

# DISEASES OF THE DIGESTIVE APPARATUS

Total credits <b>13</b>	Theory credits <b>2.5</b>	Practical credits <b>10.5</b>
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## GENERAL OBJECTIVES

During the course students must acquire the theoretical knowledge and clinical skills that enable them to identify the main problems associated with diseases of the digestive apparatus.

They must also be able to formulate a diagnosis, through correct application of current diagnostic methods, and decide upon treatment. The knowledge which students must acquire during their study of digestive diseases is grouped into a number of sections, as set out below.

## SPECIFIC OBJECTIVES

A. At the end of the course students must be able to identify the main problems associated with digestive disorders, specifically:

1. Dysphagia
2. Heartburn (pyrosis)
3. Chest pain of unknown origin
4. Nausea and vomiting
5. Dyspepsia
6. Abdominal pain
7. Meteorism
8. Diarrhoea
9. Constipation
10. Anal pain and/or itching
11. Gastrointestinal haemorrhage
12. Digestive tract lesions due to caustic substances
13. Jaundice. Cholestasis
14. Ascites
15. Hypertransaminasemia
16. Abdominal mass

B. Students must understand the theoretical bases of the diagnostic methods used in digestive disorders, specifically:

1. Abdominal examination
2. Simple and contrast radiology of the digestive tract
3. Diagnostic digestive endoscopy
4. Ultrasonography and ultrasound endoscopy
5. Computed axial tomography and magnetic resonance
6. Oesophageal manometry and pHmetry
7. Digestive functional tests
8. Isotope analysis in the diagnosis of digestive disorders
9. Anorectal examination
10. Hepatic function tests
11. Microbiological diagnosis of infectious enterocolitis
12. Hepatitis virus markers
13. Laparoscopy

14. Hepatic biopsy
15. Hepatic haemodynamics
16. Arteriography
17. Diagnostic paracentesis

C. Students must be familiar with the diagnosis and medical/surgical treatment of the main digestive disorders, specifically:

1. Oesophagitis
2. Oesophageal motor disorders
3. Oesophageal cancer
4. Peptic ulcer
5. Gastritis
6. Functional disease of the digestive apparatus
7. Gastric neoplasias
8. Malabsorption/maldigestion syndrome. Intestinal diseases that may be accompanied by malabsorption
9. Vascular diseases of the intestine
10. Infectious and parasitic enterocolitis
11. Chronic inflammatory intestinal disease
12. Intestinal obstruction
13. Colonic diverticular disease
14. Intestinal polyposis and colorectal cancer
15. Non-endocrine intestinal neoplasias
16. Anorectal disorders
17. Acute pancreatitis
18. Chronic pancreatitis
19. Pancreatic neoplasias
20. Endocrine tumours of the intestinal tract and pancreas
21. Abdominal wall disorders
22. Peritoneal and mesenteric disease
23. Acute abdomen
24. Abdominal trauma
25. Jaundice
26. Portal hypertension
27. Ascites
28. Hepatic encephalopathy
29. Viral hepatitis
30. Chronic viral hepatitis
31. Hepatic disorders caused by prescribed drugs and industrial or natural toxins
32. Severe acute hepatic insufficiency
33. Alcohol-induced hepatic disorders
34. Liver cirrhosis
35. Hepatic disorders of probable autoimmune origin
36. Inherited hepatic disorders
37. Liver tumours
38. Vascular disorders of the liver
39. Specific hepatic infections
40. Cholelithiasis
41. Neoplasias of the biliary tracts
42. Biliary tract malformations and non-parasitic liver cysts

## 43. Liver transplant

D. Students must acquire the following **skills**:

- Take a detailed history from the patient with a digestive disorder, including the patient's description of symptoms and their interpretation, as well as the systematic investigation of other possible symptoms not initially reported by the patient.
- To perform a correct physical examination of the signs associated with gastroenterological and hepatic disorders, as well as those related to other apparatus. The abdominal examination is particularly important with respect to the physical examination for possible digestive disorders, and should include: inspection, palpation, assessment of the depressibility or resistance of the muscular wall, and of the pain caused by examination and its possible origin in peritoneal irritation, the detection of masses and their characteristics, the detection of enlarged organs (liver and spleen) and inguinal adenopathy, and auscultation for both the presence or absence of abdominal sounds and their characteristics and the detection of possible abdominal murmurs or gastric gurgling.
- Auscultation of the hepatic area and other basic, exploratory manoeuvres in examining the digestive apparatus, such as rectal examination and exploratory paracentesis.
- Interpret a simple x-ray of the abdomen, of oesophageal gastrointestinal transit and of opaque enema. Interpret other complementary tests such as abdominal ultrasound, computed axial tomography, nuclear magnetic resonance, arteriography, biliary tract radiology, isotope tests in the study of the digestive tract and liver, oesophageal manometry and hepatic haemodynamics.
- Be familiar with the indications, contraindications and possible complications of the most common diagnostic and therapeutic endoscopic procedures (fibrogastroscopy, fibrocolonoscopy, endoscopic retrograde cholangiography, laparoscopy).
- Be familiar with the indications, contraindications and possible complications of the most common functional tests used to study the digestive tract, liver, biliary tract and pancreas.
- Be familiar with the indications, contraindications and possible complications and sequelae of the most common surgical interventions; know how to handle the most widely used probes and drainage. Be familiar with simple postoperative management in digestive disorders.
- Understand the theoretical bases of the microbiological diagnosis that enables the correct approach and interpretation of findings in digestive disorders.
- Interpret pathoanatomical reports in order to link correctly, and in conjunction with the pathologist, the morphological findings with the clinical features and evolution of the patient.

## SYLLABUS

### A. IDENTIFYING PROBLEMS

Students must have fully assimilated the knowledge regarding the identification of digestive problems gained during the course *General Signs and an Introduction to Clinical Pathology* prior to studying the diseases of the digestive apparatus.

#### 1. Dysphagia

Identify the difficulty of food bolus passage through the oesophagus, distinguish between solid and liquid dysphagia, and distinguish it from painful swallowing (odinophagia). Identify the progressive or intermittent nature of the problem which will suggest either an organic cause (inflammatory or neoplastic stenosis) or a motor disorder (achalasia, diffuse spasm, etc.), respectively. Identify the association with other symptoms such as heartburn, regurgitation, tracheobronchial aspiration, sialorrhoea, malnutrition, etc. Identify any underlying disease that may be related to this symptom, such as scleroderma, gastroesophageal reflux or diseases that produce opportunistic oesophageal infections, for example, acquired immune deficiency syndrome.

#### 2. Heartburn (pyrosis)

Identify this highly specific symptom of gastroesophageal reflux and determine its post-prandial or nocturnal pattern. Identify the possible association with other symptoms of gastroesophageal reflux such as dysphagia, nocturnal coughing, regurgitation and bronchial asthma.

### 3. Chest pain of oesophageal origin

Identify chest pain of oesophageal origin and distinguish it from coronary chest pain on the basis of clinical features and various diagnostic tests, as well as through its association with other oesophageal symptoms such as heartburn, dysphagia, etc. Assess the benefits of various diagnostic tests (endoscopy, radiology, oesophageal manometry, pHmetry) in determining the oesophageal origin of pain.

### 4. Nausea and vomiting

Distinguish between a central and digestive origin of vomiting, and between vomiting and regurgitation or expectoration. Determine the characteristics of vomit in terms of both its form (post-prandial, projectile, whether or not it is preceded by nausea, etc) and content (watery, food, bile, retentive, bloody, etc). Identify all the digestive disorders that may be accompanied by vomiting. Recognize the clinical consequences of vomiting (dehydration, metabolic alkalosis, hypochloremia, Mallory-Weiss syndrome, etc).

### 5. Dyspepsia

Understand the definition of dyspepsia and all the symptomatology associated with this syndrome. Distinguish between ulcerative dyspepsia, which is characterized by typical symptoms and is usually associated with a peptic ulcer, and pseudoulcerative dyspepsia, which is clinically similar to the former but without the presence of an ulcer. Identify another type of dyspepsia known as *functional* or *idiopathic* dyspepsia, which is characterized by a wide range of upper digestive tract symptoms in a patient in whom an organic cause has been ruled out. Be familiar with the sub-types of functional dyspepsia. Be familiar with the diagnostic tests that must be performed in order to distinguish between organic and functional dyspepsia.

### 6. Abdominal pain

Be familiar with the basic anatomy and physiology of abdominal pain and the stimuli which cause it. Learn to define the characteristics of pain in terms of its localization, intensity and nature, evolution over time, the factors that improve or exacerbate it, and the association with other signs and symptoms. Distinguish the different types of pain and know how to recognize the particular features and locations according to the abdominal organ where the pain originates. Understand that the perception of pain may differ from one patient to another and that this must be taken into account during assessment with respect to each patient's personality. Learn the exploratory information that will help interpret the possible aetiology of pain and be familiar with the sequence of examinations that must be performed according to the characteristics of each type of pain. Understand the concept of surgical and non-surgical acute abdomen. Most frequent causes of acute abdomen. Clinical assessment and the utility of conventional radiology, abdominal ultrasound and other complementary tests in the diagnosis of acute abdomen. Be familiar with the incidence, clinical manifestations, exploratory information (abdominal palpation, rectal examination) and laboratory data (haemogram) that enable a diagnosis of acute appendicitis to be made.

### 7. Meteorism

Understand the aetiology of gas in the digestive tract. Analyse the causes of an excessive amount of gas in the intestine and how this may be experienced by the patient as a specific symptom. Association between meteorism and other digestive symptoms. Meteorism as a symptom within the concept of *dyspepsia* or *irritable bowel*.

### 8. Diarrhoea

Understand the definition of diarrhoea, both acute and chronic. Understand the physiological mechanisms of water and electrolyte absorption and secretion in the intestine and the formation of faeces. Be familiar with the definition of osmotic and secretory diarrhoea and the characteristics of both forms. Be familiar with intestinal motility disorders that affect the formation of faeces and the onset of diarrhoea. Identify the characteristics of diarrhoea (evolution over time, quantity, appearance, odour, composition, pathological elements) and the associated symptoms that may provide a clue as to its origin. Learn the procedure for diagnosing acute and chronic diarrhoea. Understand the concept of *malabsorption-maldigestion*.

### 9. Constipation

Understand the concept of *constipation* and the epidemiology of this disorder. Be familiar with the mechanisms and causes of constipation that has an organic basis, whether its origin be gastrointestinal, neurogenic or linked to systemic disorders. Understand the concept of *congenital* or *acquired megacolon*. Be familiar with the mechanisms of idiopathic constipation. Be familiar with the diagnostic methods used to assess whether constipation is the result of an organic process.

### 10. Anal pain and/or itching

Identify anal pain. Understand its relationship to the act of defecation. Distinguish between anal and vaginal discomfort in women. Be familiar with the possible relationship between anal discomfort (pain and/or itching) and the whole range of anal pathology, especially in homosexual patients. Be familiar with the indications and interpretation of the anal examination, both manual and via rectoscopy.

## **11. Gastrointestinal haemorrhage**

Be familiar with the different forms of digestive tract haemorrhage. Learn to assess the patient with acute gastrointestinal haemorrhage, in terms of both a possible aetiological diagnosis of the haemorrhage and the haemodynamic consequences of it. Learn the characteristic features that enable the upper or lower origin of a digestive tract haemorrhage to be distinguished. Diagnostic strategy for an upper digestive tract haemorrhage and possible causes. Diagnostic strategy for a lower digestive tract haemorrhage and possible causes. Form of presentation and clinical manifestations of chronic gastrointestinal haemorrhage. Assessment of blood loss that appears in faeces.

## **12. Digestive tract lesions caused by caustic substances**

Be familiar with the most common caustic substances that cause oesophageal/gastric lesions and the pathogeny of the lesions caused by each one. Be familiar with the clinical manifestations of these lesions, in both the acute and later stage. Be familiar with the complications associated with these lesions. Learn to assess the patient with such a lesion and schedule the appropriate diagnostic tests.

## **13. Jaundice. Cholestasis**

Be familiar with the most important clinical and analytic information required when assessing the patient with jaundice. Distinguish between metabolic jaundice and cholestasis. Understand the importance of establishing a differential diagnosis between intrahepatic and extrahepatic cholestasis, be familiar with the most common causes, and know how to apply an appropriate series of examinations to identify both types of cholestasis and their aetiology. Understand the importance of how the cholestasis has evolved (acute, relapsing and chronic cholestasis) in making this differential diagnosis. Know when the urgent identification of the origin of cholestasis is necessary. Be familiar with the intra- and extra-hepatic consequences of chronic cholestasis. Be familiar with anicteric forms of cholestasis, the most common causes and their differential diagnosis.

## **14. Ascites**

Be familiar with the clinical and exploratory information required to diagnose the presence of fluid in the peritoneal cavity. Recognize the different types of ascites on the basis of the macroscopic, biochemical and cytological characteristics of the ascitic fluid (exudative, transudative, bloody, chylous, biliary, pancreatic) and their most common causes. Be familiar with the specific procedures for making an aetiological diagnosis of ascites and the order in which they should be performed. Be able to recognize spontaneous bacterial peritonitis.

## **15. Hypertransaminasemia**

Understand the meaning of increased levels of plasma transamines in the diagnosis of liver disease. Causes of prolonged hypertransaminasemia. Specific diagnostic tests in patients with prolonged hypertransaminasemia and the order in which they should be performed.

## **16. Abdominal mass**

Develop a diagnostic procedure according to the abdominal localization of the mass that enables identification of the organ or tissue responsible for it and thus propose treatment.

## **B. THEORETICAL BASES OF DIAGNOSTIC METHODS USED WITH DIGESTIVE DISORDERS**

The theoretical bases of the diagnostic methods used with digestive disorders are acquired during both the theoretical and, especially, the clinical teaching.

### **1. Abdominal examination**

Method to be applied for inspection, palpation, percussion and auscultation of the abdomen. Detection of masses, enlarged organs, adenopathy, hernias, ascites, abdominal distension, peritonism, characteristics of peristalsis and alterations in the lining of the abdominal wall.

### **2. Simple and contrast radiology of the digestive tract**

Interpreting a simple abdominal x-ray taken in both the prone and upright positions. Method of examining the digestive tract using contrast agents (oesophageal gastrointestinal transit and opaque enema) and interpretation of the results. Cineradiology in the study of the oesophagus. Radiological examination of the biliary tract: cholecystography and cholangiography. Indications and contraindications of radiological examinations of the digestive tract.

### **3. Diagnostic and therapeutic digestive endoscopy**

Methods for the endoscopic study of the upper and lower digestive tract. Types of endoscopy. Indications and contraindications of endoscopy in the upper (fibrogastroscopy and jejunoscopy) and lower (rectosigmoidoscopy and colonoscopy) tract. Method, indications and contraindications of endoscopic retrograde cholangiopancreatography. Sedation of patients for digestive endoscopy. Introduction to the concept of *therapeutic endoscopy*.

### **4. Ultrasonography and ultrasound endoscopy**

Theoretical basis of abdominal ultrasound. Indications for ultrasound. Advantages and limitations of this technique compared to other radiological or imaging diagnosis methods in assessing abdominal pathology. Concept and utility of Doppler ultrasound. Utility and diagnostic possibilities of ultrasound endoscopy. Introduction to the concept of ultrasound-guided therapeutic techniques.

### **5. Computed axial tomography and magnetic resonance**

Theoretical basis of computed axial tomography and magnetic resonance. Indications for use of the two techniques and the main advantages and disadvantages of each one compared to other diagnostic methods for assessing abdominal pathology. Contraindications of the two techniques.

### **6. Oesophageal manometry and pHmetry**

Methods of oesophageal manometry and short or 24-hour pHmetry. Indications for use of the two techniques in oesophageal pathology and interpretation of the results. Provocation tests (Bernstein's test).

### **7. Functional digestive tests**

Methods, indications, interpretation and contraindications of tests: baseline and post-stimulus gastric acid secretion test (pentagastrin, dummy food test). Pancreatic function tests (Lunch's test, secretin test, Bz-Ty-PABA test). Duodenal probe for detecting parasites or for examining bile. Peroral intestinal biopsy. Determination of faecal fat (Van der Krammer's test), D-xilose test. H<sub>2</sub> breath test.

### **8. Isotope tests in the diagnosis of digestive disorders**

Isotope study of oesophageal clearance. Gastric emptying tests. Cl<sub>4</sub> breath tests. Gammagraphy with Tc99, with Tc pertechnetate to detect Meckel's diverticulum and with indium 111 to assess inflammation in chronic inflammatory intestinal disease. Labelled erythrocyte tests for detecting the origin of digestive haemorrhage. Test of protein loss in faeces. Anti-CEA monoclonal antibody test for detecting relapse of colorectal cancer. Hepatic gammagraphy: utility in diagnosing space-occupying lesions. Biliary gammagraphy. Hepatic gammagraphy with labelled erythrocytes in the diagnosis of angiomas.

### **9. Anorectal examination**

Methods, indications and utility of manual examination, anoscopy, rectoscopy and rectal manometry.

### **10. Hepatic function tests**

Essential analytic tests in the diagnosis of liver disease. Tests that hepatic necrosis, cholestasis, hepatic insufficiency and space-occupying lesions.

### **11. Microbiological diagnosis of infectious enterocolitis**

Stool culture and detection of bacterial toxins. Direct examination of parasites in faeces. Detection of enteric viruses.

### **12. Hepatitis virus markers**

Most widely used markers in the diagnosis of viral hepatic disorders. Markers of infection due to the hepatitis A virus. Markers of infection due to the hepatitis B virus and identification of those that indicate active viral replication. Markers of infection due to the hepatitis C virus. Markers of infection due to the hepatitis D virus. Serological diagnosis of viral hepatic disease of different aetiology.

### **13. Laparoscopy**

Indications, contraindications and diagnostic possibilities of laparoscopy in the diagnosis of hepatic, pancreatic, and peritoneal disease and disorders affecting other intra-abdominal organs. Therapeutic possibilities of laparoscopic surgery.

### **14. Liver biopsy**

Basic lesions in liver disease. Histological diagnosis of the most common liver diseases: acute hepatitis, intrahepatic and extrahepatic cholestasis, chronic hepatitis and liver cirrhosis.

### **15. Pathological anatomy of the digestive tract and pancreas**

Basic lesions in digestive tract and pancreatic disorders. Histological diagnosis of the most common disorders.

## 16. Hepatic haemodynamics

Basic aspects of hepatic haemodynamics. Diagnosis of different types of portal hypertension on the basis of the determination of free and wedged suprahepatic pressure. Other techniques for diagnosing portal hypertension.

## 17. Arteriography

Indications for selective arteriography (celiac trunk, hepatic, mesenteric and splenic arteries) in the assessment of digestive disorders.

## 18. Diagnostic paracentesis

Methods. Aetiological diagnosis of ascites on the basis of the macroscopic, biochemical and cytological characteristics of the ascitic fluid.

## C. DIAGNOSIS AND TREATMENT OF THE MAIN DISEASES OF THE DIGESTIVE APPARATUS

TC: Theory class

SCT: Scheduled clinical teaching (seminars)

IL: Independent learning

### 1. Oesophagitis (SCT)

Infectious oesophagitis: candida and herpes oesophagitis (diagnosis and treatment). Caustic oesophagitis: diagnosis and treatment. Oesophagitis due to gastro-oesophageal reflux: epidemiology. Pathogenic factors. Relationship between oesophagitis and hiatus hernia. Pathoanatomical diagnosis. Clinical manifestations. Complications (stenosis, haemorrhage, perforated Barrett's oesophagus, oesophageal cancer, pulmonary complications). Diagnostic methods (endoscopy, manometry, 24-hour pHmetry, isotope study of oesophageal clearance, Bernstein's test). Differential diagnosis between peptic oesophageal stenosis and that of neoplastic origin. Hygiene- and dietary-based treatment measures. Medical maintenance treatment. Surgical treatment (Nissen's funduplication and other surgical procedures). Treatment of alkaline reflux. Treatment of peptic oesophageal stenosis (dilatation and surgical treatment). Approach to follow in the case of Barrett's epithelium.

### 2. Oesophageal motor disorders (IL)

Motor disorders of the upper oesophageal sphincter and upper third of the oesophagus. Acalasia: aetiology, pathogeny, clinical manifestations; radiological, endoscopic and manometric diagnosis, pharmacological treatment; endoscopic treatment via dilatation, surgical or endoscopic myotomy. Diffuse oesophageal spasm: physiopathology, clinical manifestations, radiological, endoscopic and manometric diagnosis. Pharmacological treatment, treatment with surgical or endoscopic dilatation. Systemic diseases associated with oesophageal motor disorders: connective tissue disease, diabetes *mellitus* and chronic alcoholism.

### 3. Oesophageal cancer (TC)

Squamous oesophageal cancer: incidence and epidemiology, clinical manifestations, radiological and endoscopic diagnosis (biopsy and cytology). Differential pathoanatomical characteristics between this kind of tumour and adenocarcinoma. Surgical treatment, radiotherapy, palliative treatment through fitting a prosthesis or laser fulguration; prognosis. Adenocarcinoma: adenocarcinoma of the gastric cardia or gastric fundus spreading to the distal third of the oesophagus. Adenocarcinoma over Barrett's epithelium. Clinical manifestations, diagnosis, treatment and prognosis. Other malignant oesophageal tumours. Benign oesophageal tumours.

### 4. Peptic ulcer (TC)

Incidence and epidemiology. Physiopathology of the ulcer: endogenous aggressive factors, exogenous aggressive factors, factors that protect mucosa. Differences in the physiopathology of gastric and duodenal ulcers. Pathogenic role of *Helicobacter pylori*. Genetic aspects of gastroduodenal ulcer. Differential pathoanatomical diagnosis between erosion, acute ulcer and chronic ulcer. Clinical manifestations. Radiological diagnosis. Endoscopic diagnosis. Differential diagnosis between gastric ulcer and carcinoma. Tests of acid secretion and serum levels of pepsinogen and gastrin in order to diagnose hypersecretory syndromes. Diagnosis of *Helicobacter pylori* infection. Medical treatment: drugs that reduce or neutralize acidity (antacids, H<sub>2</sub> antagonists and omeprazole) and drugs that protect mucosa (sucralphate, colloidal bismuth, zinc acexamate). Eradication of *Helicobacter pylori*. Maintenance treatment. Surgery for preventing relapse. Indications, effectiveness, morbidity and mortality associated with each of the available surgical techniques for treating peptic ulcer. Complications of the ulcer: haemorrhage (clinical features, prognostic factors, diagnosis and treatment) and stenosis (clinical features, diagnosis and treatment). Zollinger-Ellison syndrome: physiopathology, diagnostic and treatment.

## 5. Gastritis (TC)

Concept and definition of gastritis. Histological diagnosis of different types of gastritis. Endoscopic appearance of different types of gastritis. Erosive and/or haemorrhagic gastritis: physiopathology, prevention and treatment. Non-specific chronic gastritis: relationship between gastritis and *Helicobacter pylori*. Relationship between gastritis and the concept of *dyspepsia*. Relationship between gastritis and gastric ulcer. Relationship between gastritis and cancer. Autoimmune atrophic gastritis: relationship with pernicious anaemia. Specific gastritis: Menetrier's disease, eosinophilic gastritis, gastric problems associated with Crohn's disease.

## 6. Functional disorders of the digestive apparatus (IL)

Clinical manifestations of dyspepsia. Differential diagnosis between functional dyspepsia and organic disorders of the upper digestive tract. Procedures for diagnosing dyspepsia and its various sub-types. Treatment of dyspepsia according to the main symptoms. Irritable bowel syndrome: definition and concept. Basic concepts regarding intestinal motility disorders. Differential diagnosis between organic intestinal disorders. Clinical manifestations. Procedures for confirming the diagnosis of irritable bowel. Treatment of irritable bowel. Concept and clinical uses of vegetable fibre. Constipation: definition, pathogeny, diagnosis and treatment. Cholic melanosis.

## 7. Gastric neoplasias (TC)

Gastric carcinoma: incidence and epidemiology. Histological diagnosis of the different types of carcinoma. Concept of *early gastric cancer* and degree of dysplasia. Precancerous lesions. Relationship between cancer and *Helicobacter* infection. Clinical manifestations. Pathological anatomy. Relationship with *Helicobacter* infection. Diagnosis and differential diagnosis with respect to pseudolymphoma. Staging, treatment and prognosis. Other malignant tumours: gastric lymphoma, carcinoid tumour, Kaposi's sarcoma. Gastric polyps and benign stomach tumours.

## 8. Malabsorption-maldigestion syndrome (TC)

Intestinal disorders that may be accompanied by malabsorption. Concept of *malabsorption* and *maldigestion*. Physiopathological mechanisms of malabsorption-maldigestion and classification of the pathological processes that may accompany this syndrome according to the digestive or absorption process they alter. Physiopathology of carbohydrate, protein, fat, vitamin and mineral malabsorption. Basic principles and procedures for all the diagnostic tests. Diagnostic strategy with respect to malabsorption-maldigestion syndrome. Celiac disease: aetiology and pathogeny. Clinical manifestations. Diagnostic tests. Utility of intestinal biopsy. Differential diagnosis with respect to other intestinal disorders that may be accompanied by malabsorption. Treatment with a gluten-free diet. Tropical sprue: definition, incidence and aetiology. Clinical manifestations. Diagnosis, treatment and prognosis. Whipple's disease: definition. Aetiology and pathogeny. Clinical manifestations and diagnosis. Specific characteristics of histological findings. Differential diagnosis. Treatment and prognosis. Disaccharidase deficiency: concept, pathogeny, clinical manifestations, diagnostic tests and treatment. Intestinal bacterial proliferation: concept, pathogeny and clinical manifestations. Diseases that may accompany this syndrome. Direct and indirect diagnostic tests. Treatment. Intestinal lymphangiectasis and abetalipoproteinemia. Enteropathy of acquired immune deficiency syndrome. Other intestinal or systemic disorders that may accompany malabsorption.

## 9. Vascular disorders of the intestine (IL)

Anatomy and physiology of mesenteric circulation. Methods, indications and interpretation of angiographic examination of the mesenteric region. Chronic intestinal ischemia, intestinal angina. Clinical manifestations, pathoanatomical findings. Angiographic diagnosis and treatment. Acute intestinal ischemic syndromes: acute occlusion of the mesenteric artery, mesenteric arterial embolism, non-occlusive intestinal infarct, mesenteric venous thrombosis. Clinical manifestations, histological findings, diagnosis and treatment of each of these disorders. Ischemic colitis: pathogeny, clinical manifestations, pathological anatomy, diagnosis, treatment of the acute stage and complications. Other vascular alterations of the intestine: vasculitis, vascular malformations of the intestine (angiodysplasia), ectopic varices in portal hypertension.

## 10. Infectious and parasitic enterocolitis (TC)

Enterocolitis due to toxins: pathogeny, epidemiology, clinical manifestations, clinical and microbiological diagnosis. Treatment. Vaccines. Enterocolitis due to invasive pathogenic germs: shigella enterocolitis. Non-typhoid Salmonella enterocolitis. Typhoid fever. Campylobacter enterocolitis. Yersinia enterocolitis. Pathogeny, epidemiology, clinical features, diagnosis and treatment. Prophylaxis of these infections. Viral enterocolitis: types of virus. Clinical manifestations, diagnosis and treatment. Traveller's diarrhoea: epidemiology, microbiology, clinical features, treatment and prophylaxis. Intestinal tuberculosis: pathogeny, pathological anatomy, clinical manifestations, diagnostic tests and treatment. Enterocolitis caused by parasites: protozoa, amoebiasis, nematodes, cestodes, schistosomiasis, coccidiosis and other parasitic diseases that may be accompanied by diarrhoea. Diarrhoea in patients with acquired immune deficiency syndrome. Most common causes, diagnosis and treatment. Diagnostic approach and general treatment of infectious or parasitic diarrhoea.

## 11. Chronic inflammatory intestinal disease (SCT)

Ulcerative colitis and Crohn's disease: definition. Epidemiology. Aetiopathogeny. Pathological anatomy: fundamental differences between ulcerative colitis and Crohn's disease. Clinical manifestations according to the disease localization: ulcerative proctitis, ulcerative colitis confined to the left colon, pancolitis. Colonic Crohn's disease, disease in the small intestine and affecting both the small and large intestine. Crohn's disease affecting the upper digestive tract. Complications (perforation, haemorrhage, toxic megacolon, fistulas, abscesses and carcinoma). Extraintestinal manifestations (arthritis, cutaneous lesions, ocular lesions, hepatic alterations including sclerosing cholangitis). Diagnosis. Differential diagnosis between ulcerative colitis and Crohn's disease, and differential diagnosis between these two diseases and other intestinal disorders. Treatment of the intestinal condition (use of glucocorticoids, salazopyrin, mesalazine, metronidazole and immunosuppressants) and of the complications. Surgical treatment of ulcerative colitis (total colectomy with ileoanal pullthrough). Surgical treatment of Crohn's disease.

## 12. Intestinal obstruction (TC)

Characteristic clinical manifestations. Radiological diagnosis. Mechanical ileus: causes. Clinical and radiological features that distinguish it from a dynamic or paralytic ileus. Treatment. Dynamic ileus: causes. Clinical and radiological features. Treatment. Primary intestinal pseudo-obstruction: concept, pathogeny, clinical manifestations, diagnosis and treatment.

## 13. Colonic diverticular disease (IL)

Prevalence and epidemiology. Diverticulosis: pathology, pathogenesis, clinical manifestations, diagnosis and treatment. Diverticulitis: pathology, clinical features, diagnosis, complications, medical and surgical treatment. Secondary digestive haemorrhage in diverticuli: incidence, diagnosis and treatment.

## 14. Intestinal polyposis and colorectal cancer (SCT)

Colonic polyps. Adenomas: morphogenesis. The adenoma-carcinoma sequence hypothesis. Growth rate of adenomas and cell markers. Epidemiology, prevalence and distribution. Clinical manifestations. Early detection of adenomas. Management of an adenomatous polyp with a carcinoma focus. Long-term follow-up of the patient with a colonic adenoma removed via endoscopic polypectomy. Non-neoplastic polyps: hyperplastic polyps. Juvenile polyps. Polyps in Peutz-Jeghers syndrome. Inflammatory polyps (pseudopolyps). Cystic pneumatosis of the colon. Diffuse colonic polyposis. Familial colonic polyposis. Gardner's syndrome. Desmoid tumours. Turcot's syndrome. Peutz-Jeghers syndrome. Juvenile polyposis. Neurofibromatosis. Cronkhite-Canada syndrome. Treatment of diffuse polyposis. Medical and surgical treatment. Colorectal cancer: incidence and risk groups. Pathogenetic factors including genetic alterations. Pathological anatomy, prognostic indices based on pathoanatomical findings. Dukes' classification and its modifications. Clinical features, diagnosis and early detection. Surgical treatment: types of intervention (right hemicolectomy, left hemicolectomy, Hartmann's operation, Miles' operation), indications and complications. Radiotherapy and chemotherapy. Management and follow-up of colostomies. Follow-up to detect relapses. Prognosis.

## 15. Non-endocrine intestinal neoplasias (IL)

Benign tumours of the small intestine. Malignant tumours of the small intestine: adenocarcinoma: incidence, pathological anatomy, clinical features, diagnosis and treatment. Lymphoma: incidence. Localized lymphoma. Diffuse lymphoma (immunoproliferative disease of the small intestine). Clinical features, diagnosis and treatment. Leiomyosarcoma. Carcinoid tumour: incidence, clinical features, clinical diagnosis, biological diagnosis, treatment. Carcinoid syndrome.

## 16. Anorectal disorders (TC)

Pathogeny and clinical manifestations of disorders in this region of the digestive tract: haemorrhoids, anal fissures and fistulas, anorectal abscess, anal itching, sexually-transmitted diseases affecting this region, anal incontinence, rectal prolapse, solitary anal ulcer, proctalgia fugax and coccygodynia. Symptoms and types of presentation of anal canal tumours. Cloacogenic carcinoma.

## 17. Acute pancreatitis (TC)

Pathogeny. Aetiology. Incidence. Pathological anatomy. Clinical manifestations. Clinical diagnosis. Severity criteria. Biological diagnosis. Complementary examinations. Differential diagnosis with respect to other disorders that are accompanied by abdominal pain, especially surgical acute abdomen. General medical treatment. Specific medical or surgical treatment. Treatment of complications (pseudocyst, abscess, ascites, haemorrhage). Prevention of recurrence. Prognosis.

## 18. Chronic pancreatitis (TC)

Incidence. Aetiology and pathogeny. Pathological anatomy. Clinical manifestations. Clinical and radiological diagnosis. Differential diagnosis with respect to pancreatic cancer. Tests of pancreatic function (direct and indirect

tests). Complications (pseudocysts, pancreatic ascites, obstruction of the biliary tract, splenic thrombosis). Pain management. Treatment of pancreatic insufficiency. Surgical options in the treatment of chronic pancreatitis. Treatment of complications. Prognosis.

### **19. Pancreatic neoplasias (TC)**

Pancreatic carcinoma: incidence, epidemiology. Pathological anatomy. Clinical manifestations. Diagnosis. Differential diagnosis with respect to chronic pancreatitis. Surgical treatment. Chemotherapy and radiotherapy. Palliative treatment of pain. Prognosis. Cystadenoma and cystadenocarcinoma: incidence, pathology, clinical features, diagnosis and treatment.

### **20. Endocrine tumours of the intestinal tract and pancreas (IL)**

Biological considerations. Carcinoid tumours and carcinoid syndrome. Islet tumours: gastrinoma, insulinoma, VIPoma, glucagonoma, somatostatinoma and others. Mixed functional tumours. Non-functional islet tumours.

### **21. Abdominal wall disorders (TC)**

Overview of abdominal wall anatomy. Definition, pathogeny, diagnosis and treatment of abdominal wall anomalies: umbilical hernia, inguinal hernia, crural hernia, other hernias, eventration, surgical wound infections, wounds of other aetiology, tumours and haematomas.

### **22. Peritoneal and mesenteric disorders (IL)**

Signs and examination techniques (laparoscopy) of peritoneal disorders. Ascites: aetiopathogeny, analysis of characteristics and differential diagnosis for all the possible causes (portal hypertension, carcinomatosis, cardiac insufficiency, hypoalbuminemia, pancreatic fistula, tuberculosis). Special types of ascites: chylous ascites. Peritoneal infections: acute bacterial peritonitis (causes and diagnosis). Spontaneous bacterial peritonitis, tuberculous peritonitis. Granulomatous peritonitis. Intraperitoneal abscesses. Peritoneal tumours: peritoneal carcinomatosis, peritoneal mesothelioma, pseudomyxoma peritonei. Mesenteric panniculitis, mesenteric hernias, mesenteric tumours and cysts.

### **23. Acute abdomen (SCT)**

Concept. Main causes of acute abdomen and its incidence. Clinical manifestations. Diagnosis of the cause, differential diagnosis between surgical and non-surgical acute abdomen. Acute appendicitis. Surgical treatment. Medical treatment of the main causes of acute abdomen.

### **24. Abdominal trauma (IL)**

Open and closed abdominal traumas. Lesions in solid and hollow viscera. Diagnosis and treatment. Priorities in the context of a patient with multiple traumas.

### **25. Jaundice (TC)**

Physiology of the formation, transport and hepatic excretion of bilirubin and biliary salts. Clinical anatomy of the intrahepatic and extrahepatic biliary tracts. Concept of *metabolic jaundice*. Jaundice to an increase in indirect bilirubin: haemolytic syndrome, ineffective haematopoiesis, Gilbert's syndrome, Crigler-Najjar disease types I and II. Jaundice due to an increase in conjugated bilirubin: Dubin-Johnson syndrome, Rotor syndrome. Differential diagnosis and therapeutic strategy. Concept of *cholestasis*. Most common causes of intrahepatic cholestasis. Most common causes of extrahepatic cholestasis. Diagnostic methods and the order in which they should be performed to identify the location (intra- or extra-hepatic) of the obstruction to biliary flow and its aetiology. Cholangitis and biliary sepsis: concept, diagnosis, complications and treatment. Adverse effects of chronic cholestasis on the liver (secondary biliary cirrhosis) and other organs (intestinal maldigestion, malabsorption of liposoluble vitamins, osteoporosis) and its treatment. Cholestasis during pregnancy, relapsing benign cholestasis.

### **26. Portal hypertension (TC)**

Hepatic circulation and the portal venous system. Physiopathology of portal hypertension: importance of increased resistance to portal blood flow and splanchnic blood flow. Formation of portal-systemic collateral vessels. Consequences of portal hypertension: digestive haemorrhage, problems derived from the development of portal-systemic short circuits, haemodynamic changes in systemic circulation, ascites, splenomegaly and hypersplenism, gastropathy associated with portal hypertension. Aetiology and classification of portal hypertension according to its haemodynamic profile. Digestive haemorrhage due to rupture of oesophageal varices. Diagnosis. Medical treatment of active haemorrhage: general measures, pharmacological treatment (vasopressin, somatostatin), oesophageal tamponade, emergency sclerotherapy. Surgical treatment of active haemorrhage: indications and surgical options (porto-caval anastomosis, techniques of azygoportal disconnection). Prophylactic treatment of haemorrhagic relapse: pharmacological treatment (adrenergic beta-blockers), sclerosis of oesophageal varices, elective surgery (porto-caval anastomosis, elective portal-systemic anastomosis, calibrated porto-caval anastomosis), outcomes and indication. Transjugular intrahepatic porto-caval anastomosis. Pharmacological prophylaxis of the first haemorrhagic episode (adrenergic beta-blockers), indications. Treatment of digestive haemorrhage due to gastropathy of the portal

hypertension. Prognosis in patients with liver cirrhosis and digestive haemorrhage according to the degree of hepatic insufficiency (Child-Pugh classification); importance of the therapeutic decision.

### **27. Ascites (TC)**

Hepatic diseases that may lead to the formation of ascites. Factors involved in the formation of ascites in hepatic disease: portal hypertension and lymph production disorders affecting hepatic and splanchnic microcirculation, systemic haemodynamic alterations and compensatory mechanisms (stimulation of the renin-angiotensin-aldosterone systems, sympathetic nervous system and non-osmotic secretion of anti-diuretic hormone), renal retention of sodium and water. Functional renal insufficiency. Physiopathology of systemic haemodynamic alterations, renal dysfunction and the formation of ascites in hepatic diseases. Treatment of ascites in hepatic diseases: dietary treatment, diuretics (loop diuretics, spironolactone), therapeutic paracentesis, peritoneal-venous anastomosis. Indications and adverse effects. Prognostic factors in cirrhosis patients with ascites. Concept of spontaneous bacterial peritonitis. Physiopathology, clinical features and diagnosis. Antibiotic treatment and prophylaxis (selective intestinal decontamination).

### **28. Hepatic encephalopathy (TC)**

Identify acute hepatic encephalopathy by establishing a differential diagnosis with respect to neuropsychiatric disorders of other aetiology. Be familiar with the clinical information required to determine the severity of acute hepatic encephalopathy. Recognize when acute hepatic encephalopathy is due to chronic liver disease or secondary to severe, acute hepatic insufficiency. Be familiar with the factors that precipitate hepatic encephalopathy in chronic liver diseases. Identify chronic hepatic encephalopathy by establishing a differential diagnosis with respect to other chronic neuropsychiatric disorders. Be familiar with the complementary procedures used to diagnose hepatic encephalopathy and their value in terms of determining the extent of the problem (number connection test, electroencephalogram, evoked potentials test). Recognize sub-clinical hepatic encephalopathy. Concept of hepatic encephalopathy. Physiopathology: neurotoxins (ammonia, mercaptans), alteration of GABA-ergic neurotransmission, false neurotransmitters. Clinical features and diagnosis: grading the clinical severity of the encephalopathy, psychometric tests, electroencephalography, evoked potentials. Clinical significance of hepatic encephalopathy in acute and chronic liver diseases. Factors that precipitate hepatic encephalopathy in cirrhosis. Hepatic encephalopathy: dietary treatment, oral neomycin, lactulose.

### **29. Viral hepatitis (SCT)**

Hepatotropic viruses that cause viral hepatitis (viruses A, B, C, D, E and G): structure and serological diagnosis. Epidemiology of the different aetiological types of viral hepatitis. Pathological anatomy of viral hepatitis. Clinical forms of viral hepatitis: common clinical form, unapparent hepatitis, anicteric hepatitis, cholestatic hepatitis, prolonged hepatitis, severe hepatitis, fulminant hepatitis. Extrahepatic manifestations. Prognosis and natural history of the different aetiological types of viral hepatitis: evolution into chronic hepatitis and predictive factors of chronicity. Acute hepatitis due to non-hepatotropic viruses (Epstein-Barr virus, cytomegalovirus, herpes simplex virus, herpes zoster virus). Therapeutic strategy with acute viral hepatitis patients. Prophylaxis of viral hepatitis: prevention of person-to-person contact, prevention of hepatitis transmission via contaminated food and water, prevention of post-transfusion hepatitis, prevention of inoculation hepatitis. Passive immunoprophylaxis (common gammaglobulin, hyperimmune gamma globulin against hepatitis B). Vaccination against hepatitis A. Vaccination against hepatitis B.

### **30. Chronic viral hepatitis (TC)**

Concept. Aetiology: chronic hepatitis B, chronic hepatitis D, chronic hepatitis C. Physiopathology: mechanism of chronic viral infection and hepatic lesion. Clinical features. Histological diagnosis and pathoanatomical types of chronic viral hepatitis: chronic persistent hepatitis, chronic active hepatitis, chronic lobular hepatitis. Prognosis and natural history of chronic hepatitis B: predictive factors for development of cirrhosis, concept of *active viral replication* and *HBe seroconversion*. Prognosis and natural history of chronic hepatitis D and C. Chronic infection by the hepatitis G virus. Treatment of chronic viral hepatitis. Indications and side effects of interferon treatment.

### **31. Hepatic disorders caused by prescribed drugs and industrial or natural toxins (IL)**

Importance of hepatotoxicity due to prescribed drugs. Drug-induced acute hepatic disorders. Acute hepatitis, immunoallergic hepatitis, acute cholestasis (cholestatic hepatitis), mixed forms. Physiopathology of drug-induced acute hepatitis: formation of reactive metabolites, hypersensitivity. Concept of idiosyncrasy. Physiopathology of drug-induced cholestasis. Commonly used drugs that cause acute hepatic disorders. Drug-induced hepatic steatosis (microvesicular and macrovesicular steatosis). Commonly used drugs that cause steatosis. Drug-induced chronic hepatic disorders: chronic hepatitis, cirrhosis and chronic cholestasis. Commonly used drugs that cause chronic hepatic disorders. Drug-induced hepatic vascular lesions: portal thrombosis, perisinusoidal fibrosis, sinusoidal dilatation and hepatic peliosis, obstruction of the small hepatic veins (veno-occlusive disease), obstruction of the suprahepatic veins (Budd-Chiari syndrome). Commonly used drugs that cause hepatic vascular lesions. Drug-induced hepatic tumours: hepatocellular adenoma, hepatocellular carcinoma, angiosarcoma, cholangiocarcinoma. Relationship between oral contraceptives and hepatic tumours. Identification of drug-induced hepatic disease. Clinical course and therapeutic strategy. Hepatic disease induced by natural and industrial toxins: acute hepatitis,

cholestasis, chronic hepatitis, cirrhosis, hepatic tumours. The most common natural and industrial toxins found in our geographical area.

### **32. Severe acute hepatic insufficiency (TC)**

Concept of *severe acute fulminant* and *sub-fulminant hepatic insufficiency* and *severe hepatitis*. Most common causes: viral hepatitis, toxic and drug-induced hepatitis, ischemic hepatitis (shock liver). Other less frequent causes (acute Budd-Chiari syndrome, massive malignant liver infiltration, Wilson's disease, microvesicular hepatic steatosis). Diagnosis and pathological anatomy. Specific problems associated with severe acute hepatic insufficiency: hepatic encephalopathy, cerebral oedema, coagulation disorders, portal hypertension and ascites, non-cardiogenic pulmonary oedema, systemic circulatory alterations, renal insufficiency, renal retention of sodium and water, water-electrolyte disorders, hypoglycemia, bacterial and fungal infections. Evolution and prognosis. Concept of hepatic regeneration. Treatment and prophylaxis of specific problems associated with severe acute hepatic insufficiency. Emergency liver transplant: indication and outcomes.

### **33. Alcohol-induced hepatic disorders (TC)**

Epidemiology of alcoholism in Spain. Markers of chronic alcoholism and diagnosis of the alcoholic patient. Hepatic metabolism of alcohol and mechanisms of basic alcohol-induced hepatic lesions: cell necrosis, hepatic steatosis, hepatic fibrosis (fibrogenesis and fibrinolysis). Alcohol-induced hepatic disorders: alcoholic hepatic steatosis, acute alcoholic hepatitis, alcoholic hepatic cirrhosis. Pathological anatomy, clinical features, diagnosis and treatment. Alcohol dehabitation, psychological assessment, group therapy, aversion therapy (disulfiram, cyanamide). Monitoring abstinence. Importance of abstinence in the natural history of alcohol-induced hepatic disease. Hepatic steatosis and non-alcoholic steatohepatitis. Most common causes.

### **34. Liver cirrhosis (TC)**

Concept. Most common causes (alcoholism, chronic active hepatitis, chronic cholestasis, metabolic disorders). Pathological anatomy (macronodular and micronodular cirrhosis). Concept of *compensated* and *decompensated hepatic cirrhosis*. Most frequent complications: ascites, digestive haemorrhage, hepatic encephalopathy. Clinical features: cutaneous signs (signs of chronic hepatic disease), anaemia, coagulation disorders, hypogonadism, diabetes, hepatopulmonary syndrome, fetor hepaticus, collateral circulation. Diagnosis. Most useful biochemical tests for diagnosing cirrhosis. Imaging diagnosis: ultrasonography, computed axial tomography, hepatic gammagraphy. Liver biopsy. Laparoscopy. Natural history of cirrhosis. Probability of survival following compensated and decompensated hepatic cirrhosis. Therapeutic strategy with patients with compensated hepatic cirrhosis. Factors that predict survival and indications for liver transplant in the patient with decompensated hepatic cirrhosis.

### **35. Hepatic disorders of probable autoimmune origin (IL)**

Primary biliary cirrhosis. Concept. Pathological anatomy: histological stages of primary biliary cirrhosis. Physiopathology. Clinical features: asymptomatic primary biliary cirrhosis, signs and symptoms secondary to chronic cholestasis, associated diseases (Sjögren syndrome, CRST syndrome, Hashimoto's thyroiditis). Analytic diagnosis, antimitochondrial antibodies. Differential diagnosis with respect to other processes that may be accompanied by chronic cholestasis. Natural history. Medical treatment: treatment of pruritis and problems related to intestinal malabsorption; other therapeutic measures. Factors that predict survival and indications for liver transplant. Sclerosing cholangitis. Concept of *primary and secondary sclerosing cholangitis*. Types of primary sclerosing cholangitis: diffuse, of the small bile ducts (pericholangitis), of the large bile ducts. Clinical features: signs, symptoms and associated diseases. Differential diagnosis with respect to other chronic forms of cholestasis: retrograde cholangiography, liver biopsy. Medical treatment and indications for liver transplant. Chronic autoimmune active hepatitis. Concept. Pathological anatomy. Physiopathology. Clinical features: hepatic and extrahepatic manifestations. Diagnosis: autoantibodies, liver puncture biopsy. Treatment. Other hepatic diseases associated with immunological disorders: hepatic granulomas, chronic graft-against-host disease, hepatic amyloidosis.

### **36. Inherited hepatic disorders (IL)**

Primary haemochromatosis. Concept of *primary* and *secondary haemochromatosis*. Forms of transmission of primary haemochromatosis. Physiopathology. Clinical features: hepatic and extrahepatic manifestations (cardiac problems, diabetes and other endocrine disorders, cutaneous manifestations, bone alterations). Analytic diagnosis. Histological diagnosis, quantification of iron content in hepatic tissue. Treatment: phenotypic and genotypic research. Wilson's disease. Concept. Form of transmission. Physiopathology. Types of hepatopathy associated with Wilson's disease (hepatic cirrhosis, chronic active hepatitis, acute hepatitis, fulminant hepatitis). Extrahepatic manifestations (haemolytic anaemia, neurological problems). Analytic diagnosis. Histological diagnosis, quantification of copper content in hepatic tissue. Treatment. Family research to identify asymptomatic patients. Other inherited hepatic disorders: hepatic problems associated with alpha-1-antitrypsin deficiency, cystic fibrosis (mucoviscidosis) and late-onset cutaneous porphyria.

### 37. Liver tumours (SCT)

Benign tumours: adenoma, hemangioma, focal nodular hyperplasia. Hepatocellular carcinoma. Concept. Prevalence, incidence and epidemiology. Most important aetiological factors: hepatic cirrhosis, hepatitis B and C viruses. Pathological anatomy: expansive carcinoma, infiltrating carcinoma, multifocal carcinoma, small carcinoma. Tumour progression: intravascular and intraductal growth, hematogenous dissemination. Clinical manifestations. Paraneoplastic syndromes. Analytic diagnosis, alpha-fetoprotein and other tumour markers. Imaging diagnosis: gammagraphy, ultrasound, computed axial tomography, arteriography. Fine-needle puncture cytology. Liver biopsy. Early diagnosis: early detection programs for hepatocellular carcinoma in cirrhotic patients. Natural history of the cirrhotic patient with hepatocellular carcinoma. Surgical treatment of hepatocellular carcinoma: surgical anatomy of the liver, hepatic resection, stages of the cirrhotic patient with hepatocellular carcinoma and indications for hepatic resection. Non-surgical treatment: arterial embolization, chemoembolization, intratumour injection of ethyl alcohol. Liver transplant, indications and outcomes. Other malignant primary liver tumours: cholangiocarcinoma, hepatoblastoma, malignant tumours of mesenchymal origin. Metastatic liver. Clinical features, diagnosis and identification of the primary neoplasia. Treatment strategy in patients with single or localized metastasis and indications for hepatic resection.

### 38. Vascular liver disorders (IL)

The liver in cardiac insufficiency (cardiac liver): concept, physiopathology, pathological anatomy and clinical features. Differential diagnosis between cardiac liver and liver disease. Shock liver. Budd-Chiari syndrome. Concept of *acute* and *chronic Budd-Chiari syndrome*. Most common causes. Clinical features. Diagnosis. Prognosis. Medical treatment. Surgical options: portosystemic anastomosis, liver transplant. Venous-occlusive liver disease. Splenoportal axis thrombosis. Causes, clinical features and diagnosis. Treatment of digestive haemorrhage due to rupture of oesophageal varices secondary to portal and splenic vein thrombosis.

### 39. Specific liver infections (IL)

Pyogenic liver abscess: most common causes, clinical features, diagnosis, treatment (drainage methods and choice of antibiotics). Amoebic liver abscess. Epidemiology, physiopathology, clinical features, diagnosis and treatment. Schistosomiasis. Epidemiology, pathogeny (life cycle of the parasite and mechanism of hepatic lesion). Clinical features and diagnosis. Prognosis. Treatment. Prevention and disease control. Hepatic hydatid cyst. Prevalence in Spain. Life cycle of the parasite and physiopathology of the disease. Clinical features and diagnosis of uncomplicated hydatid cyst. Serological diagnosis. Most common complications. Surgical options: cystectomy, hepatic resection. Prevention and disease control. Hepatic alveolar echinococcosis.

### 40. Cholelithiasis (TC)

Clinical anatomy of the biliary system. Composition and formation of bile. Metabolism of biliary lipids. Concept of *lithogenic bile*. Signs of biliary pathology. Morphological and functional examination of the biliary tracts: simple radiology of the right hypochondrium, cholecystography, simple intravenous cholangiography, endoscopic retrograde cholangiography, transparietal cholangiography, ultrasound, hepatobiliary gammagraphy, biliary drainage. Gallbladder lithiasis. Types of biliary calculi (cholesterol and pigment calculi). Concept of *gallbladder microlithiasis*. Physiopathology and most common causes of gallbladder lithiasis. Asymptomatic gallbladder lithiasis. Symptomatic gallbladder lithiasis: hepatic colic. Complications of gallbladder lithiasis: acute cholecystitis, bile duct lithiasis and acute cholangitis, gallbladder hydrops, biliary ileus. Clinical features and diagnosis. Chronic cholecystitis: concept and physiopathology. Medical treatment of gallbladder lithiasis: dissolution treatment, lithotripsy, indications and outcomes. Medical treatment of choledocolithiasis: lithotripsy, extraction of calculi through endoscopic methods. Antibiotic treatment of acute cholecystitis and acute cholangitis. Surgical treatment of gallbladder lithiasis: indications, surgical options (traditional cholecystectomy, laparoscopic cholecystectomy) and complications. Preoperative cholangiography. Surgical indications in acute forms of cholecystitis and cholangitis. Indications for emergency gallbladder drainage and methods for carrying it out (interventionist radiology, endoscopy, surgery). Surgical treatment of bile duct lithiasis. Post-surgical problems: benign stenosis of the bile duct, residual bile duct calculi.

### 41. Bile duct neoplasias (TC)

Carcinoma of the gallbladder. Carcinoma of the extrahepatic bile ducts. Symptomatology and prognosis. Surgical options in bile duct neoplasias; radical duodenopancreatectomy. Non-surgical decompression techniques (ultrasound, endoscopy). Indications and outcomes.

### 42. Biliary tract malformations and non-parasitic liver cysts (IL)

Extrahepatic biliary tract atresia. Incidence. Clinical features and diagnosis. Treatment: hepatic portoenterostomy, liver transplant. Intrahepatic biliary tract atresia. Classification, syndromic and non-syndromic forms. Extrahepatic biliary tract atresia in adults. Clinical features and diagnosis. Evolution. Medical treatment. Congenital hepatic fibrosis. Dilatation of the intrahepatic biliary tracts (Caroli's disease). Bile duct cyst. Simple liver cyst. Hepatic polycystosis in polycystic renal disease in adults. Hepatic cystadenoma.

### 43. Liver transplant (TC)

Choosing the recipient: general indications for liver transplant, absolute and relative contraindications. Emergency elective liver transplant. Organ donors: medical requirements, organization and legislation covering organ donation in Spain. Surgical technique and intraoperative logistics. Most common and immediate postoperative complications: biliary complications, vascular complications, infections, acute rejection. Later complications: chronic rejection, reinfection of the graft by the hepatitis B and C virus. Immunosuppressant treatment, adverse effects.

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## TEACHING PLAN

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### THEORY CLASSES

- T. 3. Oesophageal cancer (Dr. Grande)
- T. 4. Peptic ulcer (Dr. Piqué)
- T. 5. Gastritis (Dr. Bordas)
- T. 7. Gastric neoplasias (Dr. Fuster)
- T. 8. Malabsorption-maldigestion syndrome. Intestinal disorders that may be accompanied by malabsorption (Dr. Piqué)
- T.10. Infectious and parasitic enterocolitis (Dr. Vila)
- T.12. Intestinal obstruction (Dr. García-Valdecasas)
- T.16. Anorectal disorders (Dr. García-Valdecasas)
- T. 17 and 18. Acute and chronic pancreatitis (Dr. Fernández-Cruz)
- T.19 and 41. Periampullary neoplasia (neoplasias of the pancreas and bile duct) (Dr. Fernández-Cruz)
- T.21. Abdominal wall disorders (Dr. Fuster)
- T.25. Jaundice. Concept of cholestasis (Dr. Rodés)
- T.26. Portal hypertension (Drs. Bosch and Visa)
- T.27. Ascites (Dr. V. Arroyo)
- T.28. Hepatic encephalopathy (Dr. Terés)
- T.30. Chronic viral hepatitis (Dr. Bruguera)
- T.32. Severe acute hepatic insufficiency (Dr. Rimola)
- T.33. Alcohol-induced hepatic disorders (Dr. Rodés)
- T.34. Liver cirrhosis (Dr. Bruguera)
- T.40. Cholelithiasis (Dr. Astudillo)
- T.43. Liver transplant (Dr. Rimola)

### SCHEDULED CLINICAL TEACHING

#### A. Seminars offered simultaneously to all students, alternating with theory classes

- Chronic inflammatory intestinal disease (Dr. Piqué)
- Intestinal polyposis and colorectal cancer (Dr. García Valdecasas)
- Pathological anatomy of digestive disorders (Dr. Bombí)
- Abdominal ultrasonography, tomography and magnetic resonance (Dr. Ayuso)
- Radiological treatment of digestive diseases (Dr. Montañá, Dr. Rovira and Dr. Bru)
- Influence of hepatic and gastrointestinal diseases on bioavailability and the intraorgan drug cycle. Undesirable drug effects on the liver and digestive apparatus (Dr. Forn)
- Influence of digestive diseases on drug bioavailability (Dr. Forn)
- Decision-making in gastroenterology (Dr. Granados)
- Digestive haemorrhage (Dr. Rimola)

#### B. Seminars run during the placement period, in the corresponding Service

- Oesophagitis (Dr. Grande)
- Acute abdomen (Dr. Fernández-Cruz)

- Viral hepatitis (Dr. Sánchez Tapias)
- Liver tumours (Dr. Visa)
- Extrahepatic cholestasis (Dr. Astudillo)
- Digestive endoscopy (Dr. Bordas)
- Surgical approaches. Laparoscopic surgery (Dr. Fuster)

## **INDEPENDENT LEARNING**

- T. 02. Motor disorders of the oesophagus
- T. 06. Functional disorders of the digestive apparatus
- T. 09. Vascular disorders of the intestine
- T. 13. Colonic diverticular disease
- T. 15. Non-endocrine intestinal neoplasias
- T. 16. Anorectal disorders
- T. 20. Endocrine tumours of the intestinal tract and pancreas
- T. 22. Diseases of the peritoneum and mesentery
- T. 24. Abdominal trauma
- T. 35. Hepatic disease of probable autoimmune origin
- T. 36. Inherited hepatic disorders
- T. 38. Vascular liver disorders
- T. 39. Specific liver infections
- T. 42. Bile duct malformations and non-parasitic liver cysts