Gastroenterology Tutorial
Gastritis

- Poorly defined term that refers to inflammation of the stomach.
- Infection with H. *pylori* is the most common cause of gastritis.
  - Most patients remain asymptomatic
  - Some develop complications including:
    - Peptic ulceration
    - Gastric carcinoma
    - Gastric lymphoma
H. pylori
Gastritis

- Autoimmune gastritis results from attack on the parietal cells (body of the stomach).
- Patients often present with megaloblastic anaemia.
- Also a risk factor for development of gastric carcinoma (atrophic gastritis)
Gastritis

• Reactive gastritis
  – Common cause of erythema of gastric mucosa seen at endoscopy
  – Mild damage caused by irritants such as NSAIDs, aspirin, bile
Erosive/ haemorrhagic gastritis

- Multiple defects form in the gastric mucosa from which bleeding occurs.
- Occurs following ingestion of large quantities of gastric irritants or
- In severely ill patients e.g. those with sepsis or following major surgery.
Peptic Ulcer Disease

• A peptic ulcer is a full thickness breach of the mucosa of the lower oesophagus, stomach or duodenum which does not heal over time.

• Most peptic ulcers in the stomach and duodenum are caused by infection with H pylori
  – Note: concomitant use of NSAIDs exacerbates the condition
Peptic Ulcer Disease

• Peptic Ulcers may present with dyspepsia or with complications such as:
  – Haemorrhage,
  – Perforation
  – Stricture formation
  – On OGD – peptic ulcers have a punched out appearance
Complications

• **Bleeding** most frequent; occurs in 15% to 20% of patients: accounts for 25% of deaths.
• **Perforation** occurs in 5% of patients; accounts for 75% of deaths as a result of peritonitis
• **Penetration**: this refers to direct erosion of the ulcer into an adjacent organ such as the pancreas
• **Gastric outlet obstruction**: due to oedema or fibrosis narrowing the pyloric area
Gastric Carcinoma

- Malignant epithelial neoplasms arising from the epithelium of the gastric mucosa.
- Majority are adenocarcinomas
- Intestinal type:
  - Background of chronic atrophic gastritis
  - Intestinal metaplasia
  - Dysplasia
  - Caused by H pylori or autoimmune gastritis
Gastric Carcinoma

• Diffuse type:
  – Develops from normal gastric mucosa.
  – Widely infiltrative and aggressive
CASE

• You are an A&E SHO on your week of nights. At 03.00 a 70 year old man is brought, in by ambulance after an episode of haematemesis.

• By the time he has arrived in casualty the bleeding has stopped. His wife tells you he is otherwise well apart from an irregular heartbeat.
• What are the most common causes of haematemesis?

• Haematemesis is usually caused by an acute upper gastrointestinal bleed.

• The most common cause are:
  – an erosive/haemorrhagic gastritis,
  – a bleeding peptic ulcer,
  – and bleeding oesophagaeal varices.
Why is taking a thorough drug history particularly important in this case?

A drug history is extremely important.

– Non steroidal anti-inflammatory drugs are a common cause of erosive gastritis and bleeding.

– He might be on medication which suggests that he has had dyspeptic symptoms before (e.g. antacids). This may indicate a chronic problem such as a peptic ulcer.
• You stabilise the patient and keep him well hydrated. The following morning the patient’s care is taken over by the Gastroenterology team. Endoscopy is performed.

• What is endoscopy and why is it useful in management of upper gastrointestinal bleeding?
  – Upper gastrointestinal endoscopy involves passing a fibreoptic scope through the mouth and into the oesophagus, stomach, and duodenum. It allows direct visualization of the mucosal surfaces. Endoscopy is useful to determine the cause of bleeding, to assess prognosis.
• A large peptic ulcer is seen on the posterior aspect of the first part of the duodenum with a blood clot in the base.

• Describe the features that would lead you to diagnose a peptic ulcer?
  – Peptic ulcers are sharply punched out lesions of the bowel wall with clean edges.
Actively bleeding duodenal ulcer
What is the most likely cause of his duodenal peptic ulcer and how does this knowledge aid treatment?

- The vast majority of duodenal peptic ulcers are caused by Helicobacter pylori.
- Knowledge of the bacterial aetiology of peptic ulcers means that most can be treated with Helicobacter eradication regimes rather than surgery.
This is a gastrectomy specimen from a patient showing a large ulcerated gastric carcinoma arising in the body of the stomach.

• Which of the following are true about the symptoms and diagnosis of gastric carcinoma? (Tick all those that apply)
  – Most patients in Western countries have advanced carcinomas at the time of presentation.
  – Tumours that obstruct the gastric outlet may cause persistent vomiting.
  – Gastric carcinomas are found in about 10% of patients undergoing endoscopy for persistent dyspepsia.
  – An experienced endoscopist can reliably distinguish between an ulcerated gastric carcinoma and a gastric peptic ulcer.
• Some 80-90% of all patients in Western countries have advanced carcinomas by the time of presentation.
• Symptoms of advanced gastric carcinoma include persistent abdominal pain unrelieved by eating with systemic symptoms of weight loss and anorexia.
• Tumours obstructing the gastric outlet cause may cause vomiting.
• Dyspepsia is a very common and non-specific symptom; gastric carcinoma is found in only some 1-2% of all patients undergoing endoscopy for persistent dyspepsia.
• Even an experienced endoscopist cannot reliably distinguish between ulcerated carcinomas and peptic ulcers and so multiple biopsies should be taken from the edge of any ulcerated lesion in the stomach to exclude malignancy.
Which of the following are true about risk factors for gastric carcinoma? (Tick all those that apply)

- The major risk factor is an antral predominant gastritis caused by *Helicobacter pylori* infection.
- Patients with autoimmune gastritis are at increased risk.
- Only a small proportion arise from gastric adenomas.
- Dietary factors do not appear to be important.
Answer

- Most gastric carcinomas arise from a background of atrophic gastritis, most often caused by a chronic corpus predominant gastritis associated with Helicobacter pylori infection.
- Patients with autoimmune gastritis are also at risk, as this can also lead to an atrophic gastritis.
- The adenoma-carcinoma sequence is much less important in the stomach than in the colon and rectum.
- Diet has been consistently associated with gastric carcinoma. An adequate intake of fresh fruits and vegetables lowers the risk, and high salt intake increases the risk.
Which of the following are true about the different types of gastric carcinoma? (Tick all those that apply)

- The intestinal type is preceded by a phase of dysplasia in an area of intestinal metaplasia.
- The intestinal type is rising in incidence.
- Signet ring cells may be seen in the diffuse type.
- The intestinal type is more aggressive than the diffuse type.
The intestinal type of gastric carcinoma arises through the sequence of chronic atrophic gastritis, intestinal metaplasia, dysplasia, and carcinoma.

This type of carcinoma is falling in incidence, probably due to increased eradication of Helicobacter pylori infection.

The diffuse type is characterized microscopically by discohesive cells, many of which are distended with mucin creating the signet ring cell morphology microscopically.

The diffuse type tends to widely disseminate and behave more aggressively than the intestinal type.
This is a picture of uncomplicated diverticula in the sigmoid colon, found incidentally at a post-mortem in a patient who died of unrelated causes.

• Which of the following statements regarding colonic diverticula are true? (Tick all those that apply)
  – They are true diverticula which contain all the layers of the colonic wall.
  – The sigmoid and rectum are the commonest site, as faeces are most solid here and require higher pressure to propel.
  – Their presence stimulates hypertrophy of the circular muscle layer of the large bowel.
  – They tend to arise at weak point where blood vessels penetrate the submucosa of the large bowel.
Answer

- Colonic diverticula are outpouchings of the mucosal layer of the large bowel through the submucosa and circular muscle layer of the bowel.
- Colonic diverticula are virtually restricted to the sigmoid colon only; the rectum is spared as its complete longitudinal muscle coat protects against their development.
- Diverticula stimulate marked hypertrophy of the circular muscle layer of the muscle coat.
- They tend to arise at weak points where blood vessels penetrate the submucosa.
Which of the following statements regarding complications of diverticula are true? (Tick all those that apply)

- Acute diverticulitis is a common cause of right iliac fossa pain in elderly people.
- A diverticular stricture may closely mimic a colonic adenocarcinoma.
- Erosion of a large submucosal vessel may cause torrential per rectal bleeding.
- Perforation of an inflamed diverticulum may cause generalized peritonitis.
• Acute diverticulitis is a common cause of left iliac fossa pain in elderly people.
• A diverticular stricture may very closely mimic a colonic adenocarcinoma, both clinically and radiologically.
• Erosion into a large submucosal vessel may lead to marked per rectal bleeding.
• Perforation of an inflamed diverticulum is a common cause of generalized peritonitis.
• A 72 year-old woman was referred by her G.P. for investigation of iron deficiency anaemia. Apart from lethargy, she had no symptoms, had a normal diet and was not on any medication.

• Physical examination was normal. Upper gastrointestinal tract endoscopy was normal and a mucosal biopsy of the duodenum was reported as normal by the pathologist.

• Colonoscopy revealed a fungating, ulcerated tumour in the caecum and a nearby polyp.

• The pathologists’ report on the resected specimen indicated a moderately differentiated adenocarcinoma invading the full thickness of the wall and extending into the peri-caecal tissues.

• Four of 16 regional lymph nodes contained metastatic tumour.
Question 1

• What do you conclude from:
  – The dietary history
  – The negative history of medications
  – The normal duodenal mucosa?
Question 2

- Where would you look first for possible blood-borne metastases in this patient?
This is a slice of liver from a 60-year-old male showing two tumour deposits. The background liver also had a greasy feel to its cut surface, suggestive of fatty change.

• Which of the following statements about liver neoplasms are true? (Tick all those that apply)
  – Most tumours arising in the liver are primary neoplasms.
  – Production of bile by a tumour is suggestive of cholangiocarcinoma.
  – Liver cell adenoma is a benign tumour composed of hepatocytes.
  – Liver cirrhosis is associated with an increased risk of hepatocellular carcinoma.
Answer

• Most tumours in the liver are metastatic deposits.
• Production of bile implies hepatocellular carcinoma.
• Liver cell adenoma is a benign tumour composed of hepatocytes, seen mostly in young women.
• Liver cirrhosis is strongly associated with a risk of developing hepatocellular carcinoma; all patients known to have cirrhosis should have regular measurement of serum alpha-fetoprotein to screen for the development of this tumour.
Which of the following statements about liver metastases are true?  
(Tick all those that apply)

• Metastases in the liver almost always give rise to abnormal liver function tests.
• Metastases in the liver almost always give rise to jaundice.
• Metastases in the liver are a contraindication to surgical treatment.
• Metastatic deposits in the liver are often from a gastrointestinal primary.
Answer

- Hepatic infiltration by metastases may cause abnormalities in liver function tests; however, extensive liver metastases may be present without any derangement at all.
- Jaundice only occurs with very advanced hepatic metastatic disease.
- Metastasis in the liver is not necessarily a contraindication to attempted curative treatment - they can be successfully excised in some patients.
- Gastrointestinal malignancies often give rise to liver metastases.
Which of the following statements could explain the finding of the fatty change? (Tick all those that apply)

- The deceased was obese.
- The deceased was a chronic alcohol abuser.
- The deceased had diabetes mellitus.
- The deceased was anaemic.
Answer

- Fatty liver is a common, potentially reversible, change in the liver in which hepatocytes accumulate large amounts of lipid within their cytoplasm.
- Common causes of fatty liver include obesity, diabetes mellitus, and alcohol abuse.
- Anaemia has no direct association with fatty liver.