

## Small bowel tumors

- It is only about 1-2 % of the GI tumors, Same in males and females.
- Benign lesions are more common distal while carcinomas are more common proximal
- **Risk factors:** familial adenomatous polyposis, HNPCC, Peutz-Jeghers syndrome, crohn's disease, celiac disease, biliary diversion
- **Clinical presentation:** at 6<sup>th</sup> and 7<sup>th</sup> decades of life, found incidentally, vague symptoms(nausea dyspepsia, epigastric discomfort, weight loss, hemorrhage), mass, fistula, perforation, intraperitoneal hemorrhage.
- It is difficult to examine the whole small bowel because of it's length so we need different tests and **investigations** to get the whole picture:
  - *Contrast study:* the patient swallows barium or the contrast material then we follow the contrast with series X-rays until the contrast reach the colon,  
**enteroclysis** : is mostly the same procedure but the difference here is that we inject the contrast material through a tube in the stomach.
  - *Endoscopy:* classically we do upper GI endoscopy for the stomach and duodenum but there is certain techniques which help in examining the whole intestines such as: **Double balloon enteroscopy (DBE)** { also known as "push-pullenteroscopy" or the "**double-bubble**", is a new endoscopic technique that allows pan-enteric (complete) examination of the small bowel. DBE was originally developed in Japan in 2001 and is now performed by many gastroenterologists throughout the world.} , **Push endoscopy** (also referred to as **push enteroscopy**) {is a procedure that allows diagnosis and treatment of diseases in the upper small intestine. **Push endoscopy** reaches further into the small intestine than the standard upper gastrointestinal **endoscopy** (also known as esophagogastroduodenoscopy, EGD)}
  - *MRI/CT enterography:* uses CT imagery and a contrast material for a better view of small intestine by examining it loop by loop (most commonly used)
  - *Angiography:* to examine the blood supply for a tumor as an example
  - *Capsule endoscopy:* is a camera that images the entire GI tract down to the colon and look for any lesion, it is expensive test and we have to make sure that there is no narrowing in the intestines before doing it. It is done to certain patients whose signs and symptoms are not clear.
- The tumors are classified into a benign, malignant and a carcinoid which we can't tell if the tumor is definitely benign or definitely malignant

## **Adenomas**

- The benign is adenomas which is polyps, 20% are in duodenum 30% are in jejunum and 50% are in ileum, and as more distal the polyp is the more benign it is, villous adenomas are more common in duodenum and as more villous structure there the more potential to be pre-Malignant.

## Surgery – Morning Lecture #5

- Because it is benign, it's commonly *asymptomatic*, may present with obstruction, bleeding mainly upper GI bleeding that due to a polyp in the jejunum.
- Malignant changes increase with increased size, site (Adenomas involving the ampulla transform to malignancy more often than do lesions found elsewhere in the duodenum and small intestine)

### **Polyposis syndrome :**

last lecture we talked about FAP, that happens due to APC gene mutation with multiple polyps in the colon and we said that the patient can develop polyps in the stomach, duodenum and the small bowel, the interesting thing that developing polyps in the colon has a 100% risk to develop cancer, but that of the small bowel, the risk of developing cancer is 2-12%.

- It is treated by incision and follow up, there is a scoring system but the Dr. said it is not important.

### **Other benign tumors:**

- fibromyoma, lipoma, leiomyomas and other vascular tumors .

### **Malignant tumors :**

*Always produce symptoms*, the most common presentation is weight loss and pain, other presentations are obstruction, bleeding, adhesions and diarrhea.

### **Carcinoid tumor**

- It originates from the enterochromaffin cells it may present in the foregut, midgut and the hindgut.
- it is the most common cancer of the appendix and it is found accidentally (after appendectomy) so it is painless.
- the most common site of the Carcinoid is **the terminal ileum** .
- **it** is a slow growing, yellow tumor that can metastasize to the nearby LN which they are around vessels, fibrosis may occur there so it will cause ischemia in a segment of the small bowel, and that is what we found during surgery a yellow tumor and an ischemic segment of the small bowel.
- So the Carcinoid may metastasize to near by lymph nodes and to the liver, where it will cause ulceration, obstruction and jaundice.
- Carcinoid of the Terminal ileum seems to be more aggressive than that of the appendix .

## Surgery – Morning Lecture #5

- the risk of metastasis increases with increasing size, so if the tumor size is more than 2 cm the risk of metastasize more and more. If the metastasis happens toward the liver this increases the risk of developing the Carcinoid syndrome, it can bypass the liver and cause diarrhea and flushing.  
by logic the prognosis becomes more and more dismal if the metastasis occurs.
- Carcinoid increases the risk of developing adenocarcinoma of the colon by 10-20% causing obstruction, fibrosis, and ischemia .
- There is a correlation between Carcinoid and increasing levels of acetic acid: Since 5-HIAA (5-Hydroxyindoleacetic acid) is a metabolite of serotonin, testing is most frequently performed for the diagnosis of carcinoid tumors of the enterochromaffin (Kultschitzky) cells of the small intestine, which release large amounts of serotonin. Values greater than 25 mg per 24 hours (higher if the patient has malabsorption) are strong evidence for carcinoid. The normal range is 2 to 6 mg per 24 hours.
- About 30% percent of Forgut Carcinoid patient lack the enzyme that convert L-5 hydroxytryptophan to serotonin, so we check it if we suspect the patient to have forgut Carcinoid .

### Treatment of carcinoid:

- Surgical resection with the involved lymph node if we cannot resect all tumor we do **tumor debulking** -cytoreduction-(remove part of tumor + give Cryotherapy)
- Radiofrequency ablation: Two probes is placed inside the tumor, the radiofrequency waves passing through the probe increase the temperature within tumor tissue and results in destruction of the tumor and stop the tumor .
- Embolization of hepatic artery
- Chemotherapy
- Chemoembolization
- Somatostatin or its analog (systemic therapy)

### **Notes:-**

- Whenever we see tumor with different methods of treatment this mean no method is better than the other.
- No Chemotherapy in Carcinoid.

## **Adenocarcinoma:**

- More common in proximal small bowel
- Usually in older people
- Present with nonspecific symptoms

Treatment → Resection with involved lymph node

### **Notes:-**

- The more proximal the tumor in small bowel the more malignant, and adenocarcinoma is more common in proximal small bowel
- In proximal small bowel tumor we can't do major resection in the upper small bowel because wherever we get proximal in small bowel we get closer to the root of mesentery which is superior mesenteric artery which we cannot resect because it's the main supply to the small bowel. So we do **wedge resection** with the involve lymph node.
- The Outcome 5 year survival is worse if we have lymph node involvement

### **Exception: Crohn disease and adenocarcinoma**

- Patient with Crohn which is occur mostly in terminal ileum have increased risk of adenocarcinoma in terminal ileum (usually more in proximal except for Crohn's it's in terminal ileum).
- Usually in younger patient
- More in males
- Prognosis is poor because there is other disease (there are two diseases Crohn and the cancer)

**How we diagnose crohn disease?** → By biopsy but not all patients, sometime we can diagnose crohn on radiology by finding stricture or inflammation in terminal ileum so not all time you can take biopsy from terminal ileum, Sometime we treat patient based on our clinical finding.

### **Notes:-**

- Always be careful in diagnosis because in crohn disease you will give the patient immunosuppressant so if the patient had tumor it will go faster.

## Gastrointestinal lymphoma

- Lymphoma of small bowel is only 1-4 % of primary gastrointestinal cancer so usually lymphoma appears in the stomach unless it is in small bowel.
- It can present with obstructing, bleeding, anorexia, weight loss.
- Usually in older people more common in ileum because it contain more lymph node.
- Associated with celiac disease or immunosuppressant patients (AIDS)

Treatment → is medical unless there are complications.

Complications are → perforation, hemorrhage, obstruction, and intussusception.

## Gastrointestinal stromal tumor (GIST):

- Usually arise from connective tissue cells.
- Could be benign or malignant.
- The risk of malignancy related to size of tumor.
- More common in stomach compared to small bowel and usually in older people.
- There is no lymphatic spread but it can metastasize to **peritoneum and liver**.
- Prognosis depends on tumor size and mitotic figure on pathology.

Treatment → the best is to do surgery with clean margin.

### Notes:-

- If we cannot excise the tumor either due to size or site near vital structures , we can give Tyrosine kinase inhibitor (imatinib) which have good effect on half of them (50% tumor shrinkage).
- GISTs are thought to be relatively radio-resistant.