

## Gastric Tumors – Dr. Taha

### BENIGN TUMORS:

- **Leiomyomas:** smooth muscle tumors, equal in men /women, typically located in the middle & distal stomach.
- Can grow into the lumen with secondary ulceration & bleeding. or expand to the serosa with extrinsic compression.
- Endoscopy show a mass with overlying intact or ulcerated mucosa
- Ba: usually smooth with an intramural filling defect, with or without central ulceration.
- Can be difficult to distinguish from their malignant counterparts radiographically or endoscopically; so tissue diagnosis needed.
- If symptomatic should be removed.
- Other benign tumors: lipoma, neurofibroma, lymphangioma, ganglioneuroma, hamartoma, the latter associated with Peutz-Jeghers syndrome or juvenile polyposis (restricted to the stomach).

### ADENOMAS

- Gastric adenomas & hyperplastic polyps are unusual but may be found in middle-aged & elderly patients.
- Polyps sessile or pedunculated found in 50% with familial adenomatous polyposis or Gardner's syndrome.
- Generally asymptomatic, some may have dyspepsia, nausea, or bleeding.
- Are smooth /regular on upper GI series, but the diagnosis must be confirmed by upper endoscopy with biopsy.
- Pedunculated polyps > 2 cm or with associated symptoms should be removed by endoscopic snare cautery polypectomy & large sessile gastric adenomatous polyps may merit segmental surgical resection.
- If polyps progress to severe dysplasia or cancer, the treatment is the same as for gastric adenocarcinoma

### STOMACH ADENOCARCINOMA

- Great geographic variation, strongly indicating that environmental factors influence its pathogenesis.
- It is extremely common among males in certain regions, as tropical South America, some parts of the Caribbean, Eastern Europe.
- Regardless of gender, it remains the most common malignancy in Japan & China.
- Gastric adenocarcinoma of distal stomach declined & that of proximal gastric & gastroesophageal adenocarcinomas steadily increasing in US.

### ADENOCARCINOMA: RFs

- Environmental, Genetic
- H.pylori infection
- Genotoxic agents as N-nitroso compounds may play a role, formed in the human stomach by nitrosation of ingested nitrates, which are common constituents of the diet.
- Atrophic gastritis with or without intestinal metaplasia.
- Pernicious anemia is associated with \*7 increase.
- The achlorhydria associated with gastritis related to H. pylori, pernicious anemia, vagotomy or other causes favors the growth of bacteria capable of converting nitrates to nitrites.
- Subtotal gastrectomy for benign disorders increase risk of gastric ca.
- Menetrier's disease: hypertrophic gastritis.
- Benign gastric ulcers do not predispose to gastric cancer.

**Clinical features:**

- In early stages, gastric cancer may often be asymptomatic or produce only nonspecific symptoms, making early diagnosis difficult.
- Later symptoms include bloating, dysphagia, epigastric pain, or early satiety.
- Early satiety or vomiting may suggest partial gastric outlet obstruction & gastric dysmotility cause vomiting in nonobstructive cases.
- Epigastric pain, as that with peptic ulcer, occurs in 1/4; but in the majority, the pain is not relieved by food or antacids.
- Pain that radiates to the back may indicate that the tumor has penetrated into the pancreas.
- When dysphagia, it suggests a more proximal gastric tumor at the GEJ or in the fundus.
- Bleeding, which can result in anemia, produces the symptoms of weakness, fatigue, malaise as well as more serious cardiovascular & cerebral consequences.
- Perforation related to gastric cancer is unusual.
- Gastric cancer metastatic to the liver can lead to right upper quadrant pain, jaundice &/or fever.
- Lung metastases can cause cough, hiccups, hemoptysis.
- Peritoneal carcinomatosis can lead to malignant ascites unresponsive to diuretics.
- Gastric cancer can also metastasize to bone.

**Clinical features: PE**

- In the earliest stages may be unremarkable.
- At later stages, cachectic, epigastric mass may be palpated.
- If the tumor has metastasized to the liver, hepatomegaly with jaundice / ascites may be present.
- Portal or splenic vein invasion can cause splenomegaly.
- Lymph node involvement in the left supraclavicular area is termed Virchow's node & periumbilical nodal involvement is called Sister Mary Joseph's node.
- The fecal occult blood test may be positive.
- Paraneoplastic syndromes may precede or occur concurrently
- Trousseau's syndrome: recurrent migratory superficial thrombophlebitis indicating a possible hypercoagulable state;
- Acanthosis nigricans: arises in flexor areas with skin lesions that are raised & hyperpigmented.
- Neuromyopathy with involvement of the sensory / motor pathways.
- CNS involvement with altered mental status / ataxia.

**Diagnosis: Lab**

- IDA.
- Predisposing pernicious anemia can progress to megaloblastic anemia.
- Microangiopathic hemolytic anemia has been reported.
- Abnormalities in liver tests generally indicate metastatic disease.
- Hypoalbuminemia is a marker of malnourishment.
- Protein-losing enteropathy is rare but can be seen in Ménétrier's disease, another predisposing condition.
- Serologic test results, as carcinoembryonic antigen & CA 72.4, may be abnormal.
- Although these tests are not recommended for original diagnosis, they may be useful for monitoring disease after surgery.

## Diagnosis: endoscopy & imagings

- Endoscopy with biopsy&cytology: 95 -99% Efficacy.
- Appear as small mucosal ulcerations, polyp, or a mass
- In some, gastric ulceration may first be noted in an UGI barium contrast.
- Ba: A benign gastric ulcer is suggested by a smooth, regular base, whereas a malignant ulcer is manifested by a surrounding mass, irregular folds& an irregular base.
- Upper endoscopy with biopsy & cytology is mandatory whenever a gastric ulcer is found in the radiologic study, even if the ulcer has benign characteristics.

## Diagnosis: imagings

- Staging of gastric cancer, enhanced by EUS.
- The extent of tumor, including wall invasion & local lymph node involvement, can be assessed by EUS & it is complementary to CT.
- EUS help guide aspiration biopsies of lymph nodes to determine their malignant features, if any.
- CT scans of the chest / abdomen should be performed to document lymphadenopathy& extragastric organ (especially lung/liver) involvement.
- In some centers, staging of gastric cancer needs bone scans because of the possibility of metastasize to bone.

## TUMORS, NODES, AND METASTASIS (TNM) STAGING OF GASTRIC CANCER

- TUMOR
  - T1: Tumor confined to the mucosa or submucosa
  - T2: Tumor extending into the muscularis propria
  - T3: Tumor extending through the serosa without involving contiguous structures
  - T4: Tumor extending through the serosa and involving contiguous structures
- NODES
  - N0: No lymph node metastases
  - N1: Regional lymph node involvement within 3cm of the tumor along the greater or lesser curvature
  - N2: Regional lymph node involvement more than 3cm from the primary tumor
  - N3: Involvement of other intra-abdominal lymph nodes not removable at surgery
- METASTASIS
  - M0: No distant metastases
  - M1: Distant metastases

## Treatment: Surgery

- The only chance for cure is surgical resection, possible in 25-30%.
- If confined to the distal stomach, subtotal gastrectomy with resection of lymph nodes in the porta hepatis & pancreatic head.
- In tumors of the proximal stomach total gastrectomy to obtain an adequate margin & to remove lymph nodes+ distal pancreatectomy & splenectomy, but with higher mortality/ morbidity.
- Limited gastric resection is necessary for patients with excessive bleeding or obstruction& If cancer recurs in the gastric remnant.

### **Treatment: Chemoradiotherapy**

- Gastric cancer is one of the few GI cancers responsive to chemotherapy.
- Single-agent treatment with 5-fluorouracil, doxorubicin, mitomycin C, or cisplatin provides partial response rates 20- 30%.
- When used in combination, yield partial response 35-50%.
- Radiation therapy alone is ineffective & employed only for palliative purposes in the setting of bleeding, obstruction, or pain.
- The combination of chemotherapy (fluorouracil + leucovorin) with radiation improve median survival from 27 months to 36 months compared with surgery alone in patients with adenocarcinoma of the stomach or gastroesophageal junction.

### **Treatment: Others**

- Gene therapy & immune-based therapy are currently only investigational.

### **Treatment: Supportive**

- Nutrition (jejunal enteral feedings or total parenteral nutrition),
- Correction of metabolic abnormalities that arise from vomiting or diarrhea
- Treatment of infection from aspiration or spontaneous bacterial peritonitis.
- To maintain lumen patency, endoscopic laser treatment or stenting for palliation.

### **Prognosis**

- 1/3 who undergo a curative resection are alive after 5 years.
- The overall 5-year survival < 10%.
- Prognostic factors include:
  1. Anatomic location & nodal status: Distal gastric cancers without LN involvement have a better prognosis than proximal gastric cancers with or without LN involvement.
  2. Depth of penetration& tumor cell DNA aneuploidy: Linitis plastica& infiltrating lesions have a much worse prognosis than polypoid disease or exophytic masses.

### **Early gastric cancer**

- In early gastric cancer mostly Japanese confined to the mucosa & submucosa, surgical resection may be curative & definitely improves the 5-year survival rate to > 50%.
- When early gastric cancer is confined to the mucosa, endoscopic mucosal resection (EMR) may be an alternative.

## Gastric lymphoma:

- 5% of all malignant gastric tumors.
- Increasing in incidence.
- The majority are non-Hodgkin's lymphomas & the stomach is the most common extranodal site for non-Hodgkin's lymphomas.
- Generally younger than those with gastric adenocarcinoma, also male predominance.
- Commonly present with symptoms & signs similar to adenocarcinoma.
- Lymphoma in the stomach can be a primary tumor or can be due to disseminated lymphoma.
- B-cell lymphomas of the stomach are most commonly large cell with a high-grade type.
- Low-grade variants are noted in the setting of chronic gastritis & termed mucosa-associated lymphoid tissue (MALT) lymphomas. strongly associated with H. pylori infection.
- Ba: usually ulcers or exophytic masses; a diffusely infiltrating lymphoma is more suggestive of secondary lymphoma.
- Barium usually show multiple nodules & ulcers for a primary gastric lymphoma & typically have the appearance of linitis plastica with secondary lymphoma.
- UGI endoscopy with biopsy/cytology are required for diagnosis with accuracy of 90%.
- Conventional histopathology & immunoperoxidase staining for lymphocyte markers is helpful in diagnosis.
- Proper staging of gastric lymphoma involves EUS, chest & abdominal CT scans & bone marrow biopsy.
- Treatment of gastric diffuse large B-cell lymphoma is best pursued with combination chemotherapy with or without radiotherapy with 5-year survival rates of 40-60%.
- For MALT lesions, eradication of H. pylori with antibiotics induces regression of the tumor, but longer term follow-up is needed.
- Radiotherapy can be curative for localized MALT lymphomas.