

# *Tumour Pathology*

## Syllabus

### Aim

The study of tumour pathology is to enable candidates to:

- a. Obtain a detailed knowledge of the pathology of human tumours and their natural history, on which to base their practice of Radiation Oncology.
- b. Assess the value of a pathology report and to communicate effectively with the Pathologist regarding pathological features which may influence the diagnosis, modes of treatment and/or responses to treatment.
- c. Understand the disease processes associated with malignancy and radiation effects.

### Introduction

It is assumed that candidates have a good knowledge and understanding of general pathology (at least to university undergraduate level) before attempting this subject.

Areas of general pathology which are pertinent to the practice of Radiation Oncology may be examined.

### General

Nature of neoplasia - distinction between hyperplasia, hypertrophy, regeneration, malformation and neoplasia.

Malignant transformation - Initiation and promotion stages of carcinogenesis.

Mode of origin - monoclonal, multifocal

Retention of function - differentiation and dedifferentiation

Structural and functional changes in the cellular components

Criteria for tumour diagnosis - macroscopic, histological and cytological.

Classification of tumours - histogenic, histological, behavioural and immunological.

Nomenclature - solid tumours, lymphomas, leukaemias.

Structure and organisation of tumours - vascular supply, stroma, etc.

Systems of grading.

Normal tissue reactions to tumours.

Modes of spread of tumours.

Mechanisms of metastases - cell dose and "tumour take", "seed and soil".

Precancerous states.

Endocrine aspects of malignancy - production of hormones by tumours, effect of hormones on tumours.

Paraneoplastic Syndromes.

Hypertrophic pulmonary arthropathy

CNS syndromes

Thrombophlebitis

Dermatological syndrome

Pathology of complications of treatment of malignant disease.

## Aetiology

Genetic predispositions. Congenital syndromes e.g. polyposis coli, testicular maldescent.

Chromosomal abnormalities. Hereditary tumours.

Oncogenes. Virogenes.

Multifactorial causation.

Nutrition and cancer.

Environmental causes of cancer

- Biological - protozoal, bacterial, viral
- Chemical - classes of carcinogenic chemicals, smoking
- Physical - trauma, irradiation (UV and x-rays)

Common occupational cancers.

Experimental tumours in animals - relationship to humans.

Mutagenicity.

## Tumour Immunology

Organisation and development of the immune system and the role of immune responses in disease.

Cellular basis of immunity and measurement of immune function. Graft versus host reaction.

Tumour immunity, tolerance, enhancement.

Immune surveillance hypothesis.

Immunological markers in diagnosis and monitoring.

Experimental and clinical immunotherapy.

The HLA systems, viruses and neoplasia.

## Pathology of Radiation Injury

Pathology of whole body irradiation.

Macroscopic and microscopic changes associated with radiation injury in all tissues of the body and factors influencing these including age, cytotoxic drugs and genetic influences.

Neoplasms of Specific Sites

Candidates should study in detail the primary and secondary tumours of each site or organ of the body. A thorough knowledge of the pathological features, including epidemiology and aetiology, of all common tumours of the body is expected.

In addition, a reasonable knowledge of the pathology of conditions that are the common differential diagnosis of tumours at various sites is also expected.

Candidates are advised to prepare themselves by day to day study of the biopsy and autopsy material which becomes available in the Anatomical Pathology Department of their institution, especially that originating from the cases with which they have been professionally associated. They should also avail themselves of the opportunity of attending any regular demonstrations held in their centre. A certain amount of microscopic study is advised, in so far as it assists in the broad understanding of disease processes. A sufficient knowledge of Histopathology is required to enable the candidate to conduct effective communication and dialogue with an attending Pathologist.

## Recommended Reading

It is not possible to recommend a single textbook as adequately covering all the material required for this subject. In particular, the study of tumours of specific sites is not covered broadly enough, or in sufficient depth, by any of the major general textbooks.

It is recommended that students own one of the major textbooks listed and use this as a basis for thorough study. A detailed knowledge of the sections relating to specific tumours should be obtained. When sufficient details is not available from a major textbook, reading may be supplemented by reference to Evans's HISTOLOGICAL DIAGNOSIS OF TUMOURS, which contains much useful information apart from histology. Recommended reading for Pathology of Radiation Injury is listed.

## General Textbooks

1. a. Anderson, J.R. (Ed): MUIR'S TEXTBOOK OF PATHOLOGY. Arnold, 12th Edition (1985). ISBN: 0683130013  
or  
b. Robbins, S.L., Cotran, R.S. and Kumar, V.: PATHOLOGICAL BASIS OF DISEASE, Saunders, 3rd Edition (1984).  
or  
c. Kissane, J.M. (Ed): ANDERSON'S PATHOLOGY, Mosby, 8th Edition (1985).
2. Evans, R.: HISTOLOGICAL APPEARANCE OF TUMOURS, Churchill-Livingstone, 3rd Edition (1978). (Detailed knowledge of histopathology not required)
3. Cooke, R.A. and Stewart, B.: COLOUR ATLAS OF ANATOMICAL PATHOLOGY, 3rd Edition Churchill-Livingstone (2004)

## Radiation Injury

4. a. Rubin, P. And Casarett G.: CLINICAL RADIATION PATHOLOGY (2 volumes), Saunders (1968).  
b. Fajardo, L.F.: PATHOLOGY OF RADIATION INJURY (Massib Monographs in Diagnostic Pathology No. 6), Masson (1982).

## Reference Works

It may be necessary to refer to reference works where standard textbooks are deficient or where recent developments have occurred. The Anatomical Pathology Department of individual training centres may advise.