Juvenile Polyposis Syndrome (JPS)/ Familial Juvenile Polyposis

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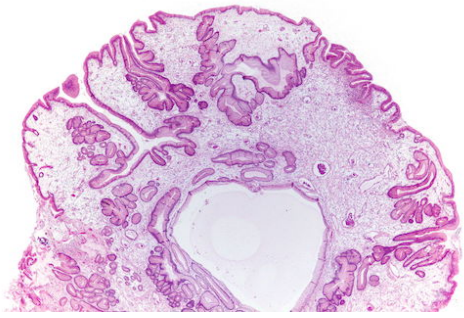
Pathophysiology and Presentation

Pathophysiology

- Mutations: SMAD4 (MADH4) or BMPR1A [1] MN
- Autosomal Dominant
- "Juvenile" Refers to the Type of Polyps, Not the Age of Onset [2]



Juvenile Polyp [8]

Presentation

- Presents with Multiple **Hamartomas Throughout the GI Tract** [3]
  - Colorectal (98%) – Most Common
  - Stomach (14%)
  - Duodenum (7%)
  - Small Bowel (7%)
- Number of Polyps Varies from Few to Over 100 [4]
- Most Present with Some Polyps by Age 20 [4]
- Most Patients Have Symptoms of GI Bleeding and Anemia by Age 20

Malignancy Risk

- Most Hamartomas are Benign but Malignant Transformation Can Occur
- Incidence of All GI Cancers: 11-86%
- Incidence of Colorectal Cancer: 17-22% by Age 35; 68% by Age 60 [1,5]
- Incidence of Upper GI Cancers: 21% [6]

Extraintestinal Manifestations

- Hereditary Hemorrhagic Telangiectasia (HHT)
    - Present in 32% of Patients with an SMAD4 Mutation [7]
    - High Incidence of Pulmonary Arteriovenous Malformation (AVM) and Epistaxis [1]
- Skeletal Stigmata (Macrocephalus, Hydrocephalus, Cleft Palate, Polydactyly, Hypertelorism) – 70% [2]

Diagnosis and Management

Diagnosis [1,9]

- Clinical Diagnosis: Based on One of the Following:
    - > 5 Juvenile Polyps of the Colon or Rectum
    - Multiple Juvenile Polyps of the Upper and Lower GI Tract
    - Any Juvenile Polyps with a Family History of JPS
- Diagnosis Confirmed by Genetic Testing

Screening/Surveillance

- Colonoscopy Every 1-3 Years, Starting at Age 12-15 [5,9,10]
    - Repeat Every Year if Polyps are Found
- Upper Endoscopy Every 1-3 Years, Starting at Age 12-15 [5,9,10]
    - Repeat Every Year if Polyps are Found

Polyp Management

- Endoscopic Polypectomy to Decrease Risk of Bleeding and Malignancy [1]
- Partial Stomach or Bowel Resection May Be Necessary in the Setting of Numerous Polyps to Relieve Symptoms or Decrease Cancer Risk [1]

Indications for Colectomy [11]

- Absolute Indications (2015 ACG Guidelines):
    - Documented or Suspected Colorectal Cancer
    - Significant Symptoms

- Relative Indications (2015 ACG Guidelines):
  - Multiple Large Adenomas > 6 mm
  - Significant Increase in Adenoma Number on Consecutive Exams
  - Adenoma with High-Grade Dysplasia
  - Inability to Adequately Survey the Colon Because of Multiple Diminutive Polyps
- Consider Partial vs Total Colectomy/Proctocolectomy

Other Colorectal Cancer and Polyposis Syndromes

Syndromes

- *Familial Adenomatous Polyposis (FAP)*
- *Lynch Syndrome*
- *Juvenile Polyposis Syndrome (JPS)/Familial Juvenile Polyposis*
- *MUT Y Homolog (MUTYH)-Associated Polyposis (MAP)*
- *Peutz-Jeghers Syndrome (PJS)*
- *Serrated Polyposis Syndrome (SPS)*
- PTEN Hamartoma Tumor Syndromes: (PHTS)

Comparisons

- *See Familial Colorectal Cancer and Polyposis Syndromes

Mnemonics

Genetic Mutations in Familial Juvenile Polyposis

- Juveniles Get “MAD” Easily (SMAD4/MADH4) and “BUMP” Music (BMPR1A)

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