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**1991-'92**

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KERALA, INDIA

**REGIONAL CANCER CENTRE**  
TRIVANDRUM-695 011, KERALA, INDIA



## REPORT OF ACTIVITIES 1991-92

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## INTRODUCTION

During the year under review this Centre witnessed rapid progress in modernisation and augmentation of its clinical and academic programmes.

The Department of Atomic Energy graciously sanctioned to this Centre a project for modernisation of Radiotherapy which included procurement of treatment planning system, isodose plotter, mould room equipment, linear accelerator, radiotherapy simulator and a micro-selectron. The foundation stone for the Department of Atomic Energy Block (DAE Block) was laid by the Hon. Chief Minister Sri. K. Karunakaran on 16th July, 1991 at 5 PM in the presence of Dr. P.K. Iyengar, Secretary, Dept. of Atomic Energy & Chairman of Atomic Energy Commission and Sri. R. Ramachandran Nair, Hon. Minister for Health. On the same day Sri. R. Ramachandran Nair also inaugurated the new operation theatre complex. This theatre has all the state of the art facilities for undertaking all forms of cancer surgery and endoscopies.

Dr. Federico Welsch, Associate Director for International Affairs, National Cancer Institute, U.S.A. during his visit here advised on an exchangeship programme for our academic staff in different U.S. Institutions.

As in the previous years the Centre was able to conduct a lot of academic activities this year also. A number of conferences, workshops and seminars were conducted. There were two W.H.O. sponsored International Workshops during the current year. The District Cancer Control Programme Workshop was held on 21st and 22nd October, 1991 with participation of more than forty health administrators and planners including Shri. T. K. Das, Joint Secretary to Health & Family Welfare, Govt. of India. A National Workshop on Cancer Control Programme was held from 17th to 19th Feb. 1992 which was attended by more than 70 important national and international

delegates from health departments, ministries, other regional cancer centres and medical colleges of the country besides W.H.O. Cancer Unit Chief, Dr. Jan Stjernsward. The recommendations of these workshops were highly appreciated. It is hoped that these recommendations will serve as a harbinger for future cancer control programmes.

A satellite oncology update was organised at Cochin with the co-operation of Dr. T.M. Paul and Dr. Lazar Chandy on 17th and 18th January, 1992. The international participants included Prof. Keith Halnan and Dr. Calum Muir.

A National level Tumour Registrars' Training Programme was conducted in this centre from 26th November to 6th December, 1991 with participation of eminent persons like Dr. Calvin Zippin and Dr. John Young from USA as faculty members.

The Regional Cancer Centre, Trivandrum is actively involved in providing technical guidance and support to three major cancer centres namely, Cancer Care Hospital, Indore, Rajeev Gandhi Cancer Institute, New Delhi and Kasturba Medical College, Manipal.

Eventhough the centre had financial difficulties, we have tried our best to uphold the quality of clinical services and academic activities. The fast progress in construction work and the number of academic programmes and publications bear testimony to this. We are also trying to acquire financial self reliance for carrying out the developmental activities.

This report contains the details of major activities of various divisions and the statement of accounts of this centre for the year 1991-92.

## DEPARTMENTAL ACTIVITIES

### DIVISION OF RADIOTHERAPY

Dr. M. Krishnan Nair	—	Director
Dr. N. Balakrishnan Nair	—	Professor
Dr. F. Joseph	—	Professor
Dr. B. Rajan	—	Associate Professor
Dr. T. Ganga Devi	—	Associate Professor
Dr. G. Sureshchandra Dutt	—	Associate Professor
Dr. P. G. Jayaprakash	—	Associate Professor
Dr. C. S. Rafeeka Beegum	—	Associate Professor
Dr. V. Narayana Bhattathiri	—	Assistant Professor
Dr. Jayaprakash Madhavan	—	Assistant Professor
Dr. K. Ramadas	—	Assistant Professor
Dr. K. Ratheesan	—	Assistant Professor
Dr. Thomas Koilparambil	—	Lecturer
Dr. Francis V. James	—	Lecturer

### CLINICAL SERVICE:

The division of Radiotherapy has two units which are responsible for the primary care of cancer patients seen at this centre. This division closely interacts with the other clinical and paraclinical divisions within the centre. This department also interacts with other disciplines of Medical College Hospital Trivandrum and also the Sree Chitra Thirunal Institute for Medical Sciences and Technology, Trivandrum.

Out patient clinic works six days a week. Regular tumour clinics are conducted twice a week to discuss important cases and all efforts are being taken to develop consensus for managing almost all cases. As in previous years combined clinics are conducted in association with Paediatricians (Paediatric Tumour Board), Gynaecologists (Trophoblastic Tumour Clinic), Gastroenterologist and General Surgeons on a regular basis. The Clinical Pathology Conference has been reorganised during the reporting year. Our Early Cancer Detection Clinic (ECDC) which was started with the assistance of the Epidemiology division has gathered great public interest. This clinic is being held on all working days.

During the last decade the clinical activities have almost doubled. The following figures show the magnitude of clinical work undertaken by the division.

1. Total Number of new patients	—	6,960
2. Review cases	—	47,411
3. Total patient visit (old & new)	—	54,371
4. Number of inpatient admissions	—	3,499
5. Number of patients who had teletherapy	—	6,253
6. Number of patients who had brachytherapy	—	617
Selectron application for gynaecological malignancy	—	400
Manual afterloading for cervix cancer	—	24
ICR ; Oesophagus	—	55
Interstitial implantations	—	124
Mould treatment	—	14
7. Number of chemotherapy	—	11,861

#### ACADEMIC PROGRAMME:

This division is actively involved in the undergraduate training programme of the Medical College, Trivandrum and also is responsible for the training of two students for M.D. degree and 3 students for the Diploma course in Radiotherapy each year. Regular weekly symposia and journal club programmes are conducted.

#### TRAINING AND CONFERENCES ATTENDED BY THE FACULTY

**Dr. T. GANGA DEVI:** Attended the Vth National Cancer Congress at Adayar during January 22-25th, 1992.

XIII Annual Conference of AROI at Manipal during Feb. 13-16, 1992

**Dr. SURESHCHANDRA DUTT:** Member of the faculty for the Annual Conference of Indian Association of Oral Medicine held in RCC in December, 1991.

Guest Speaker at the Kerala Chapter of Indian Society of Otorhinolaryngologists held at Trivandrum in April, 1991.

**Dr. V. N. BHATTATHIRI:** Second oral primaries in patients with Lip Cancer treated by interstitial implantation. 2nd International Congress on Oral Cancers. 2-5, Dec. 1991, New Delhi.

Radiation Dose related changes in Lectin staining in Oral Cancer. 2nd National Conference of Indian Society of Radiobiology. 5-6 Dec. 1991, New Delhi.

Invited paper on 'Root Surface Spread of Oral Cancer' at IV National Conference, 22-23 Dec. 1991, Regional Cancer Centre, Trivandrum.

Second Primary Tumours. Annual meeting of State Chapter of AROI, Dec. 24, 1991.

Attended National Symposium on Applications of Biotechnology in Medicine 11-12, Jan. 1992, Thrissur.

Brain Secondaries-Neuro Oncology Seminar, 17 Jan. 1992 Medical College, Trivandrum.

Periodontal spread of Oral Cancer at V National Cancer Congress, 22-25 Jan, 1992, Madras.

Attended Symposium on Chemoprevention of Cancers 6 & 7 Feb. 1992, Tata Memorial Hospital, Bombay.

Radiation dose related changes in Lectin Staining in Oral Cancer. XIII Annual Conference of Association of Radiation Oncologists of India, Feb. 13-16, 1992 Manipal.

Attended International Workshop on Radio Sensitizers. 25-27 March 1992, Bangalore.

Radiation induced morbidity in Oral Cavity and their management II National Congress of Indian Association of Prosthodontists. 1-3 March, 1992, Mangalore.

Effect of topical applications on growth rate of Oral Cancers. 11th Annual National Convention of Indian Association for Cancer Research 13-15 March, 1992, Thrissur.

**Dr. P. G. JAYAPRAKASH:** Attended the XIII Annual Conference of AROI at Manipal during Feb. 13-16, 1992.

Attended Brachytherapy update at Tata Memorial Hospital, Bombay during Feb. 17-19, 1992.

**Dr. JAYAPRAKASH MADHAVAN:** Attended Vth National Cancer Congress at Adyar during January 22-25, 1992 and presented a paper on "The Role of Radiotherapy in Seminoma Testes".

Attended XIII Annual Conference of AROI at Manipal during Feb. 13-16, 1992 and presented a paper on "Experience with PVB Chemotherapy in Non-seminoma Testicular Tumour".

**Dr. K. RAMADAS:** Attended the Vth National Cancer Congress at Adyar during January 22-25th, 1992 and presented paper on Hodgkin's Disease.

XIII Annual Conference of AROI at Manipal from Feb. 13-16, 1992 and presented a paper on "Profile of Carcinoma Prostate in Kerala".

**Dr. K. RATHEESAN:** Attended the International Congress on Oral Cancer during December 2-5, 1991 held at New Delhi and presented a paper on "Mould Therapy".

Attended the Vth National Cancer Congress held at Adayar during January 22-25th, 1992 and presented a paper on "Carcinoma Penis".

**Dr. FRANCIS V. JAMES:** Attended the Vth National Cancer Congress at Adayar during January 22-25th, 1992 and presented a paper on "Malignant Thymoma".

XIII Annual Conference of AROI at Manipal during Feb. 13-16, 1992 and presented a paper on "Medulloblastoma".

Attended the Brachytherapy Update at Tata Memorial Hospital, Bombay during Feb. 17-19th, 1992.

**Dr. M. KRISHNAN NAIR:** Attended the National Cancer Control Programme meeting in Cancer Care Trust, Indore on 20-4-1991.

Attended Oncology Faculty Meeting of University of Bangalore on 31-5-1991.

Attended VIIIth State Annual Conference of the Association of Radiation Oncologists of India, Tamil Nadu Branch, Madras on 7-9-91.

Attended Governing Body Meeting of the Indian Cancer Society, New Delhi on 21-9-1991.

Attended meeting on the Working Group on Radiotherapy in Cancer, Geneva from 1st to 5th October, 1991.

Attended National Cancer Control Programme meeting of WHO, Geneva from 25-11-91 to 29-11-1991.

Attended 6th Asian Oceanian Congress of Radiology, New Delhi from 14-12-91 to 18-12-1991.

Attended Oncology Update 1992, Cochin from 18-1-92 to 19-1-1992.

Attended 5th National Cancer Congress meeting of I.S.O., Madras from 22-1-92 to 25-1-1992.

Attended National Symposium on Environment, Bhabha Atomic Research Centre, Bombay from 3-2-1992 to 5-2-1992.

Attended Golden Jubilee Celebrations of Tata Memorial Hospital, Bombay on 22-2-1992.

Attended International Scientific Committee of International Cancer Congress 1994, Bombay on 25-2-1992.

Attended 11th Annual Conference of Indian Association of Cancer Research, Trichur from 13-3-92 to 15-3-1992.

#### PAPERS PUBLISHED/PRESENTED

1. Bhattathiri VN, Sasidharan K, Sudhakaran A, Rajasekharan Pillai, Sudha L and Krishnan Nair M. Periodontal spread of Oral Cancer: Methods of assessment and possible prognostic significance in Oral Oncology I (eds). Varma AK and Harris, M 19-26, 1991 Mac Millan India, New Delhi.
2. Bhattathiri VN. The challenge of Second Primary Tumours Oral Oncology II (eds) Varma AK and Harris M. 24-29, 1991 Mac Millan India, New Delhi.
3. Bhattathiri VN, Remani P, Ravindran Pillai, Sreelekha TT, Aleyamma Mathew, Ravindran Ankathil, Vijayakumar T and Krishnan Nair, M. The effect of Radiation on Lectin staining of Epidermoid cancers of Oral Cavity and soft palate. Journal of Experimental and Clinical Cancer Research (accepted).
4. Bhattathiri V N, Sasidharan K, Rajasekharan Pillai, Sudha L, Nalinakumari KR, Sudhakaran A and Krishnan Nair M. The tooth socket as a frequent pocket of carcinogenesis: A clinical hypothesis. Medical Hypotheses (accepted).
5. Krishnan Nair M. (Thirty papers. See Chapter List of publications elsewhere).



Hon. Chief Minister Sri. K. Karunakaran laid the foundation stone of Radiotherapy Department of Atomic Energy Block (DAE Block) on 16th July, 1991.

Sitting - Dr. M. Krishnan Nair, Director, RCC & Dr. P. K. Iyengar, Chairman, Atomic Energy Commission



Hon. Minister for Health & Family Welfare Sri. R. Ramachandran Nair inaugurated the Surgery Block on 16th July, 1991 in the presence of Hon. Chief Minister and Dr. P. K. Iyengar and Sri. M. Vijayakumar MLA.



## DIVISION OF SURGICAL ONCOLOGY

Dr. Thomas Cherian	—	Associate Professor
Dr. Gladys Jeevy	—	Anaesthetist
Dr. Paul Sebastian	—	Assistant Professor
Dr. M. Iqbal Ahamed	—	Assistant Professor
Dr. Santhosh John Abraham	—	Lecturer
Dr. D. K. Vijaykumar	—	Lecturer
Dr. Chitrathara, K.	—	Lecturer

Surgical salvage of radiation failures of head and neck cancers constituted the major work in the Surgical Oncology Division. Conservation of tissues without compromise on the disease control and cure and early rehabilitation of patients, continued to be the guiding principles in the management of patients.

The surgical oncology outpatient service functions on a referral basis, six days a week. About 30 patients are seen in the outpatient every day. During the reporting year 1991–1992, 873 patients were operated in this division of which 439 patients underwent major ablative surgical procedures.

**TABLE I**  
**Surgical Procedures**

Major operations	—	439
Minor operations	—	434

There was no operative mortality. Eight patients died during the postoperative period due to complications.

TABLE 2

## Major cases - distribution by site

Site	No.	%
Head and neck		
Oral cavity	245	55.8
Oropharynx	1	0.2
Larynx	3	0.7
Thyroid	38	8.7
Salivary glands		
Parotid	7	1.6
Other sites	5	1.1
Lacrimal gland carcinoma	1	0.2
Meibobian gland carcinoma	1	0.2
Hemangio endothelioma	1	0.2
Ameloblastoma	1	0.2
Orbital tumour	1	0.2
Breast	65	14.8
Soft tissue sarcoma	13	3.0
Bone tumour	3	0.7
Squamous cell carcinoma-skin	16	3.6
Basal cell carcinoma	5	1.1
Malignant melanoma	9	2.1
Penis	13	3.0
Miscellaneous	11	2.6
	439	100.0

TABLE 3

## Oral cancer - distribution by site

Site	No.	%
Buccal mucosa	73	29.8
Tongue	98	40.0
Lower alveolus	35	14.3
Upper alveolus/palate	5	2.0
Floor of mouth	12	4.9
Lower lip	20	8.2
Upper lip	2	0.8
	245	100.0

TABLE 4

## Microscopic Tumour Clearance

Site	Margins free			Margin positive
	Free	Close	Dysplastic	
Buccal mucosa	61 (83.6%)	2 (2.7%)	5 (6.8%)	5 (6.8%)
Lower alveolus	26 (74.3%)	5 (14.3%)	3 (8.6%)	1 (2.8%)
Tongue	67 (68.4%)	8 (8.2%)	7 (7.1%)	16 (16.3%)
Floor of mouth	9 (75%)	2 (16.7%)	0	1 (8.3%)
Lip	14 (63.6%)	3 (13.6%)	0	5 (22.7%)

TABLE 5

## Pathological Node Status in Oral Cancer

Site	No.	N+	Neck dissection not done.
Buccal mucosa	30	15	28
Tongue	29	36	33
Lower alveolus	23	12	0
Lip	3	0	19
Floor of mouth	5	5	2

**TABLE 6**  
**Neck Dissection**

Type	No.
Functional neck dissection (FND)	36
Supra omohyoid neck dissection (SOMH)	9
Supra hyoid neck dissection (SH)	9
Radical neck dissection (RND)	12
FND + SOMH	52
FND + SH	14
FND + FND	13
SOMH + SOMH	6
SOMH + SH	2
RND + SOMH	6
RND + FND	11
SH + SH	1
Total	171

**TABLE 7**  
**Flaps used for reconstruction**

Flap	No.
Pectoralis major myocutaneous	107
Sternomastoid myocutaneous	15
Platysma myocutaneous	7
Trapezius myocutaneous	2
Tensor fascia lata myocutaneous	3
Gracilis myocutaneous	1
TRAM	1
Nasolabial	31
Bilateral nasolabial	4
Tongue	1
Deltpectoral	4
Total	176

## ACADEMIC ACTIVITIES

This division actively participated in all the academic programmes of the institution. It was also involved in postgraduate training of MS (Surg) and MD Radiotherapy students.

Dr. Moni Kuriakose, Dental Surgeon from U.K. spent two weeks in our division as a trainee in October, 1991.

Dr. Austen Smith, FRCS, Registrar in Facio-maxillary Surgery, Cardiff, U.K. underwent training for one month in head and neck surgery in this division in March, 1992.

## RESEARCH

Work on the STEC funded project "Plasma Gluthathione – a prognostic marker for oral cancer" is in progress with the collaboration of the Research Division.

## PAIN CLINIC AND PALLIATIVE CARE SERVICE

It is quite gratifying that this section made rapid strides and besides patient services has taken up teaching and training programmes as well.

383 new patients who had failed all definitive modalities of cancer treatment were registered in the pain clinic. 121 patients were started on step I oral analgesics, 220 patients on step II drugs and 42 patients on oral morphine.

In all, there were 1895 patient visits to the pain clinic of which 445 were given oral morphine.

Ms. Gillian Burn, WHO Palliative Care Expert visited the institution in February, 1992. She conducted a two day teaching programme on palliative care for the nurses. One syringe driver was donated by Ms. Burn.

## Conferences/Workshops/Training programmes attended and papers presented

1. Dr. Thomas Cherian: "Experience with salvage surgery and primary reconstruction in head and neck cancers."

- Annual Conference of the Association of Plastic Surgeons of India, Kerala Chapter, Calicut, April, 1991.
2. Dr. Thomas Cherian: "Primary prosthetic implant reconstruction of the anterior arch of the mandible." 2nd International Congress on Oral Cancer, New Delhi, December 1991.
  3. Dr. Thomas Cherian: "Salvage surgery and immediate reconstruction in heavily irradiated oral cancers." Annual conference of AROI, Manipal, February 1992.
  4. Dr. Thomas Cherian: Attended the Head and Neck Workshop organised by Tata Memorial Hospital, Bombay, February 1992.
  5. Dr. Thomas Cherian: Delivered a guest lecture "Eight years experience with salvage surgery and primary reconstruction in oral cancers" at the Annual Conference of the Indian Prosthodontic Society, Mangalore, March, 1992.
  6. Dr. Gladys Jeevy: Co-chaired a session on pain relief at the First International Hospice Conference in India, Bombay, November, 1991.
  7. Dr. Paul Sebastian: Attended the Workshop and Technology Transfer in Surgical Oncology, Tata Memorial Hospital, Bombay, April 1991.
  8. Dr. Paul Sebastian: "Reconstruction of the tongue." Annual Conference of the Association of Plastic Surgeons of India, Kerala Chapter, Calicut, April, 1991.
  9. Dr. Paul Sebastian: "Reconstruction of lateral defects of the lips after excision for cancer." Annual Conference of the Association of Plastic Surgeons of India, Kerala Chapter, Calicut, April 1991.
  10. Dr. Paul Sebastian: Attended the Mid-term Conference of the Association of Surgeons of India, Kanhaza, October, 1991.
  11. Dr. Paul Sebastian: "Cancer pain relief." WHO Workshop on District Cancer Control Programme, Trivandrum, October 1991.
  12. Dr. Paul Sebastian: "Role of surgery in the management of early breast cancer." WHO Workshop on District Cancer Control Programme, Trivandrum, October 1991.
  13. Dr. Paul Sebastian: "Salvage surgery and primary reconstruction of recurrent oral cancer following radical radiotherapy - an eight years experience." 2nd International Congress on Oral Cancer, New Delhi, December 1991.
  14. Dr. Paul Sebastian: "Oral analgesics in the management of cancer pain." Oncology Update, organized by Indian Society of Oncology, Kochi, January 1992.
  15. Dr. Paul Sebastian: Participated in the second Menon Foundation Symposium on Epidemiology in Medicine, Trivandrum, January 1992.
  16. Dr. Paul Sebastian: "Experiences with the sternomastoid myocutaneous flap." V National Cancer Congress, Madras, January 1992.
  17. Dr. Paul Sebastian: "A simple technique for primary reconstruction of the anterior arch of the mandible." Annual Conference of Association of Surgeons of India, Kerala Chapter, Trivandrum, February 1992.
  18. Dr. Paul Sebastian: "Cancer pain relief." WHO Workshop on Cancer Control, Trivandrum, February 1992.
  19. Dr. M. Iqbal Ahamed: Worked as Registrar in the Department of Surgery in University of Wales College of Medicine. Cardiff, U.K. from November 1989 to January 1992. Was also involved in research activities of the department.
  20. Dr. M. Iqbal Ahamed: "Heterogenicity of RAS and P 53 abnormalities in colorectal carcinoma." European Association for Cancer Research. Geneva, Italy, April 1991.

21. Dr. M. Iqbal Ahamed: Attended the meeting of Surgical Research Society of Great Britain, Liverpool, June 1991.
22. Dr. M. Iqbal Ahamed: "Tumour heterogeneity of RAS and P53 abnormalities in colorectal carcinoma." Conference of British Association for Cancer Research St. Mary's College London, September 1991.
23. Dr. M. Iqbal Ahamed: Attended the meeting of Surgical Research Society of Great Britain, Leister, U.K. December 1991.
24. Dr. Santhosh John Abraham: "Nasolabial flap: an experience of 105 cases." Midterm conference of Association of Surgeons of India, Kerala Chapter, Kangazha, October 1991.
25. Dr. Santhosh John Abraham: "Management of thyroid neoplasms." Oncology Update, organized by Indian Society of Oncology, Kochi, January 1992.
26. Dr. Santhosh John Abraham: "Primary reconstruction in head and neck malignancies." Annual Conference of Association of Surgeons of India, Kerala Chapter, Trivandrum, February 1992.
27. Dr. Santhosh John Abraham: Attended the WHO Workshop on Cancer Control, Trivandrum, February 1992.
28. Dr. D. K. Vijaykumar: Attended the Midterm Conference of Association of Surgeons of India, Kerala Chapter, Kangazha, October 1991.
29. Dr. D. K. Vijaykumar: "Salvage surgery and modified neck dissection in oral cancer—a six year experience." V National Cancer Conference, Madras, January 1992.
30. Dr. D. K. Vijaykumar: "Primary reconstruction of tongue after excision for cancer." Annual Conference of Association of Surgeons of India, Kerala Chapter, Trivandrum, February 92.



Pre operative View



After radical surgery and reconstruction with pectoralis major myocutaneous flap.

31. Dr. D. K. Vijaykumar: "Reconstruction of the mandible—a new technique." Annual Conference of Indian Prosthodontic Society Mangalore, March 1992.
32. Dr. K. Chitrathara: Attended a Workshop on endoscopic surgery organized by the Association of Obst: & Gyn society at Bangalore, February 1992.

#### PUBLICATIONS

1. Thomas Cherian, Paul Sebastian, M. Iqbal Ahamed, K. L. Jayakumar, P. Sivaramakrishnan, Gladys Jeevy, R. Sankaranarayanan, M. Krishnan Nair, Evaluation of salvage surgery in heavily irradiated cancer of the buccal mucosa. *Cancer* 1991, 68: 295–299.
2. Thomas Cherian, Paul Sebastian, M. Iqbal Ahamed, K. L. Jayakumar, P. Sivaramakrishnan, Santhosh John Abraham, D. K. Vijaykumar. Salvage surgery and primary reconstruction for recurrent oral cancer following radical radiotherapy – an eight year experience Verma AK ed. *Oral Oncology Volume II*, New Delhi, Mcmillan India 1991, 265–268.
3. Paul Sebastian, Thomas Cherian. The feeding pharyngostomy. *The Journal of Laryngology and Otology* 1991, 105: 1097.
4. Thomas Cherian, Paul Sebastian, Elizabeth K. Abraham, M. Iqbal Ahamed, K. L. Jayakumar, P. Sivaramakrishnan. Unusual multiple metastases from malignant pleomorphic adenoma of the parotid gland. *The Journal of Laryngology and Otology* (in press)

## DIVISION OF PAEDIATRIC ONCOLOGY

Dr. P. Kusumakumary — Assistant Professor

Dr. S. Rajeev Kumar — Lecturer

This division is responsible for the primary care of all paediatric patients registered in this centre.

### Clinical activities:

Number of New patients seen	—	227
Total number of outpatient visits	—	3450
Inpatient admission	—	332

### Diagnosis:

Leukaemias	—	48	—	22.8%
C.N.S. tumours	—	53	—	25.2%
Lymphomas	—	24	—	11.4%
Neuroblastomas	—	13	—	6.1%
Soft tissue sarcomas	—	10	—	4.7%
Wilm's tumours	—	4	—	1.9%
Bone tumours	—	9	—	4.2%
Retinoblastoma	—	7	—	3.3%
Germ cell tumours	—	7	—	3.3%
Liver tumours	—	4	—	1.9%
Histiocytosis	—	4	—	1.9%
Miscellaneous tumours	—	27	—	12.9%
Nonmalignant cases	—	17	—	—

The number of new cases registered was similar to that of previous years, but there was slight difference in relative frequencies of tumours this year. The most common malignancy reported in this year was brain tumours (25.2%) whereas acute leukaemias which ranked 1st(22.8%) in previous years is second this time. This may be due to the bias in referral pattern and doesn't give a true decrease in the incidence of leukaemia in this age group. Lymphomas ranked 3rd in the list (11.4%) and frequency was high compared to previous years. Frequency of wilm's tumour was also showing remarkable change this year, the percentage being less than 2.

Male predominance was observed in leukaemias and lymphomas, the distribution was equal in both sexes in case of brain tumours.

All newly diagnosed acute lymphatic leukaemias were given induction chemotherapy and were put on maintenance treatment after attaining remission. All the brain tumours were given irradiation and chemotherapy was used sparingly in this group. Multimodality treatment was offered to all other solid tumors.

Out patient clinic in Paediatric oncology is being held on all days except Sundays. Detailed diagnostic work up of all these patients were done as routine.

Paediatric tumour board, the multidisciplinary team met every monday at 12.00 noon and major management decisions were taken by this team as in previous years.

### Academic & Research activities:

This division actively participates in the teaching and training programme of undergraduates and postgraduates of Medical College, Trivandrum.

Dr. P. Kusumakumary is a co-investigator in the ICMR funded project on "Risk factors of Hepatitis B infection in cancer patients" — in collaboration with Medical gastroenterology department, Medical College, Trivandrum. This work is in progress. Other studies are:-

1. Psychosocial problems in children with cancer. Advice from International psycho oncology society (IPOS).
2. A clinical study of infection pattern in paediatric ALL patients.

### Conferences attended/papers presented Dr. Kusumakumary P.

1. Paediatric Solid tumours
  2. Acute leukaemias in children
- } Oncology update at Kochi,  
} January, 1992.

3. 2nd Menon foundation Symposium on Epidemiology in Medicine – Trivandrum, January, 1992.
4. Hodgkin's disease in children. Silcon Conference of Indian Association of Paediatric Surgeons at Calicut (Oct. 1991)
5. Paediatric Oncology Seminar } T.M.H., Bombay,
6. Leukaemia Lymphoma update } November, 1991.

#### Papers Published:

1. P. Kusuma Kumary, R. Sankaranarayanan, C. Padmakumary, Cherian Varghese, S. Rajeev kumar and M. Krishnan Nair – 'Childhood cancer in Kerala, India' – Lancet. 455-456. Vol. 338-1991.
2. Kusumakumary and M. Krishnan Nair – 'Epidemiology and end results in paediatric cancers in Kerala: Proceedings of Vth National Cancer Congress, Madras, 107-199.
3. P. Kusumakumary, R. Sankaranarayanan, Sreedevi Amma, T. K. Padmanabhan and M. Krishnan Nair. Childhood cancer in Kerala: Epidemiology and Survival. (Accepted) American journal of Paediatric haematology and oncology.

### DIVISION OF MEDICAL ONCOLOGY

- Dr. V. P. Gangadharan — Assistant Professor  
 Dr. Geetha Mohan — Lecturer  
 Dr. Satheesh Kumar — Medical Officer

The newly formed Medical Oncology Division despite the initial constraints made rapid strides and contributed elegantly to the clinical and academic activities of the centre.

#### Clinical Activities

Outpatient clinic in Medical Oncology is run of all days except Sundays. All leukaemias are seen directly in this division. Lymphomas and other oncology cases are referred to this division for specialist care if necessary. During the year under report nearly 1,200 new cases and 9,000 review cases were attended by this division. The major achievement of this division this year has been the commissioning of a fullfledged medical oncology ward in the new building. This centralised medical oncology ward comprising 17 beds, 8 in the male ward, 6 in the female ward and 3 in the ICU, caters to the need of the in-patients. By virtue of this as well as the team spirit of the division especially those of dedicated nurses the division could offer high quality patient care.

Another achievement of this division has been the standardising chemotherapy protocols for lymphoma, trophoblastic tumours and osteosarcomas.

#### Academic Activities

Our division has been actively participating in the teaching programme of medical undergraduates, and postgraduates in Radiotherapy and General medicine. In the field of research this division is engaged in a project "CHOP Vs CNOP in a randomised trial in Diffuse Aggressive Non Hodgkins Lymphoma". We were able to successfully complete the thesis of postgraduate student in medicine "Role of Liver biopsy as a staging procedure in lymphomas". The thesis of another postgraduate medical



scholar has been started, topic being - "Prognostic factors in multiple myeloma".

#### Papers Presented

1. V. P. Gangadharan. Peripheral T Cell lymphoma - an enigma presented at the Vth National Congress of ISO at Madras in January 1992.

#### Conference attended

1. Dr. V. P. Gangadharan attended the IIIrd International Workshop on Myeloma at Torino, Italy from April 9-12, 1991 (sponsored by the Fulford India Ltd.).
2. Dr. V. P. Gangadharan attended by Vth annual conference of haematology and Blood transfusion at CMC, Vellore.
3. Dr. V. P. Gangadharan attended the Vth National Congress of ISO at Madras in January, 1992.

#### DENTAL WING

Dr. Nalinakumari, K. R. — Lecturer

Major activities of this division are:-

1. Dental extractions
2. Biopsies
3. Preparing biteblocks, prosthetic appliances
4. Preparing moulds
5. Management of pre-cancerous and other oral lesions
6. Participation in research projects.

The following services were rendered during the year.

1. Total number of sittings of patients	—	3225
2. Number of new cases	—	788
3. Number of biopsies	—	631
4. Number of biteblocks and moulds	—	69
5. Supplementary registered cases	—	24
6. C.D.P.C.	—	1

Percentage of Biopsies of Different Sites.

	<i>Site</i>	<i>Percentage</i>
1.	Buccal mucosa	— 36.13
2.	Commissures	— 5.07
3.	Hard Palate	— 3.80
4.	Soft Palate	— 0.79
5.	Retromolar regions	— 8.56
6.	Tongue Dorsum	— 5.39
7.	Tongue borders	— 16.48
8.	Floor of mouth	— 3.49
9.	Under surface of tongue	— 0.16
10.	Lower alveolus	— 9.03
11.	Upper alveolus	— 2.06
12.	Lower sulcus	— 3.01
13.	Upper sulcus	— 1.74
14.	Lower lip	— 3.80
15.	Upper lip	— 0.48
		----- 100.00

The Dental wing did total dental extraction where poor oral hygiene was indicated and tries to attend most of such cases as early as possible. We prepare biteblocks in cases of patients who require radiation in addition to preparation of moulds for cases requiring radium therapy in sites like hard palate, maxillary antrum and lip cases.

Normally cases that come to us represent pre-cancerous lesions like leukoplakia, SMF, Lichenplanus. Patients with precancerous and cancerous lesions are given proper guidance on oral hygiene, oral prophylaxis and advice on modified diet. Usually monthly check-up is done to assess their conditions and to take further necessary steps in these cases. Biopsies have been taken from all the suspected cases referred to the department.

#### **Research activities**

This wing is taking part in the research activities of the Research Division and the Radiotherapy department. Full cooperation is also extended to the research work under various schemes such as ICMR, DST, STEC funded projects. This department is rendering necessary help to the Ph.D. students of various departments.

#### **Papers presented/published**

1. Epidermal growth factor Receptor and Ras p 21 expression in oral leukoplakia and cancer.

G. Jagadeesh Chandran, S. Kannan, Joy Augustine, K. R. Nalinakumari, N. K. Hareendran, M. Krishnan Nair and Prabha Balaram.

2. Periodontal spread in Oral Cancers.

V. N. Bhattathiri, K. R. Nalinakumari presented at the Fourth National Conference of the Indian Academy of Oral Medicine 22nd & 23rd December 1991 at Thiruvananthapuram.

3. The tooth socket as a pocket of carcinogenesis, a clinical hypothesis.

V. N. Bhattathiri, Sasidharan, K. R. Nalinakumari Medical Hypothesis (accepted)

#### **Conference attended**

Fourth National Conference of the Indian Academy of Oral Medicine 22nd & 23rd December 1991 at Thiruvananthapuram.

## DIVISION OF MEDICAL RECORDS & CLINICAL SERVICES

Mr. R. Raveendran Nair : Medical Records & Clinical  
Services Officer

Activities regarding the preparation, maintenance and retrieval of records and patient related services are handled in this division. The primary objective is to assist the clinicians to provide better care and to assist analytical needs. The following are the activities of this section:

- OP Service : This is managed with support of nurses and other paramedical workers
- Medical record assembling.
- New case registration and income assessment - This is managed with the support of tumour registry.
- Bradma Card preparation
- Information
- Telephone operation
- Follow up
- Appointment
- Admission & Discharge
- Railway concession
- Reports, Certificates
- Payment & Patient billing
- Coding & Indexing
- Filing & retrieval
- Patient correspondence
- Conduct of follow-up Clinics at Early cancer detection centre, Ernakulam.
- Cancer Detection and Prevention Clinic.
- Co-ordination with ESI and CCL to provide related services.

The Medical Records are preserved year-wise according to serial number. The records are retrieved and utilised for Patient service, Cancer Registry operation, Academic and Research activities and Administrative purposes etc.

We maintain 2 years active appointment system to control the sequence of patients presenting for. We have planned to computerise this service to begin with and action has already been taken by the computer section. 60-80% of our patients are attending for follow-up confirming to the fixed appointments.

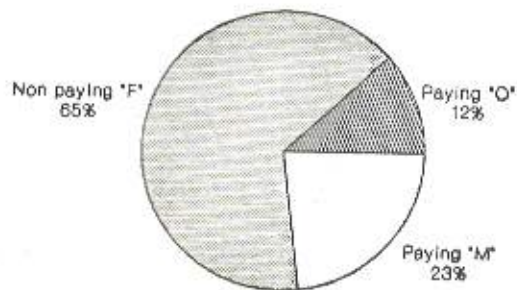
Payment and patient billings are handled by this section for the convenience of patients and has been computerised.

The following data reflect the magnitude of activities undertaken by us:

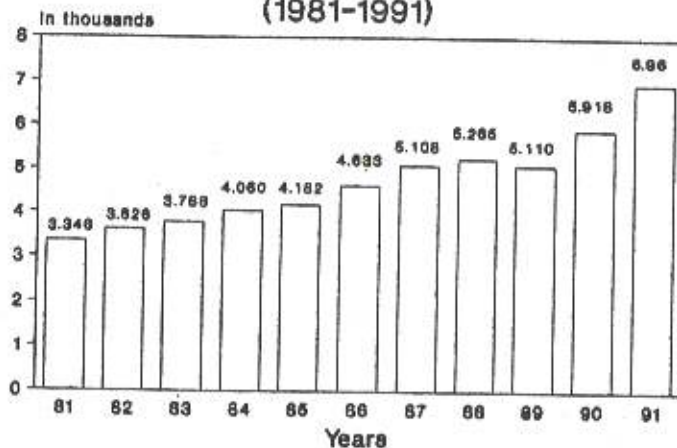
Total new cases registered	— 6960
Review cases at R.C.C.	— 43975
Persons attending follow-up Clinic and Early Cancer Detection clinic	— 1356
Trophoblastic Clinic	— 2080
Total patients visits (Old and New)	— 54371
Daily average patient visits	— 181
Average attendance per patient (each patient visit every 45 days)	— 7.8
Number of inpatient admissions	— 3499
Number of discharges	— 3430
Number of hospital deaths	— 211
Total appointments given	— 41860
Attendance by appointment	— 27763 (66%)

The Medical Records and Clinical Service Officer is the convener of the "Susan Daniel Memorial Cancer Relief Fund" California. So far 74 patients have been benefited by this fund. The division interacts with the Accounts section for dealing with the Cancer Care For Life Scheme and upto March 1992, 202 patients have availed of C.C.L. benefits.

**PERCENTAGE OF PAYING & NON PAYING CASES FOR THE YEAR 1991**



**DIAGRAM SHOWING THE NUMBER PATIENTS REGISTERED DURING THE LAST 10 YEARS (1981-1991)**



**DIVISION OF NURSING SERVICES**

Sr. Vijaya Puthusseril : Nursing Superintendent

**1. Staff Position :**

During this year this division had the following staff strength.

Head Nurse	:	1
Staff Nurses	:	45 (Permanent) 3 (temporary)
Nursing Assistants	:	4 (daily wage)
SEWA Assistants	:	4 (daily wage)

**2. Distribution of services :**

Nurses rendered services in various departments like OPD, laboratory, reception counter, imageology and other IP wards.

**(i) Out-patient department :**

There are 6 nurses in OP, including the reception as well as the clinical laboratory. They assist doctors in the daily general clinic and special clinics like pain clinic and early cancer detection clinic. Two staff nurses help out in the pain clinic on every Thursday.

**(ii) Imageology :**

There are 3 staff nurses working in imageology. They help out in CT Scan, Ultrasonography, Mammography and Thyroid function tests.

**(iii) Medical Oncology :**

From September 1991 onwards with the opening of the medical oncology ward, nurses are on 3 shift duty. No bystanders are allowed in the ward and that makes the nurses more vigilant in their care. They do handle patients with acute and chronic leukaemia, lymphoma and solid tumours with aggressive

chemotherapy and palliative care. Nurses in this unit are specially coached on leukaemia, its management and on problem oriented nursing care. They are assisted by nursing assistants in the ward. The ICU attached to medical oncology ward is kept as a critical care unit now with 3 beds. There is always one nurse in each shift.

(iv) *Chemotherapy :*

The chemotherapy is given in a day care unit and is totally managed by three staff nurses. Daily on an average there are 50-60 cases for chemotherapy. Nurses in this unit are assisted by SEWA assistants. Here also no bystanders are allowed. All follow up cases for chemotherapy are attended in this unit. Nurses protect themselves by using apron, mask and gloves.

(v) *Radium Iodide Unit :*

There are 2 rooms exclusively set for radium iodide therapy. Nurses are on call to the ward through a hot line system. Special precautions are taken to safeguard the personnel who attend these patients.

(vi) *Surgical Oncology :*

The surgical oncology is still functioning in the old block. Preparations are being taken to shift it to the new building. There are 5 staff nurses working in the theatre. New batch of additional staff nurses and a theatre sister-in-charge are yet to be recruited prior to the opening of the operation theatre, surgical wards and ICU.

(vii) *Paediatric Oncology :*

The paediatric oncology in the old building is fully staffed by R.C.C. There are 5 staff nurses working at present, doing three shift duty.

(viii) *IP wards in old building :*

Nurses belonging to the R.C.C. share the responsibilities of the IP wards along with the medical college staff. There are a total of 130 beds in IP wards.

3. **Visit by Ms. A. K. Bhargavi**

Ms. A. K. Bhargavi, Nursing Superintendent, Tata Memorial Hospital, Bombay paid a 5 days visit and made an observation study of the centre as requested by our director. She was very much impressed with the growth of the centre and pointed out the areas for further development.

4. **Staff Development Programme**

Nurses working in this centre are constantly being reminded and helped in upgrading their knowledge on cancer nursing as they are expected to give comprehensive care to patients suffering from all kinds of cancer conditions.

There is a monthly staff meeting on 1st Saturday of every month. This is a forum for the nursing staff to express their grievances and job satisfaction. A specific time period of this meeting is kept always for some educational session in the form of classes or discussion on various cancer conditions, drugs used in cancer and duties and responsibilities of nursing personnel working in different departments.

Ms. Gillian Burn gave a half day lecture in batches to all the nurses on palliative care.

5. **Teaching and Training**

This division is open to other nurses and nursing students for visits and academic trainings. The G.N.M., B.Sc. and M.Sc. Nursing students of Medical Colleges utilize the services of R.C.C. to meet their academic needs.

Among those who got orientation to the centre during the year include the following:-

- (i) Post certificate B. Sc. Nursing students of College of Nursing, All India Institute of Medical Science, New Delhi.
- (ii) Post certificate B.Sc Nursing students of Fr. Muller's College of Nursing, Mangalore.

(iii) M.Sc Nursing students of C.M.C. College of Nursing Vellore.

(iv) 2nd year Nursing students of College of Nursing, Calicut.

**6. Training/Conferences attended:**

(i) State Annual Conference of Trained Nurses Association of India at Angamaly on July 13th.

Mr. Baiju Srinivas and Mr. Mohammed Ali

(ii) A workshop cum training on Endoscopy -

Sr. Vijaya, Ms. Madhu Menon, Ms. Radha and Ms. Zaina CP

(iii) National Biennial Conference of Trained Nurses Association of India at Ernakulam Nov. 19-23rd.

Sr. Vijaya

(iv) A workshop on Cancer Nursing at Tata Memorial Hospital, Bombay, Feb. 19-21, 1992.

Mr. Baiju Srinivas, Mr. Mohammed Ali, Ms. Ambili Prasad, Ms. Sobhana, N.

## DIVISION OF CYTOPATHOLOGY

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

## ACTIVITIES

The important activities were -

1. Screening of cervical smears received from the centre, various other nearby hospitals and cancer detection camps.
2. Interpretation of cytodagnostic aspirations from various sites including ultrasound and CT guided aspirations.
3. Examination of body fluids and other secretions including sputum for malignant cells.
4. Reporting of peripheral smear and Bone Marrow.
5. Histopathological examination of surgical specimens and review of histopathology slides of patients referred to Regional Cancer Centre from other hospitals with biopsy slides/paraffin blocks/specimens.
6. Teaching and training.
7. Research work.

Project: a. Growth Factor and Growth factor Receptor study in vesicular mole in collaboration with Research division.

b. Immuno histochemistry - continuing.

## Gynaec Cytology

During this year 8258 cervical smears were studied from 8164 women, 94 of these being repeat smears from the same woman. This is 320 smears more than that of the previous year. The cases included both hospital patients and those who have attended various cancer detection camps. A detailed analysis is shown in Table - 1. Compared to the previous year there is a marked increase in the number of carcinoma in situ detected.

**TABLE 1**  
**Analysis of Cervical Smears**

<i>Lesions</i>	<i>No. of cases</i>
Normal	— 1119
Nonspecific inflammation	— 4714
T. V. Infection	— 212 + 27 with dysplasia (included under dysplasia)
Fungal infection	— 129 + 13 with dysplasia (included under dysplasias)
T. V. with fungus	— 2
T. V. with Herpes	— 3
Herpes virus infection	— 3 + 1 with dysplasia (included under dysplasia)
H. S. V. infection	— 5
Reserve cell hyperplasia	— 55
Endocervical Regeneration	— 100
Endometrial cells	— 3
Mild dysplasia	— 931
Moderate dysplasia	— 72
Severe dysplasia	— 38
Atypical cells	— 61
Carcinoma in situ	— 31
Suspicious of malignancy	— 42
Malignant cells – unclassified	— 7
Invasive squamous Carcinoma	— 116
Adeno Carcinoma	— 18
Radiation change	— 16
Miscellaneous	— 85
Unsatisfactory	— 402
<b>Total</b>	<b>8164</b>

**Non Gynaec and Aspiration Cytology including Body Fluids**

5797 samples of fluids and FNACs were examined from 5667 cases. This is 634 samples more than that of the previous year. Out of these 130 samples were repeat smears and 465 were miscellaneous group due to reason like non-mentioning of the site, no definite diagnosis etc. Excluding these the analysis was done on 5202 cases which included 3921 FNACs and 1281 body fluids. Detailed analysis is shown in Tables 2 & 3.

**TABLE 2**  
**Analysis of Body Fluids**

<i>Site</i>	<i>Malignant</i>	<i>Suspicious</i>	<i>Non-neoplastic</i>	<i>Total</i>
Ascitic fluid	53	10	294	357
Pleural Fluid	36	12	235	283
Urine	10	—	272	282
C.S.F.	3	—	340	343
Pericardial fluid	7	—	9	16
<b>Total</b>	<b>109</b>	<b>22</b>	<b>950</b>	<b>1281</b>

**TABLE 3**  
Analysis of F.N.A.C.

Site	Total	Malignant	Suspicious	Benign	Non-neoplastic
Thyroid	1645	82	26	96 (folli. neoplasm)	1441
Lymph node	727	206	29	—	492
Breast	596	110	19	90	377
Liver	184	62	3	—	119
Skin and S/c tissue	142	52	1	4	85
Oral Cavity	141	32	1	—	108
Lung & pleura	101	31	4	—	66
Salivary gland	63	9	—	4	50
Bone	57	22	—	—	35
Female Genital Tract	51	15	—	—	36
Gastro intestinal tract	20	6	—	—	14
Male genital Tract	16	3	—	—	13
ENT	15	5	—	—	10
All other sites	163	51	6	1	105
<b>Total</b>	<b>3921</b>	<b>686</b>	<b>89</b>	<b>195</b>	<b>2951</b>
Site not mentioned				—	165
Miscellaneous/Unsatisfactory				—	300
Repeat samples				—	130
<b>Grand Total</b>					<b>4516</b>

**Sputum Cytology**

Sputum samples were examined from 765 patients for malignant cells. 3 to 5 samples were examined from each patient and hence the total smears examined were at least 4 times more than the no. of patients. There is an increase of 120 patients this year compared to the previous year. The analysis is shown in table 4.

**TABLE 4**  
Analysis of Sputum Samples

Lesion	Total No. of cases
No malignant cells	— 475
Fungal infection	— 196
Atypical cells/Suspicious of malignancy	— 45
Squamous cell Carcinoma	— 14
Small cell anaplastic Carcinoma	— 14
Large cell anaplastic Carcinoma	— 01
Adeno Carcinoma	— 17
Malignancy (Unclassified)	— 03
<b>Total</b>	<b>— 765</b>

**Buccal smears**

Buccal Smears for Barr body were examined from 55 patients on an average of 2 smears per patient.

**Bone Marrow Aspirations and imprint smears**

954 bone marrow aspirations and imprint smears were reported. The details are shown in Table 5.



TABLE 5

## Details of Bone Marrow Examination - 1991

	No.	%
1. Acute Lymphatic Leukaemia	71	7.75
2. A.L.L. Follow up	164	17.19
3. Acute Myeloid Leukaemia	63	6.60
4. A.M.L. Follow up	13	1.36
5. Acute Leukaemia - Unclassified	18	1.88
6. Chronic Myeloid Leukaemia	32	3.35
7. C.M.L. Blast crisis	6	0.62
8. C.M.L. Follow up	2	0.20
9. Chronic Lymphatic Leukaemia	13	1.36
10. Multiple Myeloma	35	3.66
11. Multiple Myeloma follow up	7	0.73
12. Plasma cell Leukaemia	4	0.41
13. Non Hodgkin's Lymphoma - Infiltration	62	6.49
14. N.H.L. - No Infiltration	140	14.67
15. Hodgkin's Lymphoma Infiltration	3	0.31
16. Hodgkin's Lymphoma No infiltration	64	6.70
17. Neuroblastoma Infiltration	1	0.10
18. Neuroblastoma No Infiltration	3	0.31
19. Carcinomatous Infiltration	5	0.52
20. Rhabdomyosarcoma Infiltration	1	0.10
21. Undifferentiated Malignant cells	2	0.20
22. Aplastic Anaemia	4	0.41
23. Myelofibrosis	6	0.62
24. Hypereosinophilic Syndrome	1	0.10
25. Myelodysplastic Syndrome	1	0.10
26. Others	233	24.42
Total	954	

## HISTOPATHOLOGY

Detailed histopathological examination was carried out in surgical specimens received from the centre. In addition the slides of patients referred from outside hospitals were reviewed for diagnostic accuracy and uniformity of reporting which often involved recutting of blocks and even reprocessing of specimens for special stains.

During the said period a total of 3562 specimens were examined which was 649 cases more than those of the previous year. A detailed analysis is given in table 6.

TABLE 6

## Histopathology at a Glance

ICD 9	Site	Benign	Uncertain benign/ Malignant	Carcinoma in situ	Malignant primary	Non- neoplastic lesions	Malignant	Uncertain primary	Total
1	2	3	4	5	6	7	8	9	10
140.	Lip				60	25	..	..	85
141.	Tongue	2	1	..	233	55	..	..	291
142.	Salivary gland	2	..	..	16	2	..	2	22
143.	Gum	2	1	..	104	19	..	..	126
144.	Floor of mouth	..	..	..	26	7	..	..	33
145.	Other mouth	3	..	..	390	144	1	..	538
146.	Oropharynx	..	..	..	16	..	..	..	16
147.	Nasopharynx	..	..	..	4	3	..	..	7
148.	Hypopharynx	..	..	..	12	1	..	..	13
149.	Pharynx	..	..	..	3	..	..	..	3
150.	Oesophagus	..	..	..	24	2	..	..	26
151.	Stomach	..	..	..	17	1	..	1	19
152.	Small Intestine	..	..	..	3	..	..	..	3

1	2	3	4	5	6	7	8	9	10
153.	Colon		..	..	2	2	..	..	4
154.	Rectum	2	..	..	29	3	1	..	35
155.	Liver	..	..	..	2	38	9	1	50
157.	Pancreas	..	..	..	3	..	..	..	3
158.	Peritoneum/Omentum	1	..	..	1	..	8	..	10
159.	Other digestive	..	..	..	1	..	1	1	3
160.	Nasal cavity	..	..	..	10	2	..	..	12
161.	Larynx	..	..	..	16	2	..	..	18
162.	Lung	..	..	..	4	1	2	..	7
164.	Heart	3	..	..	..	2	1	..	6
169.	Bone Marrow	..	..	..	14	288	59	1	362
170.	Bone	2	7	..	35	10	6	..	60
171.	Soft tissue	12	8	..	63	26	13	1	123
173.	Skin	8	3	..	44	31	10	4	100
174.	Breast	16	2	5	179	54	..	..	256
179.	Uterus	7	2	..	6	13	..	..	28
180.	Cervix	1	1	25	341	134	2	2	506
181.	Placenta	..	..	..	2	..	..	..	2
182.	Corpus Uteri	..	..	1	17	10	..	..	28
183.	Ovary	3	7	..	47	5	8	2	72

	1	2	3	4	5	6	7	8	9	10
184.		Vagina	1	..	..	23	6	5	..	35
185.		Prostate	..	..	..	8	..	1	..	9
186.		Testis	..	..	..	17	1	..	1	19
187.		Penis	..	..	..	23	11	..	..	34
189.		Kidney & Urinary System	..	..	..	14	..	..	1	15
188.		Urinary Bladder	..	..	..	6	2	1	..	9
190.		Eye	..	..	..	5	..	..	..	5
191.	}	Brain & Nervous system	..	1	..	18	1	1	..	21
192.			..	1	..	95	13	3	..	113
193.		Thyroid	1	1	..	..	..	..	..	7
194.		Pituitary	4	2	..	1	..	..	..	7
195.		Other ill defined site	1	..	..	..	1	..	..	2
196.		Lymphnode	1	1	..	149	84	190	1	426
		Total	72	37	31	2083	999	322	18	3562

## TEACHING & TRAINING

This division participated in the teaching and training programme of the Medical College, Thiruvananthapuram in addition to conducting regular full time courses for cytotechnicians and cytotechnologists.

**MBBS Students:-** They were given an insight into cytological methods of diagnosis and its importance in patient management.

**Post Graduate Students:** MD Pathology and DCP students were given training in cytology for 3 months and 1½ months respectively. The staff members also discussed various topics of interest in cytology in the morning teaching sessions organised in the department of pathology of the Medical College, Thiruvananthapuram.

Post graduate of other departments of Medical College Thiruvananthapuram were given guidance in their thesis work. Dr. Elizabeth K. Abraham helped Dr. Arun, P.G. in the Department of Medicine on "Role of liver biopsy as a staging procedure for lymphoma." She also conducted lectures and discussions on Oncopathology for Radiotherapy P.Gs. Post graduates of Calicut and Kottayam Medical Colleges were given one week training in the interpretation of various cytology materials.

### Paramedical Courses

**DMLT Students** were given two weeks training in cytopreparatory techniques. The students were posted on a rotation basis in batches of 4 or 5.

**B.Sc. MLT Students** who were posted in batches of 2-3 students for 1½ months were given practical training in cytopreparatory techniques with demonstration of normal and abnormal smears in addition to 13 to 15 lecture classes. Dr. B. Chandralekha conducted a special ½ day session on "Interpretation of cytology smears" for these students.

B.Sc. MLT students of Gandhiji University, Kottayam were also given one week training in cytopreparatory techniques with demonstration of normal and abnormal smears.