

## REPORT ON THE 5th AMERICAN CANCER CONGRESS

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The 5th National Cancer Conference of the United States of America, sponsored by the American Cancer Society, Inc., and the National Cancer Institute, was held at the Bellevue Stratford Hotel in Philadelphia on 17-19 September 1964.

The Programme Committee under chairmanship of Roger A. Harvey M.D., Professor of Radiology of the University of Illinois, Chicago, arranged 2 current Plenary Sessions on the epidemiology and biology of cancer and on cancer and the patient. Panel sessions covered the following subjects: cancer of the breast, cancer of the cervix, oral and laryngopharyngeal cancer, cancer of the prostate, bladder, tumours of the bone, the potential and evaluation of pre-operative radiation, cancer of the lung, evaluation of perfusion and infusion, cancer of the colon and rectum, lymphomas and leukaemias and the role of the pathology laboratory in the diagnosis and treatment of cancer.

On Saturday 19 September a Plenary Session was held in the Academy of Music at the Convocation of the Bicentennial Observance of the University of Pennsylvania, School of Medicine. Honorary Doctor of Science degrees were bestowed upon 5 former Nobel prizewinners, who subsequently delivered addresses on nucleic acids, viruses, and genetics in relation to cancer.

The speakers were Wendell M. Stanley, Director of Virus Laboratory of the University of California; George W. Beadle, President and Professor of Biology of the University of Chicago; John F. Enders, Higgins University Professor, Harvard University; Severo Ochoa, Professor of Biochemistry, New York University; and Arthur Kornberg, Professor of Biochemistry, Stanford University, California. A magnificent presentation of the recent research work was covered succinctly by these world-renowned masters of the subjects.

The interaction of the filterable virus with the cell nucleus, antigenic effects, the chemistry of nucleic acid, DNA, RNA, enzyme effects, molecular structure, the use of the electron microscope to observe the splitting of the molecule, the repair of the latter and reassembly in various ways, were described vividly and in a stimulating fashion. The experimental work on the carcinogenic effects of viruses in hamsters, mice and monkeys was excellently reviewed.

The use of radioactive labelling with  $C^{14}$ ,  $P^{32}$  and radio-sulphur was portrayed in scholarly fashion. It seems as if this basic research will uncover the cause of cancer in the genetic message control mechanism and possibly of cell life itself. This research is costly, for in 1964 a sum of 10 million dollars was spent on this in the USA alone.

The Current Plenary Sessions were addressed by 5 or 6 speakers, each restricted to 15 minutes. Firm chairmanship allowed the programme to proceed in orderly fashion on time.

There were 99 participants in the programme, most of whom were university professors, heads of hospitals and research departments and all were practised speakers. The full pro-

ceedings are being printed and should be available early in 1965.

Here follow summaries of some of the meetings I could attend (what a pity to have had to choose between equally important subjects!)

**M. L. Levin**, Roswell Park Memorial Institute, New York: There is significant evidence that parental exposure or intra-uterine exposure to radiation increases the risk of leukaemia in the offspring; tobacco smoke is suspect in its relation to lung cancer; the increased use of insecticides should be watched.

**Van R. Potter**, Professor of Oncology, Wisconsin (Receiver of the 'Man of the Year' award for 1964 from the Mayo Clinic): He discussed hepatoma; the liver cells—normal and abnormal—the enzyme control in the mature and the immature state; the effect of protein stimulation of the enzyme activity of the cells; their response to the signal stimulus and the genetic regulation of the feed back signals; the DNA mechanism.

**J. C. Hau**, Chief Cytologist, University of Texas: The genetic control mechanism of cells is specialized so that brain tissue reads neurone messages and endocrine cells elaborate hormone with sensitivity to this type of control. All the information stored in the chromosome is not utilized in the cell structure—only part of it. Chromosome aberration due to virus simplex, herpes zoster and measles may result in disorderly growth.

**Leon Dmochowski**, Professor of Experimental Pathology, University of Texas Postgraduate School of Medicine: Viruses may be detected in the milk of mice and cows long before these animals subsequently develop leukaemia.

**Richmond T. Prehn**, Associate Professor of Pathology, University of Washington, Seattle, Washington, speaking on immunity in the biology of cancer: Possibly all tumours have antigens but may be different depending upon the chemical or virus carcinogenic factor. Since lymph nodes are involved in the immune response, are we wise in removing lymph nodes?

**Bernard Fisher**, Professor of Surgery, University of Pittsburgh, on the biological aspects of cancer cell spread, discussed the calcium effect on cell adhesiveness, and similarly enzyme, nutrition and hormone effect in relation to spread; also the role of trauma surgery and humoral effect in relation to increased metastases. (This is an old Afrikaner belief).

The Current Panel Session discussion of cancer of the cervix revealed no new concepts in treatment but a very definite restriction of surgery to the early cases only—Stage I-IIa. Increased use of cervical smears has led to earlier diagnosis and better cure rates.

The Panel Discussion on breast cancer showed great interest and activity in mammography as discussed by **Gerson-Cohen** of the Albert Einstein Medical Centre, Philadelphia, who also discussed a new technique of thermography—measuring the skin temperature over the breast lump. The value of mammography is emphasized when of 1,150 routine 'normal' women who were radiographed, 32 cases of cancer were detected when followed at 6-monthly intervals at times when the tumour was not clinically apparent. The examination has come to stay and should be actively used in South Africa.

The surgical and radiotherapy methods and opinions are very similar to those practised in the major centres in South Africa. The review revealed nothing dramatic in chemotherapy.

The Plenary Session devoted to the systemic effects of cancer on the patient was most stimulating: special consideration of protein metabolism and especially in relation to myelomatosis and 'Heavy Chain' Disease—macroglobinaemia—was discussed by **Elliott Osserman** of Columbia University, New York, under the startling title of studies on the association of 'monoclonal gammopathy' with nonreticular neoplasms.

**John L. Fahey**, of N.C.I., Bethesda, Maryland, discussed the effects of cancer on the immune globulins and immunity, with the risk of increased infections and poor antibody response with increased gammaglobulins.

An excellent review of the nervous system and muscle reaction to remote cancer was given by **G. Milton Shy**, Professor of Neurology at the University of Pennsylvania, Philadelphia, in his description of 43 cases. The toxic effects of malignancy on nerve tissue—peripheral, cord and brain—were described. Subacute cerebellar changes, subacute combined degeneration of the cord, anterior horn degeneration and dementia without local metastases were enumerated. The cases were classified as polyencephalopathies, leucoencephalopathies, myasthenia syndrome and neuropathies; the latter was the largest group. Polymyopathy may precede the detection of the primary carcinoma by years. The same applies to dysphagia occasionally. Of 119 cases of persistent neuromyopathy carcinoma was subsequently detected in 23%. The commonest tumour was a small-celled lung cancer, but breast cancer was also noted and sarcoma may mimic the clinical features exactly.

**Nathaniel Berlin**, Clinical Director of the National Cancer Institute, Bethesda, Maryland, elucidated anaemia in cancer. In a large hospital 60% of blood transfusions are given to cancer patients. The toxic effects on the bone marrow and direct bone involvement were discussed with special investigation of the blood by Cr<sup>51</sup> (volume), P<sup>32</sup> and metabolism by Fe<sup>59</sup>.

**Thomas A. Waldman**, of the N.C.I., Bethesda, Maryland, considered the question of polycythaemia in cancer, particularly in renal lesions and cerebellar haemangioblastoma but also in hepatic, adrenal and uterine tumours. Is there an erythropoietic stimulating factor produced by the tumour? Erythropoietin is produced by the kidney in response to anoxia, but on assay adrenal, ovarian, hepatic and uterine tumours show no evidence of this. Hence some other factor is involved and requires further investigation.

**Olof H. Pearson**, Associate Professor of Medicine, Western University School of Medicine, Cleveland, related the disturbances of calcium metabolism in the cancer patient and caused by tumour bone involvement, and/or the humoral effect. Parathormone formation by the tumour, without parathyroid involvement, may be found in lung cancer. The question of osteolytic and osteoblastic changes which disturbed hormone balance, the use of the sex hormones, prednisone and dietary control of calcium and protein was considered in the different stages of the disease and response to treatment.

**Mortimer B. Lipsett**, Head of the Endocrinology Service N.C.I., Bethesda, Maryland, discussed the humoral changes associated with cancer and emphasized the changes that could occur in, e.g. Cushing's syndrome, hyperglycaemia, hyperthyroidism, etc., particularly in the large tumours, e.g. mesenchymal, adrenal, hepatic, anaplastic adenocarcinomas, and pseudomyxomas, without specific liver damage or pancreatic stimulation.

Thus a large but silent retroperitoneal sarcoma may present as vague backache, but with pronounced endocrine changes. Cushing's syndrome may be caused by tumour ACTH hormone stimulation of the adrenal glands and affect the pituitary without inhibitory control. These cases show a rapid development of the oedema and pigmentation. Adrenalectomy is helpful.

A typical carcinoid syndrome associated with gastric cancer, bronchial cancer and pancreatic tumours, with the production of serotonin and tryptophan, may be encountered.

A Current Panel Discussion on the potential and evaluation of pre-operative radiation was most interesting and emphasized the value of this type of radiation especially with the higher energy radiation, which is available now.

The effect of radiation on cell takes, the tumour bed, the variation in tumour sensitivity and the delay in wound healing with large dosage irradiation was discussed by **W. E. Powers**, Director, Department of Radiotherapy, Washington University, St. Louis. The pre-operative radiation in the treatment of carcinoma of the breast has been practised at the University of Texas, M. D. Anderson Hospital and Tumour Clinic in cases where the primary lesion was greater than 5 cm. and where there is skin involvement and axillary nodes. Earlier cases received postoperative irradiation and late cases irradiation only without surgery, except for 'cleaning up' operations. The dosage pre-operatively is less than that for radical therapy and of the order of 3,500r to the primary and 4,000r to the axilla in 4 weeks. In the era of the 250KV units complications were seen but not with Co<sup>60</sup> irradiation. Operation followed 5-6 weeks after the end of the course of radiation.

The excellent results of pre-operative irradiation are shown by the 5-year results:

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|---------------------------------------|-------------------|
| (a) Surgery alone (earliest cases)    | 233—73% survival. |
| (b) Postoperative (stages I and II)   | 301—59% survival. |
| (c) Pre-operative (later than a or b) | 254—69% survival. |

Pre-operative therapy lengthens the over-all treatment time but certainly appears to be worth while. This excellent presentation was by **Gilbert H. Fletcher**.

The value of pre-operative radiation in the treatment of lung cancer discussed by **F. G. Bloedorn**, Professor of Radiology, University of Maryland, showed slight over-all improvement of the results, but with a high rate of postoperative complications.

The pre-operative radiation in the treatment of bladder cancer at the Memorial Hospital for Cancer, New York, was discussed by **Willer F. Whitmore**. The series is not large, but the results of combining irradiation with surgery appear to be worth while. There were a few cases of delayed healing of the wound, massive haemorrhage in 3 cases and increased primary morbidity and deaths. The 3-year results were as follows:

Stage	T 1	T 2	T 3	T 4
Surgery alone	8/14 57%	21/54 39%	31/140 22%	1/20
Combined therapy	3/4 75%	4/9 44%	8/19 42%	0/1

**W. S. MacComb** of the M. D. Anderson Hospital, Houston, Texas, discussed the pre-operative treatment in cancer of the head and neck, and stressed the importance of the correct dosage, time interval and great care that the surgeon should exercise in handling irradiated tissue gently. There is a limited place for this treatment.

Pre-operative radiation in the management of rectal cancer as seen at the Memorial Hospital for Cancer, New York, by **M. W. Stearns** over a period of 12 years revealed its value in late cases, but with the interesting finding that liver metastases were more common in those who received irradiation than in those who did not.

The Current Panel Session on cancer of the colon and rectum was under the chairmanship of **Prof. Warren Cole**, of the Department of Surgery, University of Illinois, Chicago, and the speakers were: **Thomas Carlile**, Mason Clinic, Seattle, Washington, who reviewed recent advances in diagnostic radiology of the colon and rectum and commented upon the excellence of the new plastic enema set, the importance of

detecting small polypi, the significance of recognizing potential malignancy and the great difference in the number of positive X-ray findings in America (2% compared with 13% in Sweden), possibly due to inadequate technique in America.

**Robert Turell**, Associate Professor of Clinical Surgery (Proctology), of the Albert Einstein College of Medicine, New York, stressed the importance of sigmoidoscopy and the use of the newer instruments with better light optics. Electrocoagulation in competent and experienced hands could play an important role in the treatment of the lower bowel carcinoma.

**Niel Swinton**, surgeon, of the Lahey Clinic, Boston, discussed the controversy of the management of polyps of the colon and rectum. Familial polyps are potentially malignant. Sessile polyps are not.

**Joel W. Baker**, chief surgeon, Mason Clinic, Seattle, indicated the surgical procedures and adjuvants necessary in the management of colon cancer. The pre-operative use of cyto-

toxic drugs was of little value. The relief of symptoms by surgery, the careful evaluation of the bowel lesion and an air of cautious optimism were worth while. He quoted a case where the colon carcinoma and metastasis in two lobes of a lung were resected with a patient alive and well 15 years later.

**Prof. J. E. Rhoads**, of the Dept. of Surgery, University of Pennsylvania, discussed the distribution of large bowel cancer, the question about polypi and cancer, the operative techniques and the usefulness of an umbilical colostomy.

The last speaker on the Panel was **N. Henry Moss**, Assistant Professor of Surgery at Temple University, Philadelphia, who presented the end-results report on 42,652 cases from 100 hospitals from 1940 to 1959. This staggering analysis covered all facets of the disease and its treatment, which remains primarily surgical, with radiation therapy reserved for special application and chemotherapy for late cases.

There was an excellent attendance, estimated at about 1,000 doctors.