Oncology in the North East

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The history of Oncology in Aberdeen Royal Infirmary began immediately after the first World War. As often happens after war, medicine enters an era of rapid advance. In the clinical field, blood transfusions, radiology, insulin and radium were introduced.

The first request for radium, for therapeutic use in Aberdeen was in 1922, for the treatment of carcinoma of the uterus. John Cruickshank, a lecturer in Malignant Disease in the Department of Pathology, was charged in May 1922 with the custody and administrative control of radium. He was given the title of “Radium Officer” and he reported to the “Radium Committee”. He was therefore the first Radiation Oncologist. His other skills included bacteriology, and he went on to hold the Chair of Bacteriology in Aberdeen.

In 1939, James Phillip was appointed Surgeon in Charge of Radium Therapy, with the remit to work in close cooperation with the X-ray department as this was the second source of therapeutic radiation.

During the Second World War, safety regulations required that radium had to be removed from patients and put into safe storage, 50 feet underground. This was not possible at Foresterhill, where treatment was centred, so the radium stock was therefore stored in a bore hole in Rubislaw quarry. A German bomb did fall on the quarry floor but produced no significant effect on the bore hole.

With the inception of the National Health Service, the management of malignant diseases gradually changed to become a specialty in its own right. Up until then, there had been no coordination between the various disciplines involved in the management of cancer. Treatments were organised on a unit basis and this depended on the individual view of the unit “chief”.

In 1949, James Phillip became Adviser to the Regional Hospital Board and in 1950, the Malignant Diseases Unit was formed with Ernest Ridley as consultant in charge. This wide ranging discipline eventually came under the comprehensive name of Oncology. The unit was situated at the east end of the hospital and was staffed by two Consultant Surgeons (James Philip and Ian Kernohan), a radiotherapist, Ernest Ridley, a part time radiotherapist (Inez Knox) and a part time medical assistant. Ian Kirby replaced Ernest Ridley when he retired and, in 1976, Tarun Sarkar arrived to join him as a second radiotherapist. Radiotherapists were later to be renamed clinical oncologists.

With the promise of using chemotherapy in solid tumours, physicians were beginning to develop the specialty of Medical Oncology. This was established in 1978, when Andrew Hutcheon was appointed to develop the non-surgical care of patients with solid tumours. He was the first NHS appointment of this kind in Scotland.

Further Development of Oncology in the North East

The Croom Report of 1979 recommended the establishment of specialist non-surgical oncology in five locations: Glasgow, Edinburgh, Dundee, Aberdeen and Inverness. Radiotherapy was provided only in these centres, but specialists also provided outpatient services and advice to clinicians in district general hospitals and outreach services in rural areas, such as Orkney and Shetland.

In the 1990s, National Clinical Guidelines for some cancers were published. The first was the CRAG guidelines (Clinical Resource and Audit Group) for the management of Ovarian Cancer, while the Scottish Intercollegiate Guidelines Network (SIGN) published advice on the management of several cancers, including breast, lung and colorectal cancer.

The Changing Role of Surgeons

The role of the general surgeon has seen many organisational changes over the years. These changes were particularly focussed on different tumour types with continued progression into specialisation.

New and different surgical techniques were now available to the surgical team, many of which allowed for a minimally invasive approach. These included laparoscopic, endoscopic and robotic surgery. The progress of medical genetics and gene profiling allowed the identification of at risk individuals for specific types of cancer, where prophylactic or risk reducing surgery was of benefit.

Clinical treatment can result in disfigurement and loss of function, so reconstructive surgery became an integral part of cancer management. In addition, patients with advanced disease could often be helped by surgery, to relieve symptoms and to improve the quality of remaining life.

Clinical Oncology and the Delivery of Radiotherapy

Many changes took place in the 1950s, including the increasing adoption of megavoltage therapy, the gradual cessation of the practice of radiotherapy for benign disease and the start of cancer chemotherapy. Megavoltage therapy, initially from cobalt 60 units was followed by the use of linear accelerators, which became the mainstay of external beam radiotherapy.

The new Radiotherapy Department in Aberdeen Royal Infirmary was opened in 2015 by the First Minister. This was a spacious and welcoming building, at the east end of Foresterhill and linked together all aspects of radiotherapy delivery under one roof. The department was equipped with three state of the art treatment linear accelerators. It also provided high dose rate brachytherapy, where the radiation source was placed close to the tumour site.

This department provided treatment planning and housed a CT simulator which was used for initial imaging.   A customised treatment plan ensured highly targeted optimal treatment delivery with medical physics playing a key role.

Development of Cancer Chemotherapy

In the 1970s, cancer chemotherapy was prescribed by medical oncologists. Doses were determined by height and weight and the drugs prescribed were dispensed by the prescribing doctor, often in the ward or in a side room. There was no control of sterility and no checks on final doses. To end this practice clinicians, including Drs Hutcheon, Dawson and King, with Mr Jappy, Head of Pharmacy Services, introduced dedicated ward pharmacists to calculate precise doses. These drugs were dispensed in a sterile environment in the pharmacy department, before being administered.

Drug delivery was also improved using venous access devices, such as the Hickman catheter or a port-a-cath. These were used to treat patients with poor venous access or whose regimes were prolonged and demanding. As well as chemotherapy, blood transfusions and nutritional support could also be given.

A key development in the 1970s, was the use of adjuvant chemotherapy, or adjuvant hormone therapy. This treatment was given after surgery, where all detectable disease had been removed, but where a high risk of relapse remained. Node positive breast cancer, for example, was in this group. Pathologists could also identify prognostic receptors in many cancers. In breast cancer, for example, the presence of oestrogen receptors indicated additional treatment with adjuvant tamoxifen.

A particular area of research interest in the Aberdeen Breast Group, was the development of the use of primary systemic chemotherapy for large or locally advanced breast cancers. This is also known as neoadjuvant therapy. This treatment aimed to reduce the size or extent of the cancer before surgery or radiotherapy, thus making procedures easier and more likely to succeed. The use of this treatment could change a tumour from incurable to potentially curable. This had other benefits, such as improving local control, which could allow breast conserving surgery to be undertaken.

A major trial assessing neoadjuvant chemotherapy from the Aberdeen Breast Group, was published in 1998 (1) with a followup in 2002 (2). This evaluated the efficacy of the sequential addition of a new chemotherapy drug called docetaxel to a standard anthracycline based treatment. The effect of this on the cancer was evaluated clinically and pathologically. The findings were of a statistically significant higher five year survival in the docetaxel group of patients (3). This and other areas of research from the Aberdeen group were widely quoted in other journals and at International meetings.

Ian Miller and Simon Payne from the department of pathology devised a histology grading system to assess response of breast cancers to this form of treatment (4). This has been widely adopted to assess pathological response to treatment.

In 2004, Andrew Hutcheon was invited to give the review lecture on the use of neoadjuvant chemotherapy in breast cancer, to the American Society of Clinical Oncology (5). This form of treatment is now used in other cancers, including lung and oesophageal.

Endocrine Treatment in Cancer

This area has undergone rapid change over the last few decades. It has long been known that some cancers, notably prostate and breast cancer, are hormone dependent. Stilboestrol was used by John Steyn in the 1970s to suppress

testosterone production in prostate cancer. In the same era, Ian Kernohan in the malignant diseases unit used yttrium implants into the pituitary, to stop production of luteinising hormone. Ovariectomy was also performed in premenopausal patients with metastatic breast cancer.
These procedures are no longer required with the advent of powerful drugs to stop LH production. Hormone therapy to block testosterone receptors, is now used as an initial treatment in prostate cancer.

Clinical Trials in Oncology

An integral part of patient care in Grampian was to offer patients participation in clinical studies. Patients with a variety of cancers were entered into national and international studies, often under the auspices of the MRC and CRC.

This service was supported by a data manager, Linda Barnett.

Integration of Cancer Care

Multidisciplinary Teams (MDT) are now the cornerstone of cancer management and each subspecialty has regular meetings to discuss tailored treatment for each patient. Alongside the oncologists are surgeons, radiologists, pathologists and specialist nurses. Other health and social care professionals such as physiotherapists, dieticians and occupational therapists could also be present with junior doctors and students attending for training.
These weekly meetings were planned with all aspects of treatment considered, including the type and size of the cancer, radiology, staging and general health of the patient.
Undoubtedly these meetings have resulted in better management of patients, with much improved quality of life. The medical oncologist's role is to integrate patient care.
All aspects of oncological activity were united by the Grampian Oncology Research Project (GORP)

Developing Areas in Oncology

Because chemotherapy drugs cannot distinguish between dividing cancer cells and dividing healthy cells, side effects are common and are often difficult to manage. In recent years, there have been major advances in the field of cancer immunotherapy and this is currently being investigated for many cancer types. Immunotherapies now exist for several, often resistant, cancers such as melanoma, lung, kidney and bladder cancer.
This is an exciting area of development. Mechanisms of action include "unlocking" T cell function, genetically engineering a patient's own immune cells to make a new protein to destroy cancer cells. Cancer vaccines are also being studied and these "train" the body to protect itself against damaged or abnormal cells.
Interventional radiology is another developing area. This can deliver chemotherapy or radioactive particles directly into a primary tumour or metastases and can also embolize tumours. Imaging techniques, including CT, Ultrasound, PET and MRI help guide these procedures. There are fewer risks to the patient, allowing them to recover more quickly.

The Development of Medical Oncology in Aberdeen

Medical Oncology was established as a specialty in Scotland in 1975, with the appointment of Ken Calman as Professor of Medical Oncology in the Western Infirmary, Glasgow. This specialty was established in Aberdeen, when Andrew Hutcheon was appointed to develop the non-surgical care of solid tumours.
Beds for the specialty were initially located in Ward 3, Woodend. Co- consultant on the ward was Anthony Jeffers, a General Physician/ Pharmacologist. Junior staff included two residents, a general medical SHO and a registrar. In 1986, Derek King was appointed as consultant, his post being split between medical oncology and haematology.
The accommodation in Woodend Hospital was totally unsuitable for treating patients with cancer - or indeed for any other patient. Complications of treatment were difficult to manage in a busy general ward. Patients had to be transported to the Xray Department at Foresterhill, for specialist staging scans and radiotherapy. This led to the move to ward 46, ARI, which was adjacent to haematology in ward 47. There were single rooms and suitable accommodation for managing the immunosuppressed, neutropenic patient and also ready access to radiology and radiotherapy.
In 1994, Derek King's post changed to full time haematology and Marianne Nicolson joined the department. Her main clinical interests were lung cancer and malignant melanoma. She was also actively involved in research and promoted randomised clinical trials. Dr Marcia Ratcliffe was appointed as associate specialist in oncology and haematology. James Cassidy, the first Professor of Oncology in Aberdeen University, developed the academic unit and laboratory based cancer research. His main clinical interest was the treatment of metastatic colorectal cancer.

The eventual aim was to site all non-surgical expertise in a dedicated unit in ARI. Alex Cumming, the Chief Executive eventually obtained funding for the malignant diseases unit which was renamed the Anchor Unit (Aberdeen, North, Centre for Haematology, Oncology and Radiotherapy). Beds were situated in wards 16, 17 and 18. The unit was opened in 1998, by Princess Anne.

With the opening of the Clinical Care Centre, the inpatient wards were moved to 112 (Haematology) and 114 (Oncology). The dedicated oncology unit comprised 25 beds in predominantly single rooms, to reduce infection risk. There were also separate lifts for movement of patients.

Friends of Anchor

Founded in 1997, by Andrew Hutcheon, the charity is focussed on patient needs within the hospital environment. The well-being team is on hand to offer a variety of support services and complementary treatments as required. This includes specialist hairdressers, massage therapists and podiatrists.

The charity is committed to working in partnership with NHS Grampian and has funded many initiatives such as a ward assistant scheme, a nurse development programme and Friends of Anchor research fellows. With a spectrum of fundraising events throughout the year, one hundred percent of donations go directly to patient care, as all administrative costs are covered by James Milne (Balmoral Group), who has been the chairman of the charity since its inception.

The generosity of the people of the Northeast, Orkney and Shetland has raised considerable amounts over the years. Examples of equipment provided by the charity include, part funding of neuronavigation equipment for neurosurgery, keyhole surgery and endoscopes. The charity has also contributed one million pounds towards two chairs in Cancer Medicine - a Clinical Chair and a Research Chair.

Cancer Link Aberdeen and North (CLAN)

CLAN supports everyone affected by cancer across the North East, Moray, Orkney and Shetland. There is first class accommodation for patients undergoing cancer treatments at Foresterhill as well as emotional and practical support for people affected by cancer, their families and friends.

Maggie Centre, Aberdeen

The Centre, in the shape of a pebble, was built in 2013 in the grounds of ARI near the radiotherapy department. It also offers support to all patients with cancer in a quiet, relaxing space.

Baird Family Hospital and Anchor Centre

This is an exciting initiative delivering two new health care facilities on the Foresterhill Campus. The Baird Family Hospital will include all Maternity, Neonatal, Reproductive Medicine, and Gynaecological services. The Anchor Centre brings all Haematology, Oncology and Radiotherapy day and outpatient services under one roof. There will also be a dedicated lounge for teenage and young adult patients, an aseptic pharmacy and teaching and research facilities. This building will be attached to the existing radiotherapy centre.

“Anchored Together” is a campaign by Friends of Anchor to make the new centre’s environment as welcoming, reassuring and comfortable as possible. Included in “delivering the difference” will be enhanced interior design, comfortable furnishings, art and landscaping.

Present Staffing of Oncology Services

From small beginnings, the non-surgical treatment of cancer is now established and staffed by four consultant medical oncologists with a fifth about to be appointed. Each has a special interest.
Clinical oncology has also expanded with ten clinical oncologists. There is a junior staff training programme with seven specialty registrar posts - two in medical oncology and five in clinical oncology.
The academic department of cancer medicine is now firmly established with the appointment of Val Speirs as professor of molecular oncology in 2018, and the appointment of Anne Kiltie to the clinical chair in 2021.

References

(1) Eltahir A, Heys SD, Hutcheon AW, et al: Treatment of large and locally advanced breast cancers using neoadjuvant chemotherapy. Am.J. Surg 175: 127 - 132, 1998.
(2) Smith IC, Heys SD, Hutcheon AW, et al: Neoadjuvant chemotherapy in breast cancer: significantly enhanced response to docetaxel. J.Clin. Oncol 20: 1456 - 1466, 2002.
(3) Hutcheon AW, Heys SD, Sarkar TK, et al: Docetaxel primary chemotherapy in breast cancer: a 5 year update of the Aberdeen Trial. Breast Cancer Res Treat. 82 - S9, 2003 (suppl 1, abst 11)
(4) Ogston KN, Miller ID, Payne S, et al: A new histological grading system to assess response of breast cancers to primary chemotherapy: Prognostic significance and survival. Breast 12: 320 - 327, 2003.
(5) Hutcheon AW and Heys SD: Primary Systemic Chemotherapy of Large and Locally Advanced Breast Cancer. American Society of Clinical Oncology. 40th Annual Meeting, 63 - 79, 2004.