Optimal Management of Splenic/Portal Vein Thrombosis

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Overview

- Portal Vein Thrombosis (PVT)
  - Etiology
  - Presentation/Clinical Aspects
  - Diagnosis
  - Management
    - Cirrhotic vs. non-cirrhotic
    - Medical vs. Invasive

- Splenic Vein Thrombosis (SVT)
  - Etiology
  - Presentation/Clinical Aspects
  - Diagnosis
  - Management
    - Surgery vs. observation
PVT: Management Dilemma

- Lack of randomized controlled data
- Determining acute vs. chronic disease
- Better understanding of etiology
- Perceived risks of anticoagulation
PVT: Etiology

- **Common causes**
  - Cirrhosis
  - Coagulation abnormalities
  - Intra-abdominal infection
  - Malignancy
  - Umbilical vein catheterization (children)

- **Uncommon Causes**
  - Schistosomiasis
  - Pancreatitis
  - Postsurgical (splenectomy, liver tx)
  - Compression by nodes
  - Drugs (oral contraceptives)
  - Pregnancy
PVT: Presentation

- Can be asymptomatic
  - Increased hepatic arterial flow
  - Rapid development of collaterals (cavernomatous transformation)
- Acute PVT
  - <60 days prior to presentation
  - Abdominal pain, nausea, fever → symptoms related to extent of thrombosis (bowel ischemia)
  - Absence of clinical, endoscopic or radiological portal HTN
PVT: Presentation

- Chronic PVT
  - Symptoms of portal HTN
    - Variceal bleeding
    - Ascites
    - Splenomegaly
    - Biliary obstruction ("cavernoma")

- Growth retardation in children
PVT: Diagnosis (Ultrasound)

- Initial imaging method
- Color doppler ultrasound has 98% neg. predictive value
PVT: Diagnosis (MRA/CT)

- MRA as accurate as angiography in detecting PVT
- CT allows diagnosis of etiology (malignancy)
PVT: Diagnosis (angiography)

- “Gold standard” in diagnosis
- Invasive
- Useful when planning shunt surgery
PVT: Management

- **Goal of management is to reduce associated morbidity and mortality**
- **Two broad intentions:**
  - Reverse or prevent advancement of thrombosis
  - Treat complications of established PVT (mainly variceal bleeding)
Acute PVT: Anticoagulation

- **Thrombolysis vs. systemic anticoagulation**
  - No randomized data comparing the two methods
  - Evidence that early intervention is beneficial

- **Malkowski et al (2003) studied 33 cases of acute PVT**
  (symptoms 8-60 days prior to presentation)
  - Conservative mgmt. in first 5 pts → all died (variceal bleeding)
  - **Thrombolysis in next 28**
    - Recanalization if symptoms <14 days (n=10)
    - Restoration of hepatopetal flow in 13/18 remaining pts allowing normal liver function
Acute PVT: Anticoagulation

- Condat et al (2000): retrospective review of 33 patients with acute PVT (recent abd pain, no evidence of portal HTN, no portal collaterals on imaging)
  - 27 pts received heparin/coumadin and had follow-up imaging ➔ 25 showed recanalization
  - 2 pts received no anticoagulation and showed no recanalization on follow-up imaging

- Suggests early anticoagulation results in recanalization
PVT: Anticoagulation

- Use in pts with chronic PVT varies secondary to presumed increased risk of bleeding
- Condat *et al* (2001) retrospectively reviewed 136 pts with PVT, but no cirrhosis or malignancy (84 pts with anticoagulation, 42 without)
  - No difference in bleeding rate, hemoglobin level on admission, or subsequent transfusion requirement
  - Anticoagulation associated with reduction in new thrombotic episodes
- Unclear whether group without anticoagulation was a better risk group (fewer comorbidities) at presentation
Management of GE Varicities

- Several recent prospective randomized studies showing B-blockade and/or endoscopic therapy decreases rate of first bleed/rebleed
  - All studies done on cirrhotic pts without mention of PVT
Mgmt of Varices in pts with PVT

- Vleggaar *et al* prospectively followed 21 pts with varices secondary to PVT (1982-1997)
  - All treated with sclerotherapy at initial bleed
  - Five pts rebled and were again treated with sclerotherapy (two had subsequent shunt procedure)
  - Pts had 95% survival at five years
    - 2 pts died from malignancy
    - 0 pts died from variceal bleeding
- Conclusion: sclerotherapy should be primary treatment of bleeding varices in pts with PVT
Mgmt of Varices in Pts with PVT

- Zargar *et al* prospectively randomized 49 children with bleeding varices secondary to extrahepatic portal venous obstruction (EHPVO) to sclerotherapy vs. band ligation
  - Both methods equal in arresting bleeding (100%) and eradication of varices (91.7% vs. 96%)
  - Fewer sessions required in band ligation (3.9(1.1) vs. 6.1(1.7) p<0.0001)
  - Rebleeding higher in sclerotherapy group (25% vs. 4% p=0.49)
- Conclusion: VBL safe/rapid means of eradicating varices associated with EHPVO in children
Mgmt of Varices in Pts with PVT

- Use of B-blockers for prophylaxis of variceal bleeding
  - No studies on use in PVT
  - Theory that sluggish blood flow in the portal vein combined with prothrombotic state may encourage thrombotic progression
    - Argument favors endoscopic therapy over B-blockade
Shunting Procedures in PVT

- General Principles
  - No consensus on optimal type of surgery or timing of surgery
  - Permanently decompresses the portal system
    - Reduction in hypersplenism/spleen size
    - Improvement in growth retardation in children
  - In general associated with low mortality and high shunt patency at 5 years (95% at 15 years in one series)
Shunting Procedures in PVT

- Splenorenal or Mesocaval shunts used most frequently to avoid use of prosthetic material
  - Must have patent splenic vein for splenorenal shunt
  - Splenic vein >7mm preferred for patency
Role of TIPS in Mgmt of PVT

- Useful in managing recurrent variceal bleeding in pts with cirrhosis and noncavernous PVT
- All series (3) reviewed consisted of 10 or less pts
- Thrombosis treated with either balloon angioplasty or thrombolysis with similar results
- Complications were minimal: recurrent bleeding after stent thrombosis
SVT: Etiology

- Acute/chronic pancreatitis and pancreatic cancer most common causes
  - Historically pancreatic cancer more common cause
- Adenopathy from metastatic CA/lymphoma
- Iatrogenic causes (splenectomy, partial gastrectomy, distal splenorenal shunt)
**SVT: Pathophysiology**

- **Sinistral portal hypertension** (left sided)
  - Collaterals most commonly use short gastrics
  - Short gastric → azygous (distal esophagus)
  - Short gastric → coronary vein → PV
  - Gastroepiploic vein → SMV
- **Results in isolated gastric varices**
SVT: Clinical Manifestations

- Most patients asymptomatic
- Should be suspected in following group of pts:
  - History of pancreatitis and newly diagnosed GI bleeding
  - Splenomegaly without portal HTN, cirrhosis, or hematologic disease
  - Isolated gastric varices
SVT: Clinical Manifestations

- Variceal Bleeding often first manifestation of SVT, but studies show risk is low
  - Bernades et al prospectively investigated 266 pts with chronic pancreatitis with US
    - 22 pts (8%) had isolated SVT, few had varices
    - On follow up endoscopic evaluation (up to 36 months), no change in appearance/location of varices
    - No episodes of bleeding during follow-up
  - Bradley et al prospectively followed 11 pts with SVT
    - Gastric or gastro-esophageal varices found in 6 pts (angiography)
    - At mean follow-up of 6.5 years, 2 pts developed bleeding
## SVT: Incidence of Varices

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SVT: Clinical Manifestations

- Other signs/symptoms:
  - Splenomegaly with rare leukopenia, thrombocytopenia, or splenic pain
  - Abdominal pain
    - Chronic pancreatitis, pseudocyst, carcinoma
SVT: Diagnosis

- Ultrasonography initial test
  - Accuracy may be limited by size/location of vein
  - If patent, normal-appearing splenic vein seen, SVT unlikely

- Venous phase angiography
  - Gold standard confirmatory test
  - Localizes obstruction and routes of collateralization
SVT: Management

- **Sclerotherapy:**
  - Gastric varices controlled in approx. 2/3 of active bleeds

- **Gastric banding:**
  - One prospective trial of 8 pts showed successful eradication of varices in 85% (7/8)
    - Only one pt had isolated gastric varices, none evaluated for SVT
SVT: Management

- **Splenectomy:**
  - Treatment of choice for bleeding varices associated with isolated SVT
  - Eliminates venous collateral outflow, decompresses surrounding varices
  - Ability to treat pancreatic pathology
SVT: Management

- Pts with asymptomatic varices:
  - Role of splenectomy is controversial
  - Due to relatively low risk of bleeding, observation is appropriate
  - If pt undergoing laparotomy for other reason, splenectomy is advised
SVT: Management

- Splenic arterial embolization:
  - Rarely studied
  - Associated with splenic abscess (25%)
  - Pts with high operative risk
  - Pts with diffuse metastatic disease
References