Approach to Subepithelial Lesions

ACG Postgraduate Course
October 13th, 2013

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Objectives

• Review the epidemiology and pathology of the major subepithelial lesions in the GI tract

• Discuss various approaches to the diagnosis and management of these lesions
Background

• Subepithelial lesions are frequently encountered
  – ~1% of EGD procedures diagnose a subepithelial lesion
  – ~13% of lesions are malignant at diagnosis
  – Many lesions are benign, but have malignant potential

• Most lesions are discovered incidentally

• Most likely symptom is anemia and/or GI bleeding
  – Other symptoms include abdominal pain and obstruction


M:F ratio=1; most patients >50 years old

CT/MRI/US usually not sensitive enough to detect and characterize most subepithelial lesions

EUS is able to:
  – Differentiate extramural compression from intramural growth
  – Determine layer of origin
  – Accurately measure size
  – Evaluate for regional lymphadenopathy
  – Obtain tissue
  – Help to determine appropriate management
Normal Gastrointestinal Wall Layers

Radial EUS Imaging

Mary Lee Krinsky, DO and Kenneth Binmoeller, MD

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Differential Diagnosis

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<tr>
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<td>GIST</td>
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<td>Leiomyoma</td>
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### GIST Lesion

- **Originate from the interstitial cells of Cajal (MP layer)**

- **Gain of function mutation in \textit{KIT} gene $\rightarrow$ activation of the \textit{c-kit} protein (tyrosine kinase receptor)$^1$

- **IHC staining is positive for CD117 in 95% cases (corresponds to c-kit activation)**

- **All have malignant potential**

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GIST Lesion

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• Higher risk of malignancy\textsuperscript{1-3}
  – Lesion size >3cm on EUS
  – Intestinal (jejunum) >> gastric lesions
  – Mitotic rate >5-10/50 HPF

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<th>Risk of Malignancy</th>
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<th>Mitotic Count</th>
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<td>Very low</td>
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<td>&lt;5/50 HPF</td>
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<td>2-5cm</td>
<td>&lt;5/50 HPF</td>
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<tr>
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GIST Lesion

• Management:
  – Symptomatic lesions $\Rightarrow$ surgical resection*$^*$
  – Asymptomatic, large lesions (>2cm) $\Rightarrow$ surgical resection*$^*$
  – Asymptomatic, small lesions (<2cm):
    • Annual EGD/EUS for surveillance vs. surgical resection

$^*$Simultaneous referral to medical oncologist for consideration of adjuvant therapy with Imatinib (Gleevec\textsuperscript{®}) for high risk lesions
Leiomyoma

• Originate from the MP layer (occasionally MM layer)

• Most common location is the mid-distal eophagus

• IHC staining is negative for CD117, CD34, and s100
  – Positive for desmin and α-smooth muscle actin proteins

• Risk of malignancy is extremely rare

Leiomyoma
Leiomyoma

• Management:
  – Surveillance EGD/EUS every 1-2 years\(^1\)
    • For asymptomatic, small lesions (<1-2cm)
  – Surgical resection
    • Symptomatic, enlarging, structural changes during surveillance
  – Endoscopic resection
    • Small lesions (<2cm) arising from the MM layer on EUS exam


Lipoma

• Fatty tumors arising from the SM layer
• Most commonly occur in the colon and gastric antrum
• Positive “pillow sign” • 98% specific for lipoma\(^1\)
• Essentially no malignant potential
• Characteristic EUS features
• Jumbo biopsies often reveal yellow, adipose tissue\(^2\)

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**Granular Cell Tumor**

- GCTs are of Schwann cell in origin
- Arise from the MM or SM layer
- Most GI tract GCTs are located within the esophagus
- Risk of malignancy is extremely low
  - ~2-4% at time of diagnosis; all >4cm in size


**Management:**
- Small lesions (<1cm) → annual EGD exam
- Large lesions (>2cm) → surgical resection
- Intermediate lesions (1-2cm) → surveillance EGD exams vs. endoscopic resection

Pancreatic Rest

- Prevalence of 1-2% in autopsy studies
- 90% located in the stomach; mostly gastric antrum
- Symptoms present in minority of patients:¹
  - Ulceration and pain
  - Pancreatitis
  - Bleeding
  - Gastric outlet obstruction
  - Dysphagia
- Characteristic central umbilication on endoscopy
- Arise from the SM layer on EUS
- Essentially no malignant potential

Carcinoid Tumor

• Most frequent neoplasm of the small intestine (ileum>jejunum>duodenum)\(^1\)
  – Small bowel accounts for 25% of all carcinoids

• Slight female predominance (M:F ratio=1:1.6)

• Originate from mucosal layer and penetrate deep

• Gastric carcinoids account for 9% of all carcinoids\(^2\)
  – 3 subtypes of gastric carcinoids
  – Varying levels of malignant potential


Gastric Carcinoid Tumors

• Type I: associated with atrophic gastritis, pernicious anemia and hypergastrinemia
  – Low malignant potential

• Type II: associated with MEN 1, Zollinger-Ellison Syndrome, and hypergastrinemia
  – Intermediate malignant potential

• Type III: sporadic form, normal gastrin levels
  – High malignant potential

Management of Gastric Carcinoid Tumors

• Type I and II lesions (hypergastrinemia):
  – Endoscopic resection for small lesions, <1-2cm
  – Surgical resection for large lesions, or multiple lesions (>5)
  – Consideration or surgical antrectomy or fundectomy
    • Removal of G-cells or ECL cells, respectively
  – Surveillance EGD every 6-12 months

• Type III lesions (normal gastrin levels):
  – Surgical resection with lymph node dissection\(^1\)

Rectal and Duodenal Carcinoid Tumors

• Management of rectal tumors:\(^1\)
  – Small lesions (<1cm), confined to SM • endoscopic resection
  – Large lesions (>2cm), or invasion to MP layer, or regional lymph node involvement • surgical resection
  – Intermediate lesions (1-2cm), confined to SM • endoscopic vs. surgical resection

• Management of duodenal tumors:
  – No guidelines exist for non-ampullary tumors
  – Reasonable to adopt the same approach to rectal lesions

Rectal and Duodenal Carcinoid Tumors

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Algorithm for the Approach to Subepithelial Lesions

**EGD**
- Biopsy overlying mucosa
- Estimation of lesion size

Lesion<1cm ➔ Repeat EGD in 1 year

Lesion>1cm ➔ EUS

**EUS**
- Characterize the lesion
- Evaluate for signs of malignancy
- Tissue acquisition for definitive Dx

Growing in size, Or >1cm ➔ No

**Methods of Tissue Acquisition**
- EUS-FNA\(^1\) or EUS-FNB (core needle)
- Tunneled, jumbo biopsy forceps\(^2\)
- Unroofing, enucleation, other techniques\(^3,4\)
- Endoscopic resection

**Significant Malignant Potential**
- yes ➔ Surgery
- no ➔ Endoscopic Surveillance

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