for assessment of the binding pattern in Reactive follicular hyperplasia (4), Follicular Lymphoma (5), Granulomatous lymphadenitis (6), and diffuse lymphoma (3). The observations revealed a consistent nature of JFL binding to histocytes suggesting that this can be used as a marker in the diagnosis of a true histiocytic neoplasm. Further confirmation using enzyme markers for histiocytes should be carried out. An inconsistent pattern of binding on the noncleaved cells and immunoblasts was noticed. This could probably be due to the non B cell nature of these cells and further confirmation using T cell markers would be necessary to identify these cells.

Studies of JFL binding on paraffin sections from various thyroid lesions such as multinodular goitre (10), Hashimoto's thyroiditis (10), follicular adenoma (20), Follicular carcinoma (20), Medullary carcinoma (10), Pappillary carcinoma (10), Thyroid aspiration smears (10) and normal thyroids (10). The binding patterns revealed that JFL could bind to these tissues. Further work up using lectins with different sugar specificities would yield more information on the cell surface changes in neoplasia.

Jack Fruit Lectin binding has also been done on breast cancer tissue sections (23). This is being analysed for assessment of binding pattern.

The overall results suggests that pattern of JFL binding can be used as one of the diagnostic tools in the identification of histiocytic neoplasms and lymphoreticular disorders.

Immunological research continued, focussing on the evaluation of cell mediated and humoral parameters in cancer patients. Depressed natural killer cell activity and lymphocyte transformation responses were seen in patients with cancer of the uterine cervix. This was further depressed following radiation therapy. Reattainment of pretreatment levels was related to initial tumour load. Here in vitro immunomodulation

with alpha interferon and interleukin 2 resulted in high levels of cytotoxic and transformation responses, thus emphasising the potential role of Biological Response Modifiers in Cancer Therapy. Yet another significant finding was the increased generative capacity of a Con A induced suppressor cell population. This could be one of the immuno-suppressive factors associated with malignancy. These cells were found to be increased in patients following radiotherapy; the increasing frequency being related to a large initial tumour load. Generation of interleukin 2 on stimulation of patients lymphocytes with PHA remains within normal limits in patients with early and moderate advanced cancers. The population of helper and suppressor T cells following radiotherapy was also stage dependent with the later cell dominating in patients with extensive disease.

Humoral immunity parameters included the characterisation of antitumour antibodies and the search for specific blocking factors of cellular immunity. A preliminary study carried out in patients with squamous cell carcinoma of the oral cavity demonstrated presence of circulating antitumour antibodies directed against the cytoplasmic components of the oral cancer cells. Inhibition with anti HSV antibodies revealed the antibodies to be directed against antigen/s other than HSV commonly seen in patients with cancer of the oral cavity. Eighty per cent of the sera from oral cancer patients (220) showed positivity of the sera from the same patient (autologous system-13) on fluorescence on heterologous oral cancer cells. Use of cell smears and serum from the same patient (autologous system-13) reduced this positivity to about 60% when neat serum was used. This positivity was further reduced to about 40% when dilutions of the sera were used suggesting the presence of a number of nonspecific antibodies the nature of which has not been identified. Work is in progress with the aim of elucidating a titre of the antibody in the autologous system which might identify tumour specific antibodies and evaluating. Preliminary work on the analysis of specific blocking factors was carried out using different antibody fractions and immune complexes in oral cancer (5) and cervix cancer (3). Immune complexes and immunoglobulin fractions were isolated using gel chromatography and PAGE from pooled serum of oral and cervix cancer patients. Addition of these components suppress the immune

response to varying degrees. Earlier studies revealed circulating immune complexes to be elevated in cancer patients irrespective of the stage of the disease. Work on the fractionation of the immune complexes as well as their role in subverting the immune response is currently going on.

In the field of cytogenetics, emphasis was given to cytogenetic studies in lymphomas and oral cancer and the effect of different doses of radiation on cytological abnormalities in mice. Studies carried out in the tissues of patients with squamous cell carcinoma of the oral cavity (60) revealed population of cells with abnormal karyotypes. Abnormalities in the chromosome number ranging from 36-92 were observed in these cases. Marker chromosomes were present in 3 cases. Gains of chromosome numbers were observed in group C, E, F, and G whereas losses of chromosomes were more consistently observed in groups A&B. Chromosome studies were carried out in 49 cases of lymphomas and 21 cases of Hodgkin's Disease and 28 cases of Non-Hodgkin's Disease. In Hodgkin's lymphomas chromosome numbers in the triploid range were observed. Out of the 28 cases of NHL, chromosome abnormalities were observed in 11 cases (39.2%). Gains of chromosome numbers 12, 7 & 21, loss of chromosomes 6 & 13 were the most common abnormalities.

In studies assessing the effect of different doses of gamma radiation in mice, cytological abnormalities were noticed in the bone marrow cells. Increased number of micronuclei, polyploidy, nuclear lesions, clumping of the chromosomes, enlargement of cells were the predominant findings. Cytotoxic effects of various doses of Largactyl administered to the animals is being assessed. The cytological changes on administration of Largactyl alone or in combination with radiation is also being assessed.

Award:

1. T. Vijayakumar, Senior Research Officer was awarded **Raja Ravi Sher Singh of Khalsia Memorial Cancer Research Award - 1987**, (Awarded by the Indian Council of Medical Research, New Delhi for outstanding work done in the field of Cancer Research).

- Mr. Sanjeevkumar was awarded Ph. D. Degree by Kerala University.

Teaching:

Teaching activities include weekly journal club cum seminar on various aspects of cancer and thesis guidance and supervision. Three M. D. thesis were completed this year and 6 Ph. D. theses are in progress.

Clinical Laboratory Services:

1. Rutine Investigations	: 1,25,183
2. Haematology	: 73,728
3. Biochemistry	: 35,129
4. Urine, CSF and others	: 16,326
Tumour markers (AFP)	: 30
Serum Immunoglobulins	: 80
Cytogenetics	: 90
VMA	: 30
Lymphocyte Enumeration	: 26
Antinuclear antibodies, cryoglobulins complement levels etc.	: 15

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- Prabha Balaram, M. Radhakrishnan Pillai and Thomas Abraham: Immunology of Premalignant and malignant

conditions of the oral cavity. II. Circulating immune complexes. *Journal of Oral Pathology* 16 (8): 389-391, 1987.

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Conferences Attended:

1. Prabha, B., M. Radhakrishnan Pillai, T. Abraham, N. Hareendran and B. Padmavathy Amma: Active and high affinity rosette forming cells in solid tumours - Influence of serum factors. XIV Annual Conference of India Immunology Society and Symposium on immune deficiencies 1987.
2. Lilarani Vijayaraghavan, Aleykutty and Ravindran Ankathil. Cytogenetic studies in cancer patients on radiotherapy. National Symposium on Radiation Biology, Manipal November, 1987.
3. Ravindran Ankathil, Vijayakumar, T., Vijayan, K. K., Remani, P., Haseena, V. M. and Vasudevan, D. M. Chromosomal abnormalities in squamous cell carcinoma of the oral

cavity. 13th Asian Pacific Dental Congress, New Delhi, January 1988.

4. M. Radhakrishna Pillai, Prabha Balaram, T. K. Padmanabhan, Thomas Abraham and M. Krishnan Nair. Immunobiology of untreated malignant cervical neoplasia. 8th Asia Pacific Cancer Conference, September 1987, Seoul, Korea.
5. Vijayan, K. K. and Krishnaswamy, N. R. A study of the reaction of N-bromosuccinimide on osthon. XXIII Annual Conference of the Indian Chemical Society, 1987.
6. Vijayan, K. K., 4th National Symposium on Mass spectrometry Indian Institute of Science, Bangalore, January 1988.
7. T. Vijayakumar and C. K. Jayaram Panicker. Immunology of Solid Tumours. 5th National Cancer Conference, Pune, 1987.

Project	Agency	Investigators
1. Isolation & Purification of specific Plant lectins and their use in the diagnosis and treatment of cancer.	ICMR 1986-89	Dr. M. Balaraman Nair Dr. M. Krishnan Nair Mr. T. Vijayakumar Dr. K. K. Vijayan
2. Immunodiagnosis of oral cancer using antitumour antibodies.	Dept. of Science, Technology & Environment, Kerala 1987-1990	Dr. Prabha Balaram Dr. Thomas Cheriyan Dr. Lalitha Bai Dr. K. T. Sreelatha
3. Major Blood groups in human malignancies	Dept. of Science Technology and Environment, Kerala, 1986-1989.	Dr. M. Krishnan Nair Dr. Prabha Balaram

- | | | |
|--|--|---|
| 4. Isolation, Purification of Immune complexes from sera of cancer patients. | DSTE, Kerala State 1987-90 | K. K. Vijayan
T. Vijayakumar |
| 5. Synthesis of anti-tumour peptides. | In collaboration with Kerala University, DSTE, Kerala State 1988-90 | Dr. P. K. Rajan (Kerala University),
K. K. Vijayan |
| 6. Cytogenetic Studies in patients with congenital disorders. | In collaboration with Paediatric Dept., SAT Hospital SAT Endorsement, 1987 | Mr. Ravindran Ankathil |
| 7. Cytogenetic studies in hematological malignancies | DSTE, Kerala State, 1987-89. | Mr. Ravindran Ankathil
Dr. M. Krishnan Nair
Dr. Joy Augustine |

DIVISION OF MEDICAL RECORDS AND STATISTICS AND HOSPITAL CANCER REGISTRY (N. C. R. P.)

Mr. P. Gangadharan	— Associate Professor
Dr. R. Sankara Narayanan	— Assistant Professor
Mr. S. Muraleedharan Nair	— Medical Statistician
Mr. R. Raveendran Nair	— Medical Records Officer
Mrs. G. Padmakumari Amma	— Senior Research Fellow

During the year 1987, the new case registrations in the out patient department numbered 4957 which was 7% more than the previous year.

The percentage of cases with microscopic confirmation was 85. The site distribution of cases is presented elsewhere in the report.

Patient statistics 1987

Total New registrations	: 4933
No. of Cancer cases	: 4394*, 89% of total new registrations.
Males	: 2363
Females	: 2031
Sex Ratio	: 1.2 : 1
No. of benign tumors	: 59
All other & non cancer cases	: 503
Inpatient admissions	: 3242
Average daily attendance	: 131
Deaths in the hospital	: 165
No. of follow up post cards sent	: 5863

* includes double sites and previous year's nonmalignant cases turned malignant in 1987.

The leading cancers continue to be the smoking related in men i.e. oral cavity and pharynx, lung, larynx and in women cervix, breast and oral cavity are the leading cancer sites. They highlight the role of tobacco use prevention and also the role of pap smear screening and self examination. Follow-up of cancer patients is an important activity and every effort has been made to keep the follow-up rate as high as possible.

Regular efforts to evaluate and maintain the quality of record keeping is made by group discussions with other specialists. The Medical Record Department staff are at present involved in several patient service activities like treatment cost certification, travel concessions etc. The medical records are constantly used by the staff of Regional Cancer Centre and Medical College Hospital for clinical research activities.

Since August 1987, the peripheral out-patient clinic conducted at the Early Cancer Detection Centre has placed additional responsibility for record maintenance staff. The medical records are transferred to Ernakulam and retrieved after follow up clinic. Every month almost 100 case papers are thus transferred.

THE HOSPITAL CANCER REGISTRY, ICMR PROJECT

The hospital Cancer Registry, Medical College Hospital, Trivandrum is in its 6th year of functioning. The current review of the 1986 incident cases will be reported in the annual review meeting to be held in Bhopal in November 1986.

The registry covers the cancer cases seen in the Medical College Hospital, Sree Avittom Thirunal Hospital, the Dental Clinics and the Regional Cancer Centre. Plans are underway to establish a population cancer registry for the city of Trivandrum.

OTHER SCIENTIFIC ACTIVITIES

The 3rd Tumour Registrars Training Programme was conducted from April 27 to May 8, 1987. The course was inaugurated by Sri. T. N. Krishnan, Director, Centre for Development Studies, Trivandrum. The programme was of 10 days duration. Registry personnel working with various registries

participated. There were 23 trainees. The course director was Dr. Calvin Zippin Director, Cancer Registry, San Francisco. Other Foreign Faculty included Dr. John Young National Cancer Institute Bethesda and Ms. Diana Lum from San Francisco. The staff from Regional Cancer Centre and Medical College Hospital participated as faculty. The next programme is planned to be held in 1988, subject to the availability of funds for travel of U. S. Faculty.

Dr. M. Krishnan Nair attended the meeting of the International Association of Cancer Registries at Copenhagen and presented a paper on the "Role of Vegetarian Diet in Oral Cancer Prevention".

Mr. Gangadharan participated in the Meetings of International Association of Cancer Registries held at Copenhagen in August 1987 and presented a paper on Cancer of the Thyroid. He also presented two papers in the International Epidemiology Association Meeting at Helsinki. The papers presented were (1) Epidemiology of Oral Cancer and (2) Epidemiology of Cervix Cancer.

TRAINING

Dr. R. Sankara Narayanan was awarded a 6 months WHO fellowship to study Epidemiology at Pittsburg Cancer Institute, Pittsburg from September 1987.

Mr. Muraleedharan Nair was awarded a British Council Fellowship for one year to undergo M. Sc. course in Medical Statistics at the London School of Hygiene and Tropical Medicine from September 1987.

Mr. Rajasekharan Nair and Mr. B. Sreekumar attended the 3rd Tumor Registrars Training Programme.

RESEARCH PROJECTS

Under an ICMR grant, a collaborative epidemiology project has been initiated. The Stomach Cancer Epidemiology Project is currently undertaken as a collaborative project between

Cancer Institute, Madras, Population Based Cancer Registry
Bombay and the Hospital Cancer Registry, Trivandrum.

Our Needs:

We have accumulated more than 25,000 cancer patient records and this forms a veritable treasure for clinical research. But accurate analysis of this massive data can be undertaken only by using a computer.

REGIONAL CANCER CENTRE, 1987.

10 Leading Cancer sites

MALE		FEMALE	
No.	%	No.	%
Lung	282 11.9	Cervix uteri	505 24.1
Buccal Mucosa & Palate	271 11.5	Breast	411 20.0
Tongue	174 7.4	Buccal Mucosa & Palate	135 6.6
Oesophagus	133 5.6	Ovary	105 5.1
Oropharynx	127 5.4	Tongue	82 4.0
Brain	99 4.2	Thyroid	76 3.7
Larynx	88 3.7	Brain	56 2.7
Liver	82 3.5	Alveoli	55 2.7
Stomach	77 3.3	Sec. Other specified sites	38 1.8
Hypopharynx	71 3.0	Vagina, Vulva	35 1.7
	59.5		73.1

REGIONAL CANCER CENTRE, SITE DISTRIBUTION OF CANCER CASES — 1987

ICD-9	Mal. Neoplasm of	Male		Female		Total		Sex Ratio M:F
		No.	%	No.	%	No.	%	
140	Lip	14	0.6	17	0.8	31	0.7	0.8:1
141	Tongue	174	7.4	82	4.0	256	5.8	2.1:1
142	Major Salivary Glands	17	0.7	11	0.5	28	0.6	1.5:1
143	Alveoli	49	2.1	56	2.7	104	2.4	0.9:1
144	Floor of Mouth	34	1.4	7	0.3	41	0.9	4.9:1
145	Buccal Mucosa	271	11.5	135	6.6	406	9.2	2.0:1
146	Oropharynx	127	5.4	10	0.5	137	3.1	12.7:1
147	Nasopharynx	22	0.9	19	0.9	41	0.9	1.2:1
148	Hypopharynx	71	3.0	15	0.7	86	2.0	4.7:1
149	Other and Ill-defined sites	10	0.4	1	0.1	11	0.3	10.0:1
150	Oesophagus	133	5.6	30	1.5	163	3.7	4.4:1
151	Stomach	77	3.3	23	1.1	100	2.3	3.3:1
152	Small Intestine	3	0.1	—	—	3	0.1	—
153	Colon	23	1.0	12	0.6	35	0.8	1.9:1
154	Rectum, rectosigmoid Jn. & anus	29	1.2	28	1.4	57	1.3	1.0:1
155	Liver	82	3.5	23	1.1	105	2.4	3.6:1
156	Gall Bladder etc.	2	0.1	2	0.1	4	0.1	1.0:1
157	Pancreas	17	0.7	8	0.4	25	0.6	2.1:1

ICD-9 Mal. Neoplasm	Male		Female		Total		Sex Ratio
	No.	%	No.	%	No.	%	M:F
158 Retroperitoneum	8	0.3	1	0.1	9	0.2	8.0 : 1
160 Nasal cavity etc.	25	1.1	11	0.5	36	0.8	2.3 : 1
161 Larynx	88	3.7	3	0.1	91	2.1	29.3 : 1
162 Lung	282	11.9	31	1.5	313	7.1	9.1 : 1
163 Pleura	3	0.1	—	—	3	0.1	—
164 Mediastinum etc.	6	0.3	2	0.1	8	0.2	3.0 : 1
170 Bone	33	1.4	23	1.1	56	1.3	1.4 : 1
171 Connective & other soft tissue	48	2.0	26	1.3	74	1.7	1.8 : 1
172 Malignant Melanoma	7	0.3	9	0.4	16	0.4	0.8 : 1
173 Skin	28	1.2	16	0.8	44	1.0	1.8 : 1
174 Female breast	—	—	411	20.2	411	9.4	—
175 Male breast	6	0.3	—	—	6	0.1	—
179 Uterus Nos	—	—	2	0.1	2	—	—
180 Cervix	—	—	505	24.9	505	11.5	—
181 Placenta	—	—	2	0.1	2	—	—
182 Body Uterus	—	—	18	0.9	18	0.4	—
183 Ovary	—	—	105	5.2	105	2.4	—
184 Vagina, Vulva	—	—	35	1.7	35	0.8	—
185 Prostate	35	1.5	—	—	35	0.8	—
186 Testis	28	1.1	—	—	28	0.6	—
187 Penis	30	1.3	—	—	30	0.7	—
188 Urinary bladder	30	1.3	7	0.3	37	0.8	4.3 : 1
189 Kidney	19	0.8	9	0.4	28	0.6	2.1 : 1
190 Eye	9	0.4	4	0.2	13	0.3	2.3 : 1
191 Brain	99	4.2	56	2.8	155	3.5	1.8 : 1
192 Nervous system NOS	5	0.2	5	0.2	10	0.2	1.0 : 1
193 Thyroid	39	1.7	76	3.7	115	2.6	0.5 : 1
194 Endocrine glands (other)	6	0.3	7	0.3	13	0.3	0.9 : 1
195 Other ill defined sites	6	0.3	13	0.6	19	0.4	0.5 : 1
196 Lymphnodes	57	2.4	24	1.2	81	1.8	2.4 : 1
197 Sec. Resp. & Digestive	18	0.8	14	0.7	32	0.7	1.3 : 1
198 Sec. Other specified	47	2.0	38	1.9	85	1.9	1.2 : 1
199 Unknown Primary	6	0.3	6	0.3	12	0.3	1.0 : 1
200 Lymphosarcoma etc.	20	0.8	15	0.7	35	0.8	1.3 : 1
201 Hodgkins disease	41	1.7	8	0.4	49	1.1	5.1 : 1
202 Other Lymphoid & Histic cytic tissue	67	2.8	20	1.0	87	2.0	3.4 : 1
203 Multiple Myeloma	16	0.7	12	0.6	28	0.6	1.3 : 1
204 Lymphoid Leukaemia	60	2.5	24	1.2	84	1.9	2.5 : 1
205 Myeloid Leukaemia	36	1.5	14	0.7	50	1.1	2.6 : 1
207 Other specified leukaemia	1	—	1	0.1	2	—	1.0 : 1
208 Leukaemia of unspecified cell type 1	—	—	—	—	1	—	—
140-208 All Sites	2363	100	2031	100	4394	100	1.2 : 1

DIVISION OF COMMUNITY ONCOLOGY

Dr. Babu Mathew

: Associate Professor

During the year under report this division played a major role in implementing the main objectives of the Regional Cancer Centre. Viz., Prevention, Control and early detection of cancer. Thus our activities comprised mainly, health education and generation of software for health education, cancer awareness and detection programmes by the National Service Scheme Volunteers of the Universities of Calicut and Kerala, re-orientation training for medical and paramedical personnel and research on prevention and Control of Cancer at the Community level. Perhaps in India this centre played a pioneer's role in the utilisation of college students and basic health workers for Cancer Control activities.

A. Health Education:

Attempts were made to spread the messages on Cancer Control through various media. The following articles were published in the leading dailies and magazines of Kerala

<i>Sl. No.</i>	<i>Name of the article</i>	<i>Name of the paper/ magazine</i>
1.	Cancer Rogam	Mathrubhumi
2.	Vayilae Cancer	Nazarath Family Helper
3.	Prevention of cancer	Samarpanam
4.	Diet changes to cure cancer	The Hindu
5.	Cancer Rogikalute Asha Kendram	Kumari Varika
6.	Prevention is better	The Hindu
7.	Campaign against cancer makes impact	The Hindu

Through All India Radio, Trivandrum during 87-88, the following were broad cast.

1. Role of Social Organisations in Prevention of Cancer (Talk)
2. Cancer Prevention (Talk)

3. Hazards of tobacco usage (Discussion)
4. Importance of Oral Hygiene (Talk)

In addition early warning signs of cancer and anti-tobacco slogans were broadcast as fillers in between programmes. Two new programmes were telecast during this year.

1. Cancer Breast
2. Cancer Care For Life (re-telecast)
3. Cancer tongue

Display boards:

A set of 12 display boards were developed on common cancers seen in Kerala and methods of early detection. These along with specimens of cancer affected organs, and leaflets presented in 7 Exhibitions, created very convincing impression to the general public.

Books for Health Education:

Dr. Babu Mathew prepared and published a guide book with 32 colour plates "on the Detection of Oral Cancer" mainly for the use of health workers, utilising ICMR grant. Technical help were rendered to 5 Units of NSS and Rajagiri Institute of Social Sciences for generating leaflets on various aspects of cancer and "Cancer Care For Life" programme.

The Video programmes on Cancer prevention and control as well as Regional Cancer Centre were duplicated and given to NSS Units and other voluntary organisations for conducting cancer awareness programmes.

Trainings:

Two days training was given to the female health supervisors working in the Health Services Department of Kerala on early detection of oral and cervical cancers. 32 persons attended. A batch of 30 health workers working in Private Sectors were also trained at Nazarath Asram, Othara.

Cancer Awareness Programmes:

During 1987-'88 Twenty seven cancer awareness programmes were held at various places the details of which are given below:

CANCER AWARENESS PROGRAMMES 1987-88

No.	Date	Name of the sponsor	Place held	Approximate No. attendees
1.	13-4-87	N. S. S. Unit Medical College Trivandrum	Attipara	200
2.	22-4-87	Rotary Club Quilon	Quilon	60
3.	3-5-87	S. N. Samskarika Samithi	Chennilode	75
4.	25-7-87	N. S. S. Programme Officers	Loyola College Trivandrum	50
5.	13-8-87	N. S. S. Volunteers of Quilon District	Fathima College Quilon	200
6.	21-8-87	N. S. S. Unit Ayurveda College	Trivandrum	120
7.	28-9-87	N. S. S. Unit St. Xaviers College, Thumba	Thumba	120
8.	28-9-87	N.S.S. Unit St. Xaviers Thumba	Vettinthara	200
9.	30-9-87	N.S.S. Unit, University Kariyavattom	Kariyavattom	60
10.	8-10-87	Pukavali Nirulsahana Samithi	V.J.T. Hall Trivandrum	400
11.	11-10-87	INTUC Workers	Neyyar Dam	75
12.	16-10-87	N. S. S. College for Women N. S. S. Unit	Karamana	70
13.	21-10-87	Mar Ivanios College N. S. S. Unit	Nalanchira	120
14.	30-10-87	Red Cross Society, Palai	Palai	50

15.	14-11-87	T. K. M. College of Arts N. S. S. Unit	Quilon	100
16.	10-12-87	P. G. Hostel Union	Kariyavattom	60
17.	11-12-87	Govt. Arts College N. S. S. Unit I	Palayalam	70
18.	19-12-87	S. N. College Chempazhandi N. S. S. Unit	Chempazhandi	60
19.	19-12-87	Govt. Arts College N. S. S. Unit II	Thycaud	50
20.	20-12-87	S. N. College Varkala N. S. S. Unit	Varkala	60
21.	23-12-87	St. Gregorios College N. S. S. Unit	Pathanapuram	120
22.	23-12-87	N. S. S. College Nilamel N. S. S. Unit	Chadaya-mangalam	120
23.	29-12-87	M. S. M. College N. S. S. Unit	Kayamkulam	120
24.	11-1-88	University College N. S. S. Unit	Trivandrum	60
25.	14-1-88	Govt. Law College N. S. S. Unit	Mukkola	200
26.	10-3-88	N. S. S. Unit. Govt. Arts College	K. S. R. T. C. Workshop Pappanamcode	400
27.	10-3-88	N. S. S. Unit I Govt. Arts College	K. S. R. T. C. Thampanur Station	75

CANCER DETECTION CAMPS

15 camps were held during the period under report. Among these camps the one organised by RED CROSS Society Palai

was most successful. The Asst. Surgeons working in various PHC of Meenachil Taluk screened the out patients attending the PHCS and referred *suspicious cases* to the camp. 19 cases were detected in this camp above.

Cancer Detection Camps 1987-88

Sl. No.	Organisation Sponsoring the camp	Place	No. of cases detected
1.	N.S.S. Unit Medical College Tvm.	Attipara	Nil
2.	Rotary Club Trivandrum (South)	Ramapuram	2
3.	Rotary Club, Trivandrum (South)	Chullimanoor	Nil
4.	E.C.D.C. Cochin	Edakunni	2
5.	Nisar Rahim Trust	Quilon	7
6.	N. S. S. Unit, Medical College Tvm	Kochuveli	Nil
7.	National Integration Society	Poovachal	4
8.	N.S.S. Unit S.N. College Varkala	Varkala	1
9.	N.S.S. Unit D. B. College, Sasthancotta	Sooranade	1
10.	Red Cross Society Meenachil Taluk Palai		19
11.	E. C. D. C. Cochin	Shertallai	4
12.	N. S. S. Unit Government Arts College	Poundkulan Coloney	2
13.	D. H. S. Kerala State	Mandrow Thuruthu	7
14.	K. S. R. T.C.	K.S.R.T.C. Workshop Pappanamcode	2
15.	MES. Womens Organisation	Bheemapally	Nil
	Total new cases detected		41

RESEARCH ACTIVITIES:

A. Collaborative Research Projects with University of British Columbia Environmental Carcinogenesis Unit

These studies begun three years ago in collaboration were continued and made rapid progress with E. C. Unit, University of British Columbia, Vancour, Canada. Some of the previous Studies were terminated sucessfully and a few new studies were taken up during the current year.

The ongoing projects are as follows:

1. Chemoprophylaxis of oral leukoplakia using Beta Carotene.
2. Reducting of Micronucleated epithelial cells in tobacco chewers with administration of Beta- Carotene, Vitamin A and Placebo.
3. Dietary differences as a positive etiological factor for the differences in the prevalence of oral leukoplakia in two ethnic groups (Brahmins Vs. Fishermen).
4. The nature of hydroxylated D. N. A. in betelnut chewers.
5. Estimation of N-7 methylation of DNA in oral cancers leukoplakias and controls.
6. Comparison of Protective effect of Red Pvlm Oil Vs. Beta-Carotene on the oral mucosa of heavy chews.
7. Estimation of the levels of Beta-Carotene to maintain the Protective effect on oral mucosa of chewers after administration of heavy dose of Beta-Carotene.
8. Estimatiop of Nitrosamine content of the uterine cervical fluid of tobacco chewers.

B. Studies on Primary and Secondary Prevention of Oral Cancer.

During the year an ICMR sponsored project Feasibility of utilising multipurpose health workers for Primary and Secondary

prevention of oral cancer in rural areas was commensed. A sum of Rupees 93,300 has been allotted for the current year.

Prof. A. Joseph (Retd. form Community Medicine Dept., Medical College, Trivandrum) has been appointed as co-ordinator for this project.

The rural areas of Trivandrum district are divided into two halves. The health workers belonging to the six northern developmental blocks are trained to carry out early detection of oral cancer (Secondary Prevention) and undertake Primary prevention of oral cancer by educating the public the harmful effects of tobacco. The health workers working in the 6 southern blocks are controls. Though the project sanction was communicated in July 1987, the activities commenced from January 1988 only because of administrative bottle necks. The training guide was published in March 1988. The project was extended for one year from March 1988.

C. Collaborative studies with British Commonwealth Foundation

A combined project with the British Commonwealth foundation, Research division of Regional Cancer Centre and Community Oncology division on various aspects of oral submucous fibrosis was finalised during the current year. A total of 72 patients were identified from cancer detection camps and other study areas. The actual work is not yet flagged off due to various reasons.

Conferences attended, Papers presented, Published and other academic activities.

Conferences attended and Papers Presented:

1. Dr. Babu Mathew. "The Prevention and control of Oral Cancer." Dr. Jacob Zachariah Memmorial Oration, 1987, delivered during XX Annual State Conference of the Indian Dental Association 29-11-1987.
2. Dr. Babu Mathew attended the 3rd Biennial Conference of the Indian Society of Oncology Bangalore, Feb. 11-13, 1988.

3. Dr. Babu Mathew attended the International workshop on Prevention and Control of Cancer held at The Kidwai Memorial Institute of Oncology, Bangalore, Feb. 1988.

4. Stich H. F., Rosin, MD., Hornby A. P., Babu Mathew, R. Sankaranarayanan and M. Krishnan Nair. Remission and inhibition of new oral leukoplakias in tobacco arecanut chewers by oral administration of Beta-carotene and vitamin A. Third International conference on Prevention of human cancer, Tuscon USA, January 1988.

5. Stich, H. F., Rosin M. P. Hornby, A. P., Babu Mathew, R. Sankaranarayanan and M. Krishnan Nair. Human Intervention studies with Caratenoids 8th International symposium on caratenoids Boston, July 1987.

Papers published:

1. Babu Mathew. Prevention and Control of Oral Cancer, Kerala Dental Journal 10 : 113-120 (1987).
2. Stich H. F., Hornby A. P., Mathew, B., Sankaranarayanan, R. and Nair, M. K. Response of Oral leukoplakias to administration of vitamin A. Cancer Lett. 40 : 93-101 (1988).
3. Stich, H.F., Hornby, A.P., Mathew, B., Sankaranarayanan, R. and Nair, M.K. Remission and Prevention of new oral leukoplakias in tobacco / betelnut chewers following short-term administration of Vitamin. A. Proc. Am. Assoc. Cancer Res. 29 : 208 (1988).

Dr. Babu Mathew was visiting Professor in Oral Medicine and Oral Pathology in Govt. Dental College, Goa. He was elected Senior Vice-President of the Indian Academy of Oral Medicine.

Dr. Babu Mathew served as a member of the Project Advisory Committee (PAC) and Project Recommendation Committee (PRC) of the Indian Council of Medical Research.

Miss. Ajitha, S., a candidate for M.S.W. from Loyola College of Social Science, Trivandrum has done her dissertation "Observations in to the problems of Oral Cancer Patients" under the guidance of Dr. Babu Mathew.

Acknowledgements:

We wish to thank Prof. M. Salihu, Programme Co-ordinator, N. S. S. Kerala University Prof. Sadasivan, Programme Officer, Govt. Arts College, Trivandrum, Prof. M. Premakumaran, Programme Officer, S. N. College Alathur and all other programme Officers of the Colleges who had taken up cancer Prevention as one of their activities. Thanks are also due to the Parish Priest of Vettucadu, Veli, Valiyathura and Poonthura for giving us all possible help to work among fishermen. Dr. V. Rugmin, DMO, Trivandrum and Mrs. B. Lalithambika, Mass Education Officer, Trivandrum deserve special mention for their excellent co-operation in the KMR Research Project. We are indebted to all the voluntary organisations who have sponsored Cancer Detection Camps and awareness programmes.

EARLY CANCER DETECTION CENTRE, ERNAKULAM

DR. B. Syamala Kumari — Cytopathologist

The Early Cancer Detection Centre, Ernakulam is now in its third year of dedicated service. The centre, initiated by a Government of India Grant of Rs. 50,000, is managed by a Committee consisting of the District Medical Officer, representatives of the City Corporation, The Rotary Club of Cochin and the Regional Cancer Centre, Trivandrum through the Cytopathologist, who is the officer-in-charge of the Centre.

Prevention and Detection of Cancer in its early and curable stages are the most cost effective and feasible strategy of cancer control. It is estimated that in our population one third of all cancers is preventable, another one third is early detectable and for the remaining one third only treatment is possible. Thus it is only logical that more stress be placed on Prevention and Early Detection of cancer. There are several socio cultural factors which are impediments to a systematic effort of Cancer screening and surveillance of the population at large. Poor economic standards, lack of health awareness especially on cancer, paucity of trained professionals and technical facilities are some of the factors present in our population.

In its cancer control efforts in the district, the Early Cancer Detection Centre, Ernakulam has undertaken several activities. They include (A) Routine Physical Examinations and Pap Smear tests, (B) Conducting Cancer Awareness Programmes using audio visual aids, & (C) Conducting Cancer Detection Clinics and Camps. These activities during the year were as under-

ROUTINE EXAMINATIONS

Routine Physical Examination and Smear Reporting:

This includes persons who attend the Early Cancer Detection Centre voluntarily for check up and those who are referred by various clinicians. There were 3679 such persons who underwent such screening. The detailed break down is shown in this report.

2. CANCER AWARENESS PROGRAMMES

During this year 21 Cancer Awareness Programmes were conducted which were organised by various voluntary and social organisations. These sessions were well attended, and there were question answer sessions & the presentations were supported by visual aids. Block level cancer awareness programmes were conducted in 15 blocks of this district under the joint auspices of each Block Development Officer and the local social organizations, particularly the Mahila Samajams and Arts Clubs.

3. CANCER DETECTION CAMPS AND CLINICS

In addition to the Clidical and Cytology works in this Centre 27 cancer detection camps were conducted in the district during the year. Of these, 12 were Block level cancer detection programmes organised by each block development office and other local social Organisations as per the advice of the District Collector. Camps conducted after health education on cancer had better responses. One inter district camp was also conducted at Parayakadu near Sherthalai in Alleppey District jointly by RCC, Trivandrum and this centre.

Thanks are due to Mr. T. N. Menon, Managing Director Travancore Cochin Cehmicals Ltd. Udyogamandal for his whole hearted support in providing the Company Vehicle for conducting the block level camps. We also express our obligations to Dr. Maya Gopinathan, ESI Hospital, Udyogamandal for her voluntary services in the camps and follow up clinics.

The centre is conducting monthly Cancer Detection Clinics at the Govt. Hospitals of Parur, Angamaly, and Edappally. Cytology specimens taken by the Doctors of the Govt. Hospitals of Thripunithura, ESI Hospital Eloor, and J. N. M. Hospital Udyogamandal were received here for cytodagnosis.

4. PUBLIC EDUCATION THROUGH MASS MEDIA

Two articles were published in the Dailies of Kerala during the period under report.

1. Cancer and treatment — Dr. B. Syamala- Mathrubhumi kumari, Cytopathologist. dt. 21-3-88.
2. The importance of Anti-smoking bill. — K. Raveendran Pillai, Cyto-technologist. Janapatham and reproduced in 29-1-88. Veekshanm, Express and Janmabhumi.

Media coverage was given to the routine activities and special programmes of this centre.

In addition to these, news about the routine check up, Cancer follow up Clinic, free cancer detection camps and other objectives of this centre published by the leading Dailies.

RESUME OF WORK STATISTICS.

1. Total No. of persons screened	— 8335
Male	— 2170
Female	— 6165
2. No. of free cancer detection camps	— 27
3. No. of Cytological smear screening	— 4841
Gynaecological	— 4341
Non-Gynaecological	— 500
4. Cytologically detected cancer cases	— 105
5. Cytologically detected pre-cancerous lesions.	— 118
6. Cancer cases referred to Regional Cancer Centre, Trivandrum for further management.	— 72
7. Proved cancer cases who attended for further advice and or check up	— 83

ROUTINE WORKING AT THE CNETRE:

1. Total No. of persons clinically examined.	—	3679
2. Cytological screening	—	2921
3. Gynaec smears	—	2601
Non-gynae smears	—	320
3. Cytologically detected cancer cases	—	83
Gynaecological cases	—	54
Non-gynaecological cases	—	29
4. Precancerous lesions	—	60
5. Clinically known and treated cases attended for further advice.	—	47

II. FREE CANCER DETECTION CAMPS

1. Total No. of camps conducted	—	27
2. No of persons screened	—	4656
3. Cytological screening	—	1929
Gynaec	—	1740
Non-gynaec	—	189
4. Cytologically detected cancer cases	—	18
Gynaec	—	4
Non-gynaec	—	14
5. Precancerous lesions	—	58
6. Clinically known and treated cases attending camps	—	36

FOLLOW UP ACTIONS

No. of patients advised for follow up	—	2040
No of patients undergone follow up	—	334
Follow up rate	—	16.37%

BREAK UP OF CYTOLOGICALLY DETECTED LESIONS

I. GYNAECOLOGICAL (FEMALE GENITAL TRACT)

1. Normal	—	1076
2. Inflammation	—	2442
3. T. V. Infection	—	156
4. Fungal Infection	—	18
5. Herpes Simplex Viral infection	—	9
6. Inflammation with squamous metaplasia	—	92
7. Inflammation with reserve cell hyperplasia	—	206
8. Inflammation with Mild Dysplasia	—	162
9. T. V. Infection with mild dysplasia	—	56
10. Fungal infection with mild dysplasia	—	3
11. Inflammation with moderate dysplasia	—	21
12. T. V. Infection with moderate dysplasia	—	4
13. HSV with moderate dysplasia	—	1
14. Inflammation with severe dysplasia	—	7
15. Inflammation with atypical squamous metaplasia	—	37
16. TV infection with severe dysplasia	—	2
17. Hyperkeratotic Cervix	—	11
18. Invasive squamous cell carcinoma	—	24
19. Adenocarcinoma	—	2
20. Carcinoma NOS	—	6

21. Carcinoma Recurrence	—	2
22. Radiation Changes	—	4

II. NON-GYNAECOLOGICAL

I. Oral

1. Normal	—	10
2. Benign lesions	—	120
3. Herpes Simplex Viral infection	—	4
4. Squamous cells with mild atypia	—	4
5. Squamous cells with severe atypia	—	30
6. Malignancy, squamous cell carcinoma	—	35
7. Adenocarcinoma	—	1
Radiation Changes	—	6

II. Sputum

1. Non malignant lesions	—	39
2. Malignancy (1) Adenocarcinoma	—	3
(2) Squamous cell carcinoma	—	5
(3) Oat cell carcinoma	—	2
3. Tuberculosis lesion	—	7
4. Herpetic Pneumonia	—	1

III. FLUIDS

1) Ascitic & Peritoneal Fluids

1. Non-malignant lesions	—	6
2. Squamous cell carcinoma	—	1
3. Adenocarcinoma	—	3

2) Pleural Fluid

1. Non-malignant lesions	—	8
2. Adenocarcinoma	—	2

3) Bronchial Washing

1. Non-malignant lesions	—	7
2. Squamous cell carcinoma	—	1
3. Adenocarcinoma	—	2
4. Viral Pneumonia	—	1

4) Gastric Lavage

1. Non-malignant lesions	—	2
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5) Nipple Discharge

1. Non-malignant lesions	—	4
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6) Urine

1. Non-malignant lesion	—	2
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IV. ASPIRATIONS

1) Breast

1. Benign lesions	—	44
2. Inflammatory lesions	—	6
3. Malignant lesions	—	5

2) Thyroid

1. Non-malignant lesions	—	36
2. Malignant Lesions	—	1

3) Lymph Nodes

1. Non-malignant lesions	—	8
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2. Malignant lesions	—	6
3. Inflammatory lesion	—	5
4. Tuberculosis lesion	—	5
4) Endometrial Aspiration		
1. Non malignant lesions	—	3
2. Atypia	—	1
5) Other Sites		
1. Non malignant lesions	—	84
2. Malignancy	—	2

V. PERIPHERAL BLOOD SMEAR

1. Non malignant lesions	—	9
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PERIPHERAL CLINIC OF REGIONAL CANCER CENTRE

In a function presided over by Shri. V. Rajagopalan, Collector, Ernakulam, The Hon'ble Minister of Finance Shri. V. Viswanatha Menon inaugurated the peripheral clinic of the Regional Cancer Centre in the Detection Centre, Ernakulam in August 1987. This is intended for the patients from the northern districts of Kerala for treatment or follow-up and check-up who otherwise would have to come all the way to Trivandrum. With the suitable and adequate infrastructure available at Ernakulam Centre senior staff from Trivandrum visit and conduct the clinics once in a month. Within this short time more than 1,000 patients utilised this facility and on an average more than 100 patients report per month.

EARLY CANCER DETECTION CENTRE, PALGHAT

Dr. Ananda Kamath : Medical Officer-in-charge

Activities:

During the year the centre made rapid progress in various field of activities, especially in conducting Early Cancer Detection Camps, Cancer Related Health Education and Cancer Awareness Programmes in different places in Palghat District, in addition to the routine work.

The list of camps and their details are shown in the following tables. The camps were organised by voluntary organisations and arts and sports clubs in remote villages, to some of these places even access was difficult. Thus most of the beneficiaries were the poor villagers. During these camps, Health Education was given to the people, especially on the warning signals of cancer, preventable cancers, importance of pap test and its easy availability etc. Training was given to the nurses and nursing students who participated in the camps.

The routine work of the institution involved examinations of persons, follow up of old cases, examination of smear taken both in the centre as well as in the camps and management of cancer cases undergoing treatment.

The building in the land donated by M/s. Instrumentation Ltd., is nearing completion and will be commissioned soon.

Acknowledgement:

Thanks are due to Shri. R.G. KINI, General Manager Instrumentation Ltd., and Shri. P. B. Nambiar, Civil Engineer of the Instrumentation Ltd for their sincere efforts in the construction of the building and for other helps.

Thanks are also due to Dr. P. G. Sudharsanan and Dr. Alexander, former DMO's of Palghat district and Dr. Indira Rajagopal Gynaecologist and other Medical Officers and nurses and nursing students for co-operating in all the activities of the centre. We are grateful to Dr. Indira Rajagopal, Civil Surgeon and Gynaecologist, P. H. C. Koppam who attended all camps and rendered invaluable services.

DETAILS OF EARLY DETECTION CAMPS (1987-88)

<i>Sl. No.</i>	<i>Date</i>	<i>Place</i>	<i>Sponsored by</i>	<i>Total patients</i>	<i>Clinically Carcinoma</i>	<i>Cytologically Carcinoma</i>
1	7-4-1987	MATHUR	Rotary & Inner Wheel Club, Palghat	93	5	—
2	7-6-1987	AYAKKAD	Welfare Association Ayakkad	170	2	—
3	19-7-1987	ELAPPULLY	Grama Vikasana Karshaka Samithi Elappully and Giants Group Palghat	350	7	1
4	11-10-1987	E. C. D. C.	Sasthra Sahitya Parisghat, Kanjikode	75	4	—
5	22-11-1987	MARUTHA ROAD	Sasthra Sahitya Parishat, Marutha Road	152	4	—
6	15-12-1987	ALATHUR	N. S. S. Unit, S. N. College, Alathur	195	2	—
7	17-1-1988	KIZHAKKEN-CHERRY	Yuvarasmi Arts & Sports Club Kizhakkencherry	207	1	1
8	14-2-1988	VITHANASSERY	Yuvajana Kala Kayika Samithi Vithanassery	246	5	—
9	21-2-1988	KANNAMBRA	Sruthi Arts & Sports Club	238	2	—
10	13-3-1988	VETTAKKARA	Rashmi Recreation Club Drasyakala Kayika Samithi	241	3	1
11	20-3-1988	MATTUMANDA	Sasthra Sahitya Parishat Mattumanda	299	3	—
12	27-3-1988	VALLIKODE	Gandhiji Smaraka Vayana Sala & Kala Samithi, Vallikode	196	3	1
Total				2462	41	4

LIST OF CANCER AWARENESS PROGRAMMES (1987-88)

<i>No.</i>	<i>Date</i>	<i>Venue</i>	<i>Organisers</i>	<i>No. of participants</i>
1	16-2-1988	Kannambra, Palghat	Sruthy Arts & Sports Club	200
2	18-3-1988	Mattumantha, Palghat	Sasthra Sahithya Parishat	150
3	24-3-1988	Pattanitheruva Palghat	Nehru Yuvajana Kendra	45

DETAILS OF CYTOLOGY TESTS

(1987-88)

Specimen	Male	Female	Total	Grand total
Cervix	R —	63	63	569
	C —	506	506	
Buccal	R 27	8	35	156
	C 82	39	121	
Sputum5	R 3	1	4	4
	C 0	0	0	
Others5	R 3	10	13	40
	C 10	17	27	
Total				
	R 33	82	115	769
	C 92	562	654	

R = Routine in Centre

C = From Camps



Sri. V. Viswanatha Menon
Hon'ble Minister for Finance,
inaugurating the Regional
Cancer Centre's Peripheral
Clinic, attached to the Early
Detection Centre, Ernakulam,
in August 1987.



Sri. A. C. Shanmugha Das, Hon'ble Minister for Health speaking at a function held at S. N. College, Alathur for distributing 'Cancer Care for Life' Policies donated by the N. S. S. Unit to the poor persons.

(L-R:) Sri. C. K. Rajendran M.L.A., Prof. K. Udayakumar, Principal,
Dr. Babu Mathew and Dr. R. G. Kartha Dy. D.M.O., Palghat.



Sri. C. T. Krishnan, M.L.A., Kollenkode inaugurating an Early Cancer Detection Camp at Koduvayoor.

(L-R:) Dr. Rajmohan Nair, Sri. Govindankutty Nair, Panchayat President and Sri. M. P. Bhaskaran, District Magistrate.

COMMUNITY ONCOLOGY – Field is our Laboratory



Indo-Canadian Research Activities:
Field Work in Progress at Fishermen Villages.

CORRELATION (1987-88)

Sl. No.	DETAILS	Carcinoma		Fungus		TOTAL
		In situ	Invasive	Mild Dys		
1.	Normal	-	-	2	2	336
2.	Erosion	-	2	-	-	54
3.	Hypertrophy	-	-	-	-	12
4.	Discharge	-	-	-	-	37
5.	Unhealthy	-	4	-	-	58
6.	Erosion + Unhelathy	-	-	-	-	2
7.	Hypertrophy Unhelthy	-	-	-	-	67
8.	Discharge Unhelathy	1	-	1	-	37
9.	Erosion + Hypertrophy	-	-	-	-	1
10.	Erosion + Discharge	-	-	-	-	5
11.	Hypertrophy + Discharge	-	-	-	-	6
12.	Erosion + Dis Unhealthy	-	-	-	-	5
13.	Hypertrophy + charge + Unhe	-	-	-	-	4
14.	Polyp	-	-	-	-	5
	Total	1	6	3	2	569

ONCOLOGY SEMINARS

<i>Date</i>	<i>Name</i>	<i>Topics</i>
12-4-1987	Dr. N. C. Misra, President, Indian Surgical oncology & Professor of Surgery, King George Medical College, Lucknow.	Chemotherapy of Lymphoma
26-5-1987	Dr. N. W. Johnson Dept. of Dental Sciences, Royal College of Surgeons, London.	Submucous Fibrosis
24-7-1987	Dr. Rajendra Kurup Anderson Hospital and Tumour Institute, Texas, USA	Electron arc therapy for treating post mastectomy patients
16-11-1987	Dr. Sonkodi Istvan Szegd Medical University, Hungary	Cryo surgery in Head and Neck Lesions
17-12-1987	Dr. Price Royal Marsden Hospital Manchester University U. K.	Clinical trials in Oral Cancer
11-1-1988	Dr. Heing Werner Radeke Denmark	Application in staging of Rectal Carcinoma
26-2-1988	Dr. H. F. Stich British Columbia Cancer Research Centre, Vancouver Canada	Chemoprophylaxis of oral cancer
25-3-1988	Dr. F. Takeda Neuro Surgeon & Vice- Director, Saitana Cancer Centre, Japan	Management of Pain
25-3-1988	Mr. George Heidrich WHO Collaborating Centre for Symptom Evaluation, Madison, WISCONSIN, USA.	WHO role in the Management of Pain in Cancer Patients

SPECIAL CLINICS

(multi disciplinary)

In addition to the routine clinics and noon clinics, the following special clinics with the active participation of faculty members from other departments were conducted regularly.

- I. Paediatric Oncology—on all Mondays at 12 noon. Resource persons from other departments are Dr. V. G. Chellam Prof. of Pediatric Pathology, Dr. Mani Ninan, Director & Prof. of Paediatric Surgery, Dr. N. Surendran, Prof. of Paediatric Surgery.
- II. Head and Neck Clinic - All Tuesdays 12 noon. Resource person - Dr. S. Krishnamoorthy, Prof. of E. N. T.
- III. Trophoblastic tumour clinic - All Wednesdays 12 noon. Resource person - Dr. Thomas Chandy, Director and Prof. of Obst. & Gynaecology.
- IV. Clinico Pathological Conference - on 1st Saturday of every month at 11.30 A.M. Resource persons Dr. M. A. Aleykutty Prof. of Pathology & Other staff of Department of Pathology.
- V. Pain clinic — on Thursday at 1 P.M.
Conveners — Dr. Gladys Jeevy and Dr. Paul Sebastian

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

- Dr. Prabha, B. Assoc. Prof. of Cancer Research National Institute of Immunology, New Delhi. - Non-isotopic Immuno assays. April, 1987
- Dr. Gladys Jeevy, Anaesthesiologist VII Southern Interstate Conference of Anaesthetists, Bangalore June, 1987.
- do- Training Programme in Electronic Awareness for Medical Personnel, Trivandrum, October 1987.
- do- 3rd Biennial Conference of Indian Society of Oncology, Bangalore, February, 1988
- Dr. B. Chandralekha, Assoc. Prof. of Cytology IAPM, Kerala Chapter, Alleppey, June, 1987.
- Dr. G. Rajasekharan Pillai, Asst. Prof. Cytology -do-
- Sri. P. Gangadharan, Assoc. Prof. of Cancer Epidemiology International Epidemiology Association, Helsinki, Finland, August, 1987.
- Dr. Thomas Chorlan, Asst. Prof. of Cancer Surgery IX Congress ARO, Srinagar, October, 1987.
- Dr. C. S. Kuttappan, Assoc. Prof. Radiotherapy -do-
- Sri. P. G. Gopalakrishna Kurup, Assoc. Prof. of Radiation Physics -do-
- Dr. V. N. Bhattathiri, Asst. Prof. of Radiotherapy Symposium on Brachytherapy, Varanasi, November, 1987.

Dr. Rajasekharan Pillai, Asst. Prof., of Cytology	IAPM, Kerala Chapter Conference November, 1987
Dr. Elizabeth K. Abraham, Asst. Prof. of Cytology	-do-
Dr. N. Sreedevi Amma, Prof. of Cytology	-do-
Dr. C. S. Madhu, Tutor, Radiotherapy	Endocurietherapy, Hyperthermia and Oncology, Hyderabad, November, 1987
-do-	Annual Conference of the Indian Radiological and Imaging Asso- ciation, Jan. 1988, Coimbatore.
Dr. A. Sudhakaran, Tutor, Radiotherapy	-do-
Dr. C. S. Rafeeka Beegum Asst. Prof. Radiotherapy	National Symposium on Radiation Biology, Manipal, November, 1987.
Sri Ravindran Ankathil Scientific Officer	-do-
-do-	13th Asian Pacific Dental Congress, New Delhi, January, 1988
Dr. R. Gireesan, Tutor, Radiotherapy	National Symposium on Radiation Biology, Manipal, November, 1987.
Dr. Jayaprakash Madhavan, Asst. Prof. Radiotherapy	-do-
Dr. Jamaluddin. M. Tutor trainee in Radiotherapy	-do-
Dr. M. Iqbal Ahmed, Lecturer in Cancer Surgery	New Frontiers in Surgical Oncology, CME, and National conference of Association of surgeons of India, Madras, December, 1987.

Dr. K. K. Vijayan,
Lecturer in Cancer
Research

4th National Symposium on Mass
spectrometry, IISc. Bangalore,
January 1988

Smt. G. Padmakumari Amma,
Senior Research Fellow

A course on personal computers
and their applications.
Trivandrum, January, 1988

PAPERS PUBLISHED/PRESENTED
IN CONFERENCES ETC.

1. Padmanabhan, T. K., Prabha Balaram and Vasudevan, D. M. Role of Levamisole immunotherapy as an adjuvant to radiotherapy in oral cancer. I. A three year clinical follow up. *Neoplasma*, 1987, 34: 627-632.
2. Krishnan Nair, M., Sankaranarayanan, R. and Padmanabhan, T. K. Local Control of Carcinoma of the Oral Tongue by Radium needle implantation. *Endocurietherapy/Hyperthermia Oncology*, 1987, 3: 127-129.
3. Radhakrishna Pillai, M., Prabha Balaram, Padmanabhan, T. K. and Krishnan Nair, M. Monoclonal antibody defined phenotypes of peripheral blood lymphocytes in cancer of the uterine cervix. *American Journal of Reproductive Immunology and Microbiology*, 1987, 14: 141-143.
4. Krishnan Nair, M., Sankaranarayanan, R. and Padmanabhan, T. K. Evaluation of the role of radiotherapy in the management of carcinoma of the buccal mucosa. *Cancer*, 1988, 61: 1326-1331.
5. Krishnan Nair, M., Sankaranarayanan, R., and Padmanabhan, T. K. Preloaded brachytherapy of early cancer of the buccal mucosa. *Endocurietherapy/Hyperthermia Oncology*, 1988, 4: 7-9.
6. Krishnan Nair, M., Sankaranarayanan, R., Padmanabhan, T. K. and Madhu, C. S. Oral Verrucous Carcinoma-Treatment with radiotherapy. *Cancer*, 1988, 61 : 458-461.
7. Thomas Cherian, Paul Sebastian, Iqbal Ahmed, Jayakumar, Sivaramakrishna. A simple technique of primary Reconstruction of lateral defects of the lips - "A better alternative for the Abb-Eslander technique. 5th National Cancer Conf. Indian Assoc. of Surg. Oncol, Pune, Aug. 1987.
8. Thomas Cherian, Paul Sebastian, Iqbal Ahmed, Jayakumar, Sivaramakrishnan. A simple technique for the Reconstruction of the total loss of lower lip following wide excision for Ca - A primary Reconstruction. 5th National Conf. Pune, Aug. 1987.
9. Thomas Cherian, Paul Sebastian, Iqbal Ahmed, Jayakumar, Sivaramakrishnan. "Reconstruction for a functional tongue following Glossectomy for Ca Tongue. IX Congress Assoc. of Radiation Oncologists of India, Srinagar, Oct. 1987.
10. Ramachandran, T. P., Elias, T. S., Kurup, P. G. G. and Davis, C. A. Patient Dose Monitoring in beam therapy with 4MV accelerator. Paper presented in the IX conference on Medical Physics, Trivandrum, Dec. 1987.
11. Elizabeth K. Abraham. Immunoblastic lymphoma of breast. Kerala Chapter meeting of IAPM, Medical College, Trivandrum, Jan. 1987.
12. Elizabeth K. Abraham. Bone marrow Biopsy in Non-Hodgkins Lymphoma. Annual conference of IAPM, Hyderabad, Dec. 1987.
13. Kumari, T. V., Vasudevan, D. M., Ravindran Ankathil, Remani, P. and Vijayakumar. T. Demonstration of HSV- 1 antigen in patients with oral cancer by immunofluorescence and immunoperoxidase techniques. *J. Exp. Pathol*, 1987, 3:75-86.
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15. Prabha Balaram, Radhakrishna Pillai, M. and Thomas Abraham: Immunology of Premalignant and malignant conditions of the oral cavity. II. Circulating immune complexes. *Journal of Oral Pathol*, 1987, 16(8) : 389.
16. Prabha, B., Thomas Abraham, Radhakrishan Pillai, M., Thomas Cherian and Krishnan Nair. M. Anti tumour

- antibodies in oral cancer. A preliminary study. *Journal of Experimental and Clinical Cancer Research*, 1987, 6 (4) : 239-244.
17. Vijayakumar, T., Ravindran Ankathil, Remani, P., Haseena Beevi, V. M., Vijayan, K. K. and Jayaram Panicker, C. K.: Total hemolytic complement (CH 50) and its fractions (C3 and C4) in the sera of patients with carcinoma of the oral cavity, uterine cervix and breast. *J. Clin. Immunology*, 1987, 7: 1-4.
 18. Vijayan, K., Remani, P., Haseena Beevi, V. M., Ravindran Ankathil, Vijayakumar, T., Rajendran, R. Joy Augustine and Vadudevan, D. M : Tissue binding patterns of lectins in premalignant and malignant lesions of the oral cavity. *J. Exp. Pathol*, 1987, 3: 295-304.
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 20. Padmanabhan, T. K., Prabha Balam and Vasudevan, D. M. Role of levamisole immunotherapy as an adjuvant to radiotherapy in oral cancer. II. lymphocyte subpopulations. *Neoplasma*: 1988, 35(2): 235-242.
 21. Rajendran, R., Sugathan, C. K., Ravindran Ankathil and Vijayakumar, T: Teacher collins syndrome - Report of two cases. *J. Oral. Med.* 42: 291-294, 1987.
 22. Thomas Abraham and Prabha Balam : Circulating immune complexes in patients with squamous cell carcinoma of the oral cavity. *Indian Journal of Cancer*, 1987, 24 : 133-140.
 23. Rajendran, R., Anil, S., and Vijayakumar, T. Cranio - Facial Dysostosis (Cruzon's Disease) - Report of a case. *J. Ind. Dent. Assocn.* 1987, 59: 65.
 24. Vijayakumar, T., Robertson, D., McIntosh, D. and Forrester, J.A. Tissue staining properties of Lectins from Jack Fruit (*Artocarpus integrifolia*). *J. Exptl. Pathol*, 1987, 3: 281.
 25. Vivekanandan, S., Vijayakumar, T. and Sasidharan, V. K. Lecithine cholestrolacyl transferase activity in pregnancy and toxemia of pregnancy. *Ind. J. Med. Res*, 1987, 86 : 46.
 26. Iype Vargese, Sugathan, C. K., Balasubramonian, G. and Vijayakumar, T. Serum copper and Zinc levels in premalignant and malignant lesions of oral cavity. *Oncology*, 1987, 44: 224.
 27. Remani, P., Ravindran Ankathil, Vijayan, K. K., Haseena Beevi, V. M., Rajendran, R. and Vijayakumar, T. Circulating immune complexes as an immunological marker in premalignant and malignant lesions of the oral cavity. *Cancer Letters*, 1988, 40: 185-191.
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 29. Lilarani Vijayaraghavan, Aleykutty and Ravindran Ankathil. Cytogenetic studies in cancer patients on radiotherapy. National Symposium on Radiation Biology, Manipal, Nov. 1987.
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 32. Vijayan, K. K. and Krishnaswamy, N. R. A study of the reaction of N-bromosuccinimide on osthol. XXIIIrd Annual Conference of the Indian Chemical Society, 1987.
 33. Vijayan, K. K. 4th National Symposium on Mass spectrometry. Indian Inst. of Science, Bangalore, Jan. 1988.

34. Vijayakumar, T and Jayaram Panicker, C. K. Immunology of Solid Tumours. 5th National Cancer Conference, Pune, 1987.
35. Stich, H. F., Rosin, M. D., Hornby, A. P., Babu Mathew, Sankaranarayanan, R and Krishnan Nair, M. Remission and inhibition of new oral leukoplakias in tobacco-arecanut chewers by oral administration of Betacarotene and vitamin. A. Third International Conf. on Prevention of human cancer, Tuscon USA, Jan. 1988.
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37. Babu Mathew. Prevention and Control of Oral Cancer. Kerala Dental Journal, 1987, 10: 113-120.
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39. Stich, H. F., Hornby, A. P., Mathew, B., Sankaranarayanan, R. and Nair, M. K. Remission and Prevention of new oral leukoplakias in tobacco/betelnut chewers following short - term administration of Vitamin. A. Proc. Am. Assoc. Cancer Res.; 1988, 29 : 208.

DISTINGUISHED VISITORS

1. Dr. N. C. Misra
Prof. of Oncology
King George Medical College
LUCKNOW
2. Dr. John L. Young, Jr.
National Cancer Institute
Bethesda, Maryland, USA
3. Diana Lum
General Tumour Registry
University of California
San Francisco,
California - 94143 - 0746
4. Dr. Calvin Zippin
Director, Tumour Registry
University of California
San Francisco
California - 94143 - 0746
5. Dr. Sonkodi Istvan
Medical University
Hungary
6. Dr. H. F. Stich,
British Columbia Cancer Centre
Vancouver, British Columbia
CANADA
7. Dr. Fumikazu Takeda
Neuro Surgeon & Vice-Director
Saitama Cancer Centre
JAPAN
8. Mr. George Heidrich
(WHO Collaborating Centre for
Symptom Evaluation)
Assoc. Director,
Madison, Wisconsin
U. S. A.

ADMINISTRATION

GOVERNING BODY MEMBERS OF THE REGIONAL CANCER CENTRE SOCIETY, TRIVANDRUM

1. Shri E. K. Nayanar : Chairman
Chief Minister of Kerala
2. Shri A. Shanmughadas : Vice-Chairman
Minister for Health
Government of Kerala
3. Shri V. Krishnamurthy, IAS : Alternate
Secretary to Government Vice-Chairman
Health & Family Welfare Dept.
4. Shri R. Narayanan, IAS, : Member
Commissioner & Secretary to Govt.,
Finance Department
5. Shri S. Varadachary, IAS, : Member
Secretary to Government
Planning & Economic Affairs Dept.
6. Shri M. Vijayanunni, IAS : Member
Secretary to Govt.,
Planning Department.
7. Dr. M. S. Valiathan : Member
Director, Sree Chitra Tirunal
Institute of Medical Science &
Technology
8. Dr. S. C. Gupta : Member
Director
Vikram Sarabai Space Centre
Trivandrum
9. Secretary to Govt., : Member
Union Ministry of Health &
Family Welfare, Govt. of India
or
his nominee

10. Director General of Health Services : Member
New Delhi
or
his nominee
11. Dr. Elsie Philip : Member
Principal, Medical College
Trivandrum
12. Seniormist Pathologist in the : Member
Medical College Services in the
Kerala Government
13. Dr. G. Santhakumari, : Member
Director of Medical Education
Trivandrum
14. Dr. M. Krishnan Nair, : Convener
Director
Regional Cancer Centre,
Trivandrum

**EXECUTIVE COMMITTEE MEMBERS OF THE
REGIONAL CANCER CENTRE SOCIETY-
TRIVANDRUM**

1. Shri V. Krishnamurthy, IAS., : Chairman
Secretary to Government,
Health & Family Welfare Dept.
2. Shri R. Narayanan, IAS., : Member
Commissioner & Secretary to Govt.,
Finance Department,
Government of Kerala.
3. Shri S. Varadachary, IAS., : Member
Secretary to Government,
Planning and Economic Affairs Dept.
4. Shri M. Vijayanunni, IAS, : Member
Secretary to Government,
Planning Department.
5. Dr. Elsie Philip, : Member
Principal,
Medical College,
Trivandrum.
6. Dr. G. Santhakumari, : Member
Director of Medical Education,
Trivandrum
7. Dr. M. Krishnan Nair, : Convener
Director,
Regional Cancer Centre,
Trivandrum.

**BUILDING COMMITTEE MEMBERS OF THE
REGIONAL CANCER CENTRE SOCIETY,
TRIVANDRUM**

1. Shri E. Kurian, : Chairman
Chief Engineer,
Public Works Department,
Trivandrum.
2. Dr. G. Santhakumari, : Member
Director of Medical Education,
Trivandrum.
3. Shri M. Ramaswamy Iyer, : Member
Chief Architect,
Public Works Department,
Trivandrum.
4. Dr. Elsie Philip, : Member
Principal,
Medical College,
Trivandrum.
5. Dr. M. Krishnan Nair, : Member
Director,
Regional Cancer Centre,
Trivandrum.
6. Shri Joseph Stephen, : Member
Finance and Accounts Officer,
Regional Cancer Centre,
Trivandrum.
7. Shri G. Raveendranathan Nair, : Convener
Project Engineer,
Regional Cancer Centre,
Trivandrum.

**SCIENTIFIC COMMITTEE MEMBERS OF THE
REGIONAL CANCER CENTRE SOCIETY,
TRIVANDRUM**

1. Dr. Sundaram, M. S., : Chairman
Head, Biomedical Division,
BARC, Bombay.
2. Dr. Elsie Philip, M.D., : Vice-Chairman
Principal,
Medical College,
Trivandrum.
3. Dr. M. S. Valiathan MS, FRCS, FAMS, : Alternate
Director, Sree Chitra Thirunal, Vice-Chairman
Institute for Medical Science &
Technology, Trivandrum.
4. Sr. N. Lakshmypathy, M.D., : Member
Director,
Institute of Nuclear Medicine &
Allied Sciences, Delhi.
5. Dr. (Mrs) G. Sudha Gangal, Ph.D., : Member
Head, Division of Immunology,
Tata Memorial Hospital,
Bombay.
6. Dr. Renadev. Ph. D., : Member
Retd. Director,
Cancer Research Institute,
Tata Memorial Centre,
Bombay.
7. Dr. Jayaram Panicker, M. D., : Member
Principal, Medical College,
Calicut.
8. Dr. Yagnanarayana Iyer, Ph. D., : Member
Prof. of Biochemistry,
St. John's Medical College,
Bangalore.

9. Prof. N. Sreedevi Amma, M.D., : Member
Prof. of Cytology,
Regional Cancer Centre,
Trivandrum.
10. Dr. T. P. Ramachandran, Ph. D., : Member
Associate Prof. of Radiation Physics,
Regional Cancer Centre,
Trivandrum.
11. Head, Nuclear Medicine Division, : Member
Regional Cancer Centre,
Trivandrum.
12. Dr. M. Krishnan Nair, MD., FRCR., : Member
Director,
Regional Cancer Centre,
Trivandrum.
13. Dr. M. Thangavelu, MD., : Member
Dean, P. S. G. Institute of Medical
Sciences, Coimbatore.
14. Dr. K. Padmanabhan, MD., : Convener
Superintendent,
Regional Cancer Centre,
Trivandrum.

MAJOR DECISIONS OF THE GOVERNING BODY DURING THE YEAR 1987-88

The Governing body approved the annual report of 1986-87 and the budget of the centre for the year 1987-88.

The Governing Body resolved to request the Government of India again to take steps to redesignate the Regional Cancer Centre as National Cancer Institute in view of its ability to undertake studies which are of relevance to the national needs on Cancer Control and to provide financial support for its development, since the Government of India had expressed their inability to agree to our earlier proposal of taking over this Centre due to financial constraints.

Governing Body resolved to nominate the Chief Engineer, P. W. D. (Buildings & Local works) as Chairman of the Building Committee in place of Dr. G. Santhakumari, Director of Medical Education since she had expressed her inability to continue as Co-ordinator of the Building Committee. The Director of Medical Education shall continue as a member of the Building Committee.

MAJOR DECISIONS OF THE EXECUTIVE COMMITTEE IN THE YEAR 1987-88

The Executive Committee resolved to accept the award of British Council Visiting Fellowship by Dr. M. Krishnan Nair, Director, Regional Cancer Centre and W. H. O. Fellowship Award, 1986 by Dr. R. Sankaranarayanan, Assistant Prof. of Cancer Epidemiology.

The Committee resolved to permit Dr. M. Krishnan Nair, Director and Sri. P. Gangadharan, Associate Professor for their participation in the International Association of Cancer Registries Meeting from 5-7th August, 1987 at Copenhagen, Denmark. Sri. P. Gangadharan, however did not attend.

The Committee resolved to permit Dr. M. Krishnan Nair, Director to associate with the co-ordinating council for Asian-pacific Region, for Cancer education subject to sanction of Government of India and without financial commitment to the Regional Cancer Centre Society.

The Committee resolved to request M/s. Instrumentation Limited, Palghat to complete the construction of the boundary wall, gates and filling of the compounds immediately to enable inauguration of the Early Cancer Detection Centre, Palghat in the new building constructed and donated by the Company. It was also resolved to admit payment of the actual expenditure incurred by the Engineering Wing of the Regional Cancer Centre.

The Committee resolved to create one post of Maintenance Engineer (Electrical), one post of Assistant Maintenance Engineer (Mechanical) and four posts of Supervisors for the Engineering Wing and to make appointments through Employment Exchange. It was also resolved to create 2 temporary posts of Resident Surgical Officers in the Cancer Surgery Division on a consolidated of pay of Rs. 1500/- P.M.

The Committee resolved to keep the period of validity of the rank list of the selections made by the Society as two years.

It was resolved to appoint Shri E. Thayal Singh Elias as Lecturer in Radiation Physics on a regular basis.

It was resolved to convert the Post of Associate Professor of Community Medicine as a permanent post of the Society with more responsibilities and to allow Dr. Babu Mathew, Assistant Professor of Oral Medicine to continue on deputation in this post for one more year.

The Committee resolved to fix the following norms as bonded obligation for availing training facilities from the Regional Cancer Centre Society to places within the country and outside the country.

Duration of training	Place of training	Duration of bounded obligations	
		Period	Amount
Upto 6 months	Within the country	—	Nil
6 months to one year	dp.	2 years	10,000/-
-do-	Outside the country	3 years	15,000/-
More than one year	Within the country	3 years	15,000/-
-do-	Outside the country	5 years	25,000/-

The Committee resolved to purchase a Diagnostic X-ray machine for routine X-rays and contrast studies for inpatients and out-patients of the Society, at an estimated expenditure of Rs. 10 lakhs.

It was resolved to follow the qualifications prescribed by Government from time to time for academic posts in medical specialities in which teaching and training programmes are conducted as extension of the Medical College.

It was also resolved to permit the Director to accept free medical supplies required for research from England after obtaining clearance if required, from the Government of India.

The Committee resolved to keep in abeyance the filling up of the post of Professor of Cancer Research and Scientist Gr. II and to create instead one post of Assistant Professor and 2 posts of Lecturer in Cancer Research.

The Committee resolved to accept the board recommendation submitted by Dr. O. S. Menon, Dr. Ramakrishnan Nair and Dr. P. A. Thomas of Medical College, Trivandrum with regard to organisation of surgical facilities in the new building nearing completion. Resolved to approve the list of equipments proposed by the experts.

It was resolved to appoint 3 Ex-servicemen who were engaged on daily wage basis as Security Guards on a consolidated salary of Rs. 500/- P.M. on contract basis.

The Committee resolved to permit the Director to obtain an overdraft of Rs. 10 lakhs from State Bank of Travancore, Medical College Branch for a period of one month which will be redeemed as soon as the Institutional Finance and State Government grant are made available.

ENGINEERING DEPARTMENT

The 1st Phase of Building Construction is nearing completion. The work was delayed due to financial constraints. A loan has now been sanctioned jointly by Canara Bank and Indian Overseas Bank. Once the money is received from the institutional financing the building work can be completed by the end of 1988.

The Civil work for Entrance Block, Utility Block, Underground Water Tank and Site Development Works are almost over except the finishing works and interior design. For the Air-conditioning system two Nos. 200 TR Heat Recovery Centrifugal Unit from YORK, U. S. A. have already been received at the Site, and connected Air-conditioning work is being done by M/s. Blue Star Limited.

M/s. Harrisons Malayalam Limited has completed most of the electrification work. The Electrical Equipments—1250 KVA Indoor Type Transformer, H. T. & L. T. panels etc. supplied by M/s. Voltas Limited have also been received at Site. M/s. Crompton Greaves have effected the supply of electrical fittings. The work for power supply is being taken up by the Kerala State Electricity Board. Plumbing and Water supply works by M/s. Madras Engineering Concerns is in progress. We have laid a separate drinking water supply line to be connected with the underground water tank. M/s. C. M. E. Industries Limited, Bombay have been entrusted with the work for fire protection, fire fighting and domestic pump system. The erection of lift by M/s. Best & Crompton is already over. Other allied works such as, false ceiling work by M/s. Lloyds Insulation and M/s. Salvicat (I) Pvt. Ltd., Communication system by Indian Telephone Industries Limited, horticulture and landscaping work etc. are in progress.

The building will be ready for occupation by the end of 1988. We have so far spent approximately Rs. 225 lakhs towards Civil, Electrical, Air-conditioning, Water Supply and Plumbing, Lift, Fire Fighting and Fire Protection and for other building works.

ACCOUNTS

**REGIONAL CANCER CENTRE
BALANCE SHEET AS AT**

LIABILITIES	Rs.	P.	Rs.	P.
CAPITAL FUND				
As per last Balance Sheet	3,10,59,046.			
Add: Transfer of Capital				
Grants: Central Government	20,00,000.			
State Government	35,55,353.		3,66,14,399.	
				86
CAPITAL GRANT				
Government of India, Ministry of Health and Family Welfare, New Delhi Ist Instalment of grant for 1987-88 as per letter No. V. 22015/2/87-R dated 5-6-1987	3,30,000.			
IIrd Instalment of grant as per letter No. V-22015/ 2/87-R dated 16-9-1987	8,35,000.			
IIIrd Instalment of grant as per letter No. V-22015/ 2/87-R dated 14-12-1987	8,35,000.			
	20,00,000.			
Less: Amount utilised for purchase of Equipment and construction of building transferred to Capital Fund	20,00,000.			Nil
Kerala State Government Grant capitalised	35,55,353.			
Less: Amount utilised for construction of building transferred to Capital Fund	35,55,353.			Nil
Carried over			3,66,14,399.	
				86

**SOCIETY, TRIVANDRUM
31ST MARCH, 1988**

ASSETS	Rs.	P.	Rs.	P.
FIXED ASSETS				
As per Schedule			4,05,02,687.	
INVESTMENTS				
Term Deposits in respect of Cancer Care for Life Scheme, with Banks	73,61,960.			
In Non-Operational Account with Banks	2,93,182.			
			76,55,142.	
CURRENT ASSETS, LOANS AND ADVANCES				
Stock of Chemicals, Films, Sundry Medical Items etc.	1,46,444.			
Interest Accrued on Bank Deposits	1,27,412.			
Advances: Considered Good	1,50,302.			
Considered Doubtful	15,000.			
Deposits	7,115.			
Stamps on Hand	484.			
Cash on hand (including imprest Rs. 5,050)	6,892.			
Balance with Banks and Treasury:				
State Bank of Travancore Medical College S.B.A/c. No. 9610	35,889.			
Canara Bank, Puthen- chanthai S.B. A/c. No. 975	31,728.			
Government Treasury S.B. A/c. No. TPA 675(A)	10,00,512.			
			15,21,781.	
Carried over			4,96,79,610.	
				89

**REGIONAL CANCER CENTRE
BALANCE SHEET AS AT**

LIABILITIES	Rs.	P.	Rs.	P.
B/forward			3,66,14,399.	86
UNUTILISED GRANT				
For setting up Cobalt Therapy Unit with Rotational Head & Collimation facilities as per letter No. T-20013/13/86-R dated 20-5-1986			12,00,000.	00
CANCER CARE FOR LIFE FUND ACCOUNT				
As per last Balance Sheet	46,99,967.	00		
Add: Receipts during the year	29,55,327.	00	76,55,294.	00
CURRENT LIABILITIES				
Sundry Creditors			52,45,799.	59
SECURED LOANS				
From Banks on lien against Fixed Deposits relating to Cancer Care for Life Scheme:				
State Bank of India	5,90,228.	60		
State Bank of Travancore	3,78,217.	50	9,68,446.	10
TOTAL			5,16,83,939.	55

Sd/-
Director.

Trivandrum,
4-8-1988

**SOCIETY, TRIVANDRUM
31ST MARCH, 1988**

ASSETS	Rs.	P.	Rs.	P.
B/forward			4,96,79,610.	89
INCOME AND EXPENDITURE ACCOUNT				
<i>Cancer Centre:</i> Balance as per last Balance Sheet	33,06,132.	10		
<i>Less:</i> Excess of Income over expenditure			7,63,548.	28
			25,42,583.	82
<i>Cancer Care for Life Scheme:</i>				
Balance as per last Balance Sheet	14,538.	75		
<i>Less:</i> Excess of Income over Expenditure	5,52,793.	91	5,38,255.	16
			20,04,328.	66
TOTAL			5,16,83,939.	55

Vide our Report of date attached

For SURI & CO.,
Chartered Accountants

Sd/-
N. SUBBIAH
Partner

REGIONAL CANCER CENTRE
INCOME AND EXPENDITURE ACCOUNT

EXPENDITURE	Rs.	P.	Rs.	P.
To Opening Stock of Chemicals, Films and Other Sundry Medical items			2,29,696	.07
" Purchase of Chemicals, Films etc.	3,01,757	.90		
" Salaries, Wages, Bonus, Contribution to Provident and Other Funds	20,40,947	.27		
" Purchase of Medicines	5,61,195	.53		
" Purchase of Nuclear & Radio Therapy Isotopes	4,35,264	.00		
" Consultation Service Fee	24,257	.65		
" Uniforms	12,978	.00		
" Rent	33,000	.00		
" Postage, Telegrams & Telephones	86,358	.15		
" Printing and Stationery	89,092	.80		
" Travelling Expenses	1,22,379	.55		
" Advertisement Charges	58,299	.00		
" Legal Expenses	4,326	.00		
" Audit Fee	6,500	.00		
" Repairs and Maintenance :				
Equipments	4,19,359	.32		
Buildings	4,870	.25		
Vehicles	62,267	.30		
	4,86,496	.87		
" Interest Paid	51,823	.85		
" Conference, Seminars & Workshops	11,159	.75		
" Books & Periodicals	80,752	.00		
" Early Cancer Detection Centre Expenses :				
Ernakulam	2,32,528	.20		
Palghat	1,94,006	.85		
	4,26,535	.05		
" Proportionate Share of Expenditure of National Tumour Registry	91,388	.10		
" Miscellaneous Expenses	20,134	.80		
	49,44,646	.27		
" Excess of Income over Expenditure			7,63,548	.28
TOTAL			59,37,890	.62

SOCIETY, TRIVANDRUM
FOR THE YEAR ENDED 31ST MARCH, 1988

INCOME	Rs.	P.	Rs.	P.
By Grant from Government of Kerala Health & Family Welfare Department received during the year :				
Ist Instalment as per letter No. G. O. Rt. 1798/87/H & FWD dt. 6-8-1987	25,00,000	.00		
IInd Instalment as per letter No. G. O. Rt. 2825/87/H & FWD dt. 24-9-1987	25,00,000	.00		
IIIrd Instalment as per letter No. G.O. Rt. 3537/87/H & FWD dt. 14-12-1987	5,00,000	.00		
IVth Instalment as per letter No. G.O. Rt. 241/88/H & FWD dt. 28-1-1988	10,00,000	.00		
Vth Instalment as per letter No. G.O. Rt. 792/88/H & FWD dt. 25-3-1988	10,00,000	.00		
VIth Instalment as per letter No. G.O. Rt. 877/88/H & FWD dt. 30-3-1988	10,00,000	.00		
	85,00,000	.00		
Less: Part of the grant Capitalised and transferred to Balance Sheet	35,55,353	.73		
			49,44,646	.27
" Investigation Fee			8,11,521	.45
" Interest Received			14,780	.40
" Cytotechnician Course Fee			3,375	.00
" Fee and Charges on Radio Immune Assay Course			1,125	.00
" Miscellaneous Receipts			15,998	.50
" Closing Stock of Chemicals Films & Other Sundry Medical item etc.			1,46,444	.00
TOTAL			59,37,890	.62

**REGIONAL CANCER CENTRE SOCIETY,
CANCER CARE FOR
INCOME AND EXPENDITURE ACCOUNT FOR**

EXPENDITURE	Rs.	P.	Rs.	P.
To Advertisement & Publicity			87,118.	
„ Processing and mailing charges of application forms and Membership cards			63,615.	
„ Printing and Stationery			13,416.	
„ Travelling Expenses			682.	
„ Miscellaneous Expenses			920.	
„ Excess of Income over Expenditure			5,52,793.	
TOTAL			7,18,546.	

AUDITORS' REPORT

We have examined the accounts of REGIONAL CANCER CENTRE SOCIETY, TRIVANDRUM (Registration No. 567/81) for the year ended 31st March 1988, the attached Balance Sheet as at 31st March 1988 and the Income and Expenditure Account for the year ended that date annexed thereto and we certify the same to be correct and in agreement with the books of account and other records kept by the Society so far as it appears from our examination of those books and records, subject to the following:

1. Proper records showing description of the assets, classification, location, individual cost, etc., in respect of Fixed Assets have not been maintained.
2. Depreciation on Fixed Assets has not been charged since 31-3-1986, and the unprovided depreciation amounted to Rs. 73,50,168, including Rs. 48,49,524 in respect of the year ended 31-3-1988.
3. In respect of additions to old building, capitalised during the year at Rs. 8,60,110, pending negotiation and/or settlement with the State P.W.D., additional claim of Rs. 4,16,940

**TRIVANDRUM (REGN. No. 567/81)
LIFE SCHEME
THE PERIOD ENDED 31ST MARCH, 1988**

INCOME	Rs.	P.	Rs.	P.
By Sale of Application Forms			12,419.	
„ Interest on Fixed Deposits			7,03,430.	
„ Donations Received			2,697.	
TOTAL			7,18,546.	

made by the State P.W.D. has not been provided and included in the accounts.

4. Stock records in respect of chemicals, films and other medical items have not been properly maintained. The closing stock of Rs. 1,46,444 as on 31-3-1988 has been valued as per the inventories furnished by the different Departments.
5. Advances considered good includes Rs. 19,914 being travelling, staff and other advances outstanding for more than one year in respect of which no proper adjustments/recoveries have been made in the accounts.
6. Provision has not been made in respect of Advances considered doubtful at Rs. 15,000.

Trivandrum,
4-8-1988.

For SURI & CO.,
Chartered Accountants

Sd/-
N. SUBBIAH
Partner.

REGIONAL CANCER CENTRE
Scheduled of Fixed Assets

	Written down value as on 1-4-1987		Additions during the year	
	Rs.	P.	Rs.	P.
Building (Under Construction)	83,11,727.	12	58,12,087.	95
Furniture and Fixtures	4,24,872.	80	18,111.	55
Office Equipments	98,488.	50	1,203.	60
Vehicles	1,02,253.	95	—	—
Library Books	1,96,340.	55	—	—
Hospital & Lab Equipments	1,59,56,518.	94	2,75,150.	60
Lift/Elevators (Under Installation)	4,39,433.	00	—	—
Electrical Installation & Fittings (Under Installation)	6,11,346.	90	24,55,125.	90
Air Conditioning (Under Installation)	1,96,407.	00	36,45,986.	65
Telephone Equipments (Under Installation)	—	—	5,15,695.	00
Water Supply (Under Installation)	—	—	4,81,827.	00
Capital Work-in-Progress	8,60,110.	25	1,00,000.	00
Addition to old Building	—	—	8,60,110.	25
	2,71,97,499.	01	1,41,65,298.	50

Sd/-
Director.

Trivandrum,
4-8-1988.

SOCIETY, TRIVANDRUM
as on 31st March, 1988

	Deductions during the year		Balance as on 31-3-1988		Depreciation for the year		Written down value as on 31-3-1988	
	Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.
	1,41,23,815.	07	..	..	1,41,23,815.	07
	4,42,984.	35	..	..	4,42,984.	35
	99,692.	10	..	..	99,692.	10
	1,02,253.	95	..	..	1,02,253.	95
	1,96,340.	55	..	..	1,96,340.	55
	1,62,31,669.	54	..	..	1,62,31,669.	54
	4,39,433.	00	..	..	4,39,433.	00
	30,66,472.	80	..	..	30,66,472.	80
	38,42,393.	65	..	..	38,42,393.	65
	5,15,695.	00	..	..	5,15,695.	00
	4,81,827.	00	..	..	4,81,827.	00
	8,60,110.	25	1,00,000.	00	..	..	1,00,000.	00
	8,60,110.	25	..	..	8,60,110.	25
	8,60,110.	25	4,05,02,687.	26	Nil	..	4,05,02,687.	26

Vide our Report of date attached

For SURI & CO.,
Chartered Accountants

Sd/-
N. SUBBIAH
Partner.

GOVERNMENT OF KERALA

NO. 75940/PU-C1/88/FIN.

FINANCE DEPARTMENT

COMMENTS OF COMMISSIONER & SECRETARY
(FINANCE) TO THE GOVERNMENT OF KERALA ON THE
AUDITED ACCOUNTS OF THE REGIONAL CANCER CENTRE,
TRIVANDRUM FOR THE YEAR ENDED 31ST MARCH 1988
AS REQUIRED UNDER RULE 11 OF THE RULES RELATING
TO THE REGIONAL CANCER CENTRE SOCIETY

"NO COMMENTS"

Sd/-
COMMISSIONER & SECRETARY (FINANCE).

TRIVANDRUM
12-10-1968.

SURI & CO.,
Chartered Accountants

Mahathma Gandhi Road
Trivandrum-695 001

4-8-1988.

UTILISATION CERTIFICATE

Certified that the grant of Rs. 85,00,000 (Rupees Eighty-Five lakhs only) received by the Regional Cancer Centre Society, Trivandrum (Regn. No. 567/81) from Health (J) Department, Government of Kerala, as per the following Government Orders:

G.O.Rt. No. 1798/87/H & FWD dt. 8-6-1987 Rs. 25,00,000
G.O.Rt. No. 2825/87/H & FWD dt. 24-9-1987 Rs. 25,00,000
G.O.Rt. No. 3537/87/H & FWD dt. 14-12-1987 Rs. 5,00,000
G.O.Rt. No. 241/88/H & FWD dt. 28-1-1988 Rs. 10,00,000
G.O.Rt. No. 792/88/H & FWD dt. 25-3-1988 Rs. 10,00,000
G.O.Rt. No. 877/88/H & FWD dt. 30-3-1988 Rs. 10,00,000

has been utilised by the Society during the year 1987-88 for the purpose of Chemotherapy and Nuclear Medicine and allied services and for the purpose of maintenance of the Institution and other working expenses, implementation of projects, construction of building, functioning of Early Cancer Detection Centres and maintenance of National Tumour Registry.

Sd/-
SURI & Co.,
Chartered Accountants.

SURI & CO.,
Chartered Accountants

Mahathma Gandhi Road
Trivandrum-695 001

4-8-1988.

UTILISATION CERTIFICATE

Certified that the grant of Rs. 20,00,000 (Rupees Twenty lakhs only) received by the Regional Cancer Society, Trivandrum (Reg. No. 567/81) during the year 1987-88 from Ministry of Health and Family Welfare, Government of India, as per letters No. V-22015/2/87-R dated 5-6-1987, 16-9-1987 and 14-12-1987 has been utilised for purchase of equipments and construction of building during the year 1987-88 in connection with the development of the Institute as Regional Cancer Centre for Research & Treatment.

Sd/-
SURI & Co.,
Chartered Accountants

LIST OF STAFF

<i>Director</i>	— Dr. M. Krishnan Nair
<i>Superintendent</i>	— Dr. T. K. Padmanabhan
<i>Secretary (Academic)</i>	— Prof. A. Joseph
<i>Nursing Superintendent</i>	— Sr. Sabeena; S. D.

RADIOTHERAPY

Dr. M. Krishnan Nair	— Director & Professor
Dr. T. K. Padmanabhan	— Professor
Dr. F. Joseph	— Associate Professor
Dr. C. S. Kuttappan	— "
Dr. B. Rajan	— "
Dr. T. Gangadevi	— "
Dr. P. G. Jayaprakash	— Assistant Professor
Dr. C. S. Rafeeka Beegum	— "
Dr. V. Narayana Bhattathiri	— "
Dr. Jayaprakash Madhavan	— "
Dr. C. S. Madhu	— Tutor
Dr. A. Sudhakaran	— "
Dr. P. R. Sasindran	— "
Dr. K. Ratheesan	— Lecturer
Dr. Gireesan	— Tutor

DENTAL SECTION

Dr. L. Sudha	— Tutor
Dr. K. R. Nalina Kumari	— Lecturer
Smt. Kirshnambal	— Dental Hygienist

NUCLEAR MEDICINE

Dr. P. Ramachandran Nair	— Associate Professor
Dr. K. Sasidharan	— Associate Professor
Dr. V. Padmanabhan	— Assistant Professor
Dr. V. M. Pradeep	— Lecturer
Sri. Raghuram K Nair	— "

RADIATION PHYSICS

Dr. T. P. Ramachandran	—	Associate Professor
Sri. P. G. Gopalakrishna Kurup	—	"
Sri. C. A. Davis	—	Assistant Professor
Sri. Thayal Singh Elias	—	Lecturer
Smt. Raheena Beegum	—	Radiographer
Smt. V. Sheela	—	"
Sri. Joe D'Cruze	—	"
Sri. T. Prasad	—	"
Sri. P. Ramachandran	—	"
Sri. N. Satheesh Kumar	—	Radiographer
Sri. K. P. Radhakrishnan	—	"
Smt. B. Vimala	—	"
Sri. N. Sadasivan Nair	—	"
Smt. Suseelamma	—	"
Sri. V. Gangadharan	—	"
Smt. P. Seetha	—	"
Sri. C. Viswanathan	—	"
Smt. M. Leela	—	"
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Dr. B. Chandralekhā	—	Associate Professor
Dr. Elizabeth K Abraham	—	Assistant Professor
Dr. Rajasekharan Pillai. G	—	"
Smt. J. Ambika Kumari	—	Senior Scientific Officer
Sri. G. Raghunathan Nair	—	Cytologist
Sri. K. Vijayagopal	—	Junior Research Officer
Sri. P. Gopalakrishnan	—	Research Assitant
Sri. R. Muraleedharan	—	Cytotechnologist
Smt. Anandavally	—	Lab. Technician Gr. II
Smt. S. Najeeya	—	"
Smt. J. Omana	—	U. D. Typist
Smt. Molykutty John	—	Cytotechnologist
Smt. G. Leelamma	—	Technician
Smt. G. Lekha	—	"
Sri. Abraham P. T.	—	Cytotechnician

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Dr. Gladys Geevy	—	Anaesthetist
Dr. Paul Sebastian	—	Lecturer
Dr. Iqbal Ahamed	—	Lecturer
Dr. N. Sivarama Krishnan	—	Resident Surgical Officer
Dr. K. L. Jayakumar	—	"
Sri. R. Harikumar	—	Theatre Assistant
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Smt. Saly Augustine	—	Staff Nurse

PAEDIATRIC ONCOLOGY

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Dr. Geetha Raveendran	—	"
Smt. P. M. Aleykutty	—	Nurse

CANCER RESEARCH

Dr. B. Prabha	—	Associate Professor
Dr. K. K. Vijayan	—	Lecturer
Sri. Raveendran Ankathil	—	Scientific Officer
Sri. Thomas Abraham	—	Scientific Officer
Smt. B. Padmavathy Amma	—	Technical Officer
Smt. C. Gangadevi	—	Lab. Technician Gr. II
Smt. J. Usha	—	"
Smt. P. Renuka	—	"
Smt. A. Leela	—	Animal House Keeper-cum-attender
Sri. K. Vikraman Nair	—	"
Sri. Anil Kumar	—	Lab. Technician

HOSPITAL CANCER REGISTRY AND MEDICAL RECORDS

Sri. P. Gangadharan	—	Associate Professor of Cancer Epidemiology (Statistics)
Dr. R. Sankaranarayanan	—	Assistant Professor of Cancer Epidemiology (Medical)
Sri. R. Raveendran Nair	—	Medical Records Officer

Sri. S. Muraleedharan Nair	—	Medical Statistician
Smt. G. Padmakumari Amma	—	Senior Research Fellow
Smt. P. T. Latha	—	Social Investigator
Smt. Anitha Nair	—	"
Smt. Jalajakumari, V.	—	Clerk
Sri. L. G. Amaldas	—	Clerk
Sri. G. Rajasekharan Nair	—	"
Smt. C. Sreedevi Kutty	—	Typist
Sri. B. Sreekumar	—	Coding Clerk
Smt. D. Chandrika	—	"
Smt. S. Ponnammal	—	Receptionist
Sri. Shibu Kumar	—	Clerk - Typist
Sri. S. Vijayan Nair	—	Sergeant
Sri. S. Rajayyan	—	Technical helper
Sri. K. Thankappan Nair	—	Security Guard
Sri. N. Achudhan Nair	—	"
Sri. Ramachandran	—	"

COMMUNITY ONCOLOGY

Dr. Babu Mathew	—	Associate Professor
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ADMINISTRATIVE OFFICE

Sri. E. U. Aravindakshan	—	Administrative Officer
Sri. Joseph Stephen	—	Finance and Accounts Officer
Sri. C. Somasekharan Nair	—	Financial Assistant
Sri. K. Parameswaran	—	Secretary and Confidential Assistant
Sri. S. Sukumaran Nair	—	Cashier-Cum-Accountant
Sri. C. Gnaneswaran	—	Accountant
Smt. R. Sudevi	—	Confidential Assistant
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Smt. Mallikadevi. S	—	"
Sri. N. Ramaswamy Iyer	—	Office Assistant
Sri. S. V. Sasikumar	—	"
Smt. B. Lalitha	—	"
Sri. K. Sasikumar	—	"
Sri. T. Padmakumar	—	"
Sri. N. Sudarsanan Pillai	—	"

Smt. K. Rajalekshmi	—	Office Assistant
Sri. P. Krishnan Nair	—	Driver
Sri. P. Sreekumaran Nair	—	"
Sri. M. Subair	—	Helper
Sri. P. Antony	—	"
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Sri. G. Surendran	—	"
Sri. R. Anil Kumar	—	"
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Sri. P. S. Suresh	—	"
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Sri. K. Sivankutty	—	"
Sri. S. Senan	—	"
Smt. P. Seethalekshmi	—	"
Sri. R. Sasikumaran Nair	—	Helper-cum-Watchman

ENGINEERING WING

Sri. R. Raveendranathan Nair	—	Project Engineer
Sri. A. Rajan	—	Maintenance Engineer (Electrical)
Sri. P. Rajagopalan	—	Asst. Engineer
Sri. R. Asokan Nair	—	1st Grade Overseer
Smt. P. Suseela	—	Confidential Assistant
Smt. N. Beena	—	Office Assistant

EARLY CANCER DETECTION CENTRE, ERNAKULAM

Dr. B. Syamalakumari	—	Cytopathologist
Sri. Raveendran Pillai	—	Cytotechnologist
Smt. Mercy Joseph	—	"
Sri. K. S. Jayalal	—	Cytotechnician
Smt. T. P. Ramani	—	U. D. Typist
Smt. L. Madhavikutty Amma	—	Staff Nurse
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Sri. P. M. Abdul Rahiman	—	Helper

EARLY CANCER DETECTION CENTRE, PALGHAT

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- Director of Health Services, Government of Kerala, Trivandrum.

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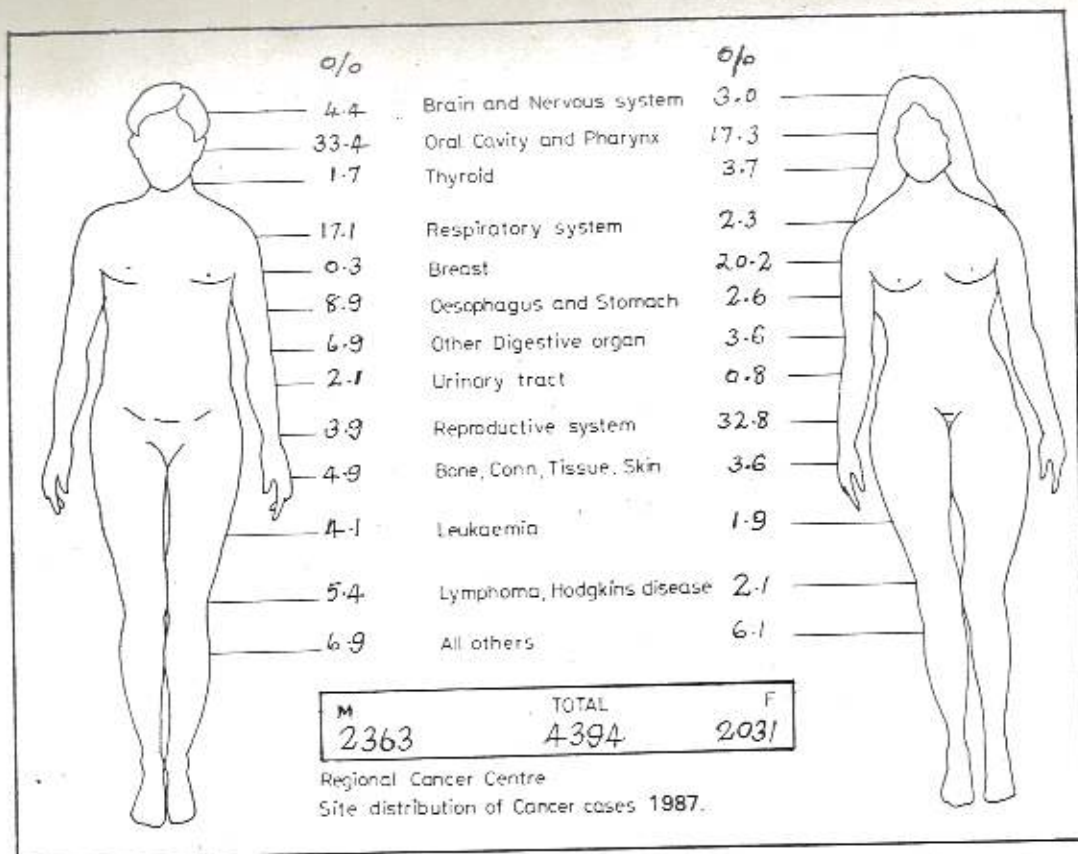
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