

CLINICAL ONCOLOGY

Total credits 4.5	Theory credits 2.5	Practical credits 2
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GENERAL OBJECTIVES

- To acquire the basic knowledge required by the general physician in terms of primary and secondary prevention, the diagnostic process, diagnosis of extension, therapeutic strategy, ongoing monitoring of disease and support methods.
- To understand and appreciate the multidisciplinary, diagnostic and therapeutic aspects of cancer.

SPECIFIC OBJECTIVES

At the end of the program, students should be able:

- To distinguish between early diagnosis by screening and early detection. To regard early detection as a basic way of improving cancer prognosis.
- To understand that histological diagnosis is the first step to take when a tumour is suspected and that it should precede the diagnosis of extension; to understand the complexity of pre-treatment assessment for each tumour localization.
- To use basic public education guidelines on cancer.
- To apply the European Code Against Cancer and identify its three key aspects: prevention, early diagnosis and general guidelines.
- As regards the problem of smoking, to be familiar with basic action guidelines with respect to smokers and be aware of the general strategy in the fight against smoking.
- To appreciate the impact of nutrition, the sun and pollution (in the working environment) as avoidable causes of cancer and possible action to be taken by the general physician.
- Given a clinical history, to know how to distinguish between early diagnosis and early clinical diagnosis.
- To identify genuinely valid means of making an early diagnosis through analysis of their cost and effectiveness. To distinguish between their application to a specific individual and public campaigns.
- To appreciate the prognostic impact of early clinical diagnosis.
- To understand the essential need for histological diagnosis when planning treatment.
- To recognize the decisive (and clinical rather than academic) importance of the TNM system, disease staging and their application through tumour committees.
- To distinguish between hormone-dependent and independent tumours. On this basis, to decide upon the indications and contraindications for hormone treatment.
- To identify the indications for antineoplastic chemotherapy with respect to surgery and radiotherapy. To apply the concept of *sub-clinical metastasis* in specific patients.
- To be familiar with the basic mechanism of action of chemotherapy, the importance of dose and the advantages of polychemotherapy. To understand the limitations of treatments and the need to assess the ability of patients to tolerate treatment: patient selection.
- To be familiar with the main families of cytotoxic drugs used in the design of polychemotherapy regimes.
- To understand the different applications of chemotherapy: as a basic treatment of advanced disease or in localized disease, as a part of a multidisciplinary treatment, with different sequences with respect to local treatment.
- To understand why the toxicity of chemotherapy is "*necessary*". To be familiar with dose limits. Given a set of cytostatic agents, to know how to draw up a treatment regime.
- To know how to determine a patient's body surface area.
- Given a range of data concerning erythrocytes, leukocytes, platelets, and renal and hepatic biochemistry, to know how to establish the indications and contraindications for a chemotherapy regime.

- To know how to distinguish at the clinical level between an advanced-stage and a terminal patient.
- Given a patient with pain, to know how to use existing scales to design the steps of a medical pain treatment.
- To know how to distinguish between the indications for systemic versus local treatment.
- To introduce the basic regimes of support treatment according to the developmental stage of the disease.
- To distinguish between "*established*" treatments and those under study. To understand the methods for evaluating the benefits and toxicity of treatments.
- To understand and know how to apply the concepts of *prevention*, *diagnosis* and *treatment* of the main complications associated with the disease and with treatment (support treatment).
- To know how to distinguish between the concepts of *quantity* and *quality of life*. To describe objectively the two concepts in relation to the stages of the disease. To understand the need at the clinical level to establish a correct balance between the two.
- To understand the need for patient involvement in establishing treatment objectives and making decisions, and the concept of adequate and inadequate disease adaptation.
- When asked to name the key prognostic factors in medical oncology, to list them in order of priority.
- To relate age and prognosis. To observe the growing importance of prolonging life expectancy in the prognosis and treatment of cancer.
- To be familiar with the prognosis for the ten most common solid tumours. To distinguish between overall prognosis and prognosis as applied to tumours and their different stages. Define the concept of *cure* in chronic disease.
- With respect to solid tumours (information will be provided about the ten most common tumours in our geographical area) to be to design a suitable diagnostic and therapeutic strategy for each one.
- To know how to identify the positive effects of integrated therapies in terms of curing cancer and be able to decide at which point each one of them should be applied.

SYLLABUS

Theoretical

1. Natural history of cancer

Study of tumour development from the first transformed cell until patient death or tumour elimination. The process comprises a sub-clinical and a clinical stage in which students must be familiar with host-tumour relationships, the consequences of treatment, the phenomenon of spontaneous cure, multiple neoplasia and the causes of host death.

2. Diagnosis of extension and therapeutic strategy

Objectives and integration in therapeutic strategy. The TNM and pTNM classification. Advantages and disadvantages of stage classification. Cancer treatment in terms of a "*multidisciplinary therapeutic strategy*". From the physician as an oasis (Holland's definition) to interdisciplinarity. Place of oncological treatments (surgery, radiotherapy, chemotherapy, hormone therapy, immunotherapy) in curing and palliating cancer. Tumour committees, the basic instrument for ensuring diagnosis and multidisciplinary therapeutic strategy.

3. Bases of antineoplastic chemotherapy

Monochemotherapy. Cell kinetics and the development of chemotherapy. From low and daily doses to the maximum tolerated dose. Bruce's experiments. Definition of cytostatic agents according to their action on the cell cycle. Cycle-dependent, stage-dependent and independent cytostatic agents. The contributions of Skipper. The last cell. Bases of polychemotherapy; neoadjuvant and complementary chemotherapy. Dose intensiveness. Local treatments.

4. Classification of cytotoxic agents

- a) Alkylating agents. Definition. Classification. Mechanisms of action. Side effects. Description of the basic characteristics of the main alkylating agents. Their indications and contraindications. Specificity of alkylating agents.
- b) Anti-metabolite agents. Definition. Classification. Mechanisms of action. Side effects. Description of the basic characteristics of the main anti-metabolite agents. Indications and contraindications.
- c) Plant derivatives. Definition. Classification. Side effects. Description of the basic characteristics of the main plant derivatives. Their indications and contraindications. Effects on cell division.
- d) Anti-tumour antibiotics. Definition. Classification. Mechanisms of action. Side effects. Description of anti-tumour antibiotics in current clinical use. Their indications and contraindications. Effects on the mitotic cycle.

- e) Miscellaneous substances. Justification of the need for this group. Basic components. Mechanisms of action, side effects, characteristics, indications and contraindications.

5. Complementary and neoadjuvant chemotherapy and in patients with metastasis

Neoadjuvant chemotherapy. Definition. Differences and similarities compared with pre-surgical chemotherapy. The experiments of Goldie and Coldman. The time factor in antineoplastic chemotherapy. General indications and contraindications.

Complementary chemotherapy. Definition. Basic limits and requirements. The case of Wilms' tumour: development of its treatment and changes in its prognosis.

Sub-clinical metastases. Attempts to detect residual disease. Basic indications for complementary chemotherapy. Contraindications. Monitoring its outcome: need for statistics. The combination of neoadjuvant and complementary chemotherapy: the case of osteosarcoma. Chemotherapy in patients with metastasis. Prior analyses and instrument-based tests. Periodic monitoring. Curable metastatic tumours. Testicular tumours as a paradigm of chemotherapy for disseminating tumours; fundamental role of certain polychemotherapy regimes. Metastatic tumours with effective but not curative chemotherapy. The concept of *palliation* in chemotherapy. The question of whether chemotherapy increases survival among patients with incurable metastatic tumours. Quality of life vs. quantity of life. Clinical situations in which chemotherapy is contraindicated. Futile life support.

6. General prognosis of cancer

Cancer: the only curable chronic disease. Concept of cure in chronic disease. Increased survival among non-curable patients. Prognostic factors: definition. General factors. Analytic factors. Clinicoanatomical factors. Therapeutic factors. Prognosis with solid tumours. Use of prognostic factors in treatment design.

7. Clinical trials

Preclinical and clinical stages of research. The Protocol as a basic method in trials. Historical roots of the clinical trial. Clinical research methodology. The clinical trial: stage I: definition and basic objectives. Methodology of stepwise dosing in order to obtain the maximum tolerated dose. Choice of candidates for the stage I trial. Prior treatment, diagnostic requirements, ethical problems. Number of patients required to meet the objectives of this stage of the trial. The clinical trial: stage II: definition and objectives. Basic requirements. Types of candidate. Tumours that can be included. Number of patients. Stage III trials. Methods of patient inclusion, comparability, evaluation, cooperative groups. Stage IV trials (drugs in widespread use, toxicity, monitoring over time). Content of the protocol: its stages.

8. Support treatment

A new overall concept of support treatments, from diagnosis to the patient's cure or death. Complications of antineoplastic therapy and its support treatment. Symptoms and complications of neoplastic disease: treatment of pain, organ failure, infections and most common oncological emergencies. Side effects and toxicity of the most widely used cytostatic agents.

9. Psychosocial problem of cancer

Uses and customs according to different societies. The North American method. The model used in southern European countries. Advantages and disadvantages. Doctor-family communication: an issue requiring further work. Sexual problems: quality of life. Sexual changes. Factors related to sexual dysfunction.

10. Breast cancer. Multidisciplinary strategy model

Seminars

1. Epidemiology

Increased incidence: current causes and foreseeable results. Cancer as a cause of death. Frequency, trends in mortality, mortality by sex, geographical distribution. Future of oncology. Influence of foreseeable changes in surgery, in the computerization of the health system and in genetic therapy.

2. Prevention and early diagnosis

Definition. Its relationship to treatment. Objective benefits of early diagnosis. Problem of delay in diagnosis. Screening for breast cancer: profile of the candidates. The special case of risk groups. Early clinical diagnosis: definition; its contribution to therapeutic progress. Basic differences with respect to early diagnosis. Its relationship to treatment and prognosis. The European Code Against Cancer: its place in primary and secondary prevention and in early clinical diagnosis.

3. Cancer of unknown primary

Definition. Aetiology. Most common tumours. Therapeutic strategy. The case of CUP detected in the cervical ganglion area.

4. Advanced-stage and terminal patients

Definition of advanced-stage and terminal patients. Symptom monitoring. Prognostic factors. Hospital and domiciliary care. Role of primary care and nursing. Social aspects. The family and society. Ethical aspects.

5. Presentation of clinical cases

Breast cancer, colorectal cancer, lung cancer, urological cancer, gynaecological cancer, and squamous cell cancer of head and neck.

SPECIFIC TEACHING METHODS

The *Clinical Oncology* program is structured around ten theory sessions which cover the basic knowledge required by students.

Teaching is based on:

1. The selection of ten basic oncological topics which, when addressed through theory classes, will give students a clear overall view of this discipline. Prior to each class students will be given reference material and/or be directed toward the reading material they should use in order to develop a thorough understanding of the topic under study.
2. Essential topics of a practical nature will be addressed through ten seminars. Direct contact will be established with the tumour committees for the main tumours, giving students the opportunity to observe the multidisciplinary diagnostic and therapeutic process.
3. Placements in hospital departments.

LEARNING REQUIREMENTS

The knowledge acquired in the program *General Pathological Anatomy* about the pathological anatomy of tumours provides the basis for understanding the clinicoanatomical forms, as well as for establishing post-surgical and post-pathological TNM.

Students must be familiar with the basic concepts of oncological surgery, biopsy (objectives, procedure) eradicated or curative surgery and palliative surgery as taught in the program *Basic Principles of Surgery*. As regards radiotherapy, students must be familiar with the basic indications (curative radiotherapy, radiotherapy linked to other treatments) and their general side effects, as taught in the program *General Radiology and Physical Medicine*.