GIST:
Role of Interventional Radiology in the Treatment of Localized and Metastatic Disease

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GIST Day of Learning
March 10, 2018
• Multidisciplinary approach

• Interventional radiology (IR) serves many roles

• Usually after or with surgical and medical treatment
• Patients referred to IR mostly from the Oncologists and surgeons

• Patient’s are seen in the IR clinic prior to ablations, embolizations, and blocks, or if questions, even about minor procedures
Where does IR come in?

- Before surgery and/or medical Rx
- During/after surgery and/or medical Rx
- Palliation/comfort
Before surgery and/or medical Rx:

- Biopsy if needed
- Embolization to stop bleeding
- Embolization to decrease bleeding risk at surgery
- Portal vein embolization preoperatively for liver metastases
Embolization for bleeding - pelvic GIST
Embolization for bleeding
PV Embolization prior to liver resection

• 55 yo male w/ 14 yr hx GIST
• 2014 Large solitary right lobe GIST met responding to imatinib; recommend resection
• Pre-MRI 11/12/2014; small left lobe
• PVE 12/11/2014
• Post_MRI 1/12/2015; total 1674 mL; lt 706 mL (42%)
PV Embolization

• Moderate procedural sedation in most cases (in AZ)
• Use ultrasound to access the portal venous system
• Occlude either the right or left PV system to cause atrophy of that lobe and hypertrophy of the other lobe, prior to planned resection.
• Usually admitted overnight after procedure.
PV anatomy

Rt  Lt  Acc. Rt
Balloon occluded; embo w/ glue mixture
Left lobe volume increased after PVE
During/after surgery and/or medical Rx:

- Intraoperative liver mass ablation
- Percutaneous ablation of resistant/recurrent liver lesions
- Intra-arterial therapy of resistant/recurrent liver lesions (especially multiple)
Ablation:

“One advantage that RF ablation has over catheter-based intra-arterial therapy is that it allows for minimal interruption of systemic treatment … RF ablation has a particular role in patients who have a solitary area of disease progression, in the context of metastatic disease that is otherwise effectively controlled by tyrosine kinase therapy. RF ablation can delay a change in systemic therapy by achieving local control at the site of solitary progression.”

Ablation:

• Historically, used radiofrequency (RF) or cryoablation (freezing)
• In the liver, we now use microwave ablation (better control).
• May be performed intraoperatively, at the same time as a resection (e.g. right lobectomy and solitary left lobe ablation)
• May be done in the CT suite with CT and ultrasound.
• Use general anesthesia because of pain and to control breathing motion.
• Admit at least overnight after percutaneous ablation.
Ablation complications:

- Pain
- Abscess and sepsis (1-2 weeks)
- Post-ablation syndrome (esp. if large area ablated)
  - flu-like symptoms
  - pain
- Liver failure (if large area or previous/concurrent resection)
- Other organ injury (gallbladder, stomach, bowel)
- Pneumothorax (if high in liver)
PET/CT GIST perigastric mass and liver met
GIST liver met ablation

Pre

Probe placement

Post
GIST perigastric mass fiduciary marker

Pre Marker placement after liver ablation
Arterial therapies

- Bland embolization
- TACE
- DEB-TACE
- Y-90 (radioembolization)
Arterial therapies

• Moderate sedation and overnight observation
• Premedicated, including antibiotics and anti-nausea
• Post-embolization syndrome can occur
  • Fever, RUQ pain, N/V
  • Treat with intra-arterial lidocaine, odansetron (anti-nausea), analgesics (pain meds)
• Other complications include groin hematoma, and (rarely) liver failure
Segment IV mass TACE
Yttrium-90 (Y-90)

- Radioactive embolic particles used, trapped in liver
- Requires arterial and NM procedures to plan
  - Embolizing small vessels sometimes needed to avoid non-target embolization
  - Shunting percentage (portosystemic) calculated
- Usually entire lobe treated
Intra-arterial Technetium 99m MAA

Shunt fraction to lungs (c/w liver) = 26% anteriorly and 32% posteriorly, precluding y-90 procedure.
Palliation/comfort (relief of symptoms):

- Drain fluid (paracentesis, thoracentesis, abscess)

- Gastrostomy tube placement
  - Percutaneous transgastric
  - Transesophageal (PTEG)

- Nerve blockade
• 10 cm duodenal (proximal small intestine) GIST

• After resection, food and fluid would not easily pass through causing N/V and distention

• Needed feeding tube beyound the surgical site

• Needed to vent the stomach
Large GIST duodenal wall

Mass

Exiting small bowel

Dilated stomach

Pre-op

Post-op

Swollen small bowel
Percutaneous gastrostomy and gastrojejunostomy
PTEG (percutaneous transesophageal gastrostomy)
Celiac plexus block (neurolysis)
Summary

• Multidisciplinary approach
• IR serves many roles
  • Biopsy
  • Embolization
    • Bland
    • PVE
    • Intra-arterial therapies
  • Ablations
    • Percutaneous
    • Intraoperative
  • Symptom relief/palliation
THE END