Retroperitoneal Fibrosis

Grand Rounds VGH
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Outline

- Case Presentation
  - Hx, Px, Imaging
- Review of RP Fibrosis
  - Def'n, Etio, Epid, Pathology, Pathophysiology, Staging, Imaging, Dx, Medical and Surg Mgt
- Case Presentation
  - Mgt, follow up images
- Summary
Case Presentation

• ID
  - 63 yo F, HTN, dyslipidemia, no previous surgery, otherwise healthy

• CC
  - Non specific back pain

Case Presentation

• HPI
  - Non specific flank pain L > R for 6 mos
  - Gradual onset of Sx
  - Anorexia
  - No LUTS
  - No hematuria
  - No migraines
Case Presentation

• Physical exam
  - Mild L CVA tenderness
  - Abd exam negative
  - Pelvic exam negative

• Meds
  - Altace
  - Lipitor

• Allergies
  - none

Case Presentation

• Tests
  - Cr 115
  - Lytes N
  - CBC N
  - Incr ESR
  - U/A & U C&S –ve

• Imaging
**Definition Retroperitoneal Fibrosis (RPF)**

- Fibrotic process involving RP encircling and strangulating the organs & vessels in the RP space
- Dense woody hard mass in center of RP typ L45 vertebra
- Envelopes IVC and AO
  - Extends from AO bifurcation to renal pedicle
  - Extends laterally to outer edge of psoas enveloping the ureters

**RP Fibrosis AKA**

- Ormond’s D
- Periureteritis fibrosa
- Periureteritis plastica
- Chronic periureteritis
- Sclerosing RP granuloma
- Fibrous retroperitonitis
Epid

- Pt’s 40 - 60 yo
- Children rare
- M:F 2.5:1

Etio

- Idiopathic RP fibrosis 30%
- Secondary 70%

Secondary Causes of RPF

- Chemicals
  - Asbestos
  - Talcum powder
  - Avitene
  - Methyl methacrylate
Secondary Causes of RPF

**Malignancy**
- Primary RP tumors
  - Lymphoma, sarcoma, multiple myeloma
- Metastatic Periureteral disease
  - Rectal, colon, breast, pancreatic, prostatic, gastric
- Carcinoid RP tumors

**RP Inflammatory Processes**
- Collagen vascular D
  - Mesenteric panniculitis
  - AO or iliac aneurysm
- CT D
  - SLE, RA
- Pancreatitis, enteritis, diverticulitis
- Sarcoidosis
- endometriosis
Secondary Causes of RPF

• **Medications**
  - Beta blockers
  - Methyldopa
  - Hydralazine
  - Ergotamine alkaloids → LSD, Methysergide
  - Dopaminergic agonists → pergolide, pramipexol
  - Haloperidol
  - Amphetamines
  - Phenacitin

Secondary Causes of RPF

• **RP Injury**
  - Trauma
    - Hemorrhage
    - Urinary extravasation
    - Rectal perforat’n after Ba enema
  - XRT
  - Previous operation
Secondary Causes of RPF

• Infection
  - Biliary tract infections
  - Gonorrhea
  - Ruptured liver echinococcal cyst
  - TB
  - Chronic UTI
  - Syphilis

Primary RPF

• Typ occurs as an isolated entity
• 15% of idiopathic cases are assoc w fibrotic processes elsewhere in body
Multifocal Fibrosclerosis

- Rare syndromes involving multiple organ systems
  - Sclerosing mediastinitis
  - Sclerosing cholangitis
  - Orbital pseudotumor
  - Riedel’s thyroiditis

Pathogenesis

- Early in D → inflammation
- Late in D → fibrosis
Pathology iRPF

- **Gross**
  - Flat, gray-white, hard fibrous plaque

- **Microscopic**
  - Densely fibrotic collagen
  - Non specific areas of inflammation
  - Macrophages, lymphocytes, plasma cells
  - Occasional eosinophils

Pathology

- Often lateral margins of mass demonstrate more inflammatory process than central portion
- Depending on stage of D, pathology can vary from an active inflammatory infiltrate or can be bland with hypocellular collagen and minimal cellularity
**SSx**

- Presents insidiously
- Vague abd and flank pain
- Nonspecific systemic complaints
  - Anorexia
  - Wt loss
  - Moderate pyrexia
  - N & V
- Most Sx occur from envelopment of ureters

**SSx**

- Dull non colicky pain in girdle distribution
- Discomfort unaffected by
  - Position
  - Activity
  - Defecation or micturition
- Discomfort worsens with time
- L/E edema
- DVT
- HTN
**Inv’n**

- **US**
  - Hydronephrosis
  - Hypoechoic periaortic mass

**IVP**

- **Classic Triad**
  - Proximal hydroureteronephrosis
  - Medial deviation of ureters
  - Extrinsic compression of ureters
- **Bilateral hydrenephrosis**
- **Encasement of ureters prevents dilation of middle and distal ureteral segments**
CT

- Exam of choice to visualize
  - extent of fibrosis
  - Presence of LAD
  - Primary malignancy
- Fibrotic plaque exhibits similar attenuation to muscle
- Contrast enhancement of mass
MR

- Findings are comparable to CT
- Contrast study with impaired renal fn
- Fibrotic plaques present w a characteristic T1 and T2 weighted image
Pyelography

- Not primary study
  - antegrade or retrograde
- Pyelography may be performed during Tx
  - Perc NT placed
  - Ureteral stents
- Studies can be useful to determine extent and length of ureteral involvement
Nuclear Renography

- May assist in determining cause of renal insufficiency
- Will provide differential renal fn in pt’s w non functioning kidney

Biopsy

- Once Dx is suggested by imaging, Bx is req’d to confirm Dx
  - Exclude malig
- CT guided needle Bx
  - Minimally invasive
- FNA
  - Appearance is often non specific
- Open vs Laparoscopic surgery
  - For larger Bx specimens
Laboratory Inv’n

- Incr ESR
- Incr gamma globulin level
- Mod leukocytosis
- Renal insufficiency
- Anemia
- Lyte abNlities
- Consider tumor markers if indicated

Acute Mgt

- Prompt Dx
- Preservation & correction of renal fn
  - Perc NT
  - JJ ureteral stents
- Post obstructive diuresis
- Assess pt’s for DVT and L/E edema
- Stop offending Rx
Mgt - Medical

- Corticosteroids
- Immunosuppressants
- Combination Tx

Corticosteroids

- Primary Tx for RPF
- Historically used pt’s unfit for surg or w extensive involvement of main vessels
- Administered post-op w good long term success
Corticosteroids

• Evidence for Efficacy
  - Kardar study is largest clinical study, n=11
  - Numerous case reports confirming efficacy
• Success determined by regression of mass & resolut’n of ureteral obst’n
• Complete disappearance of mass @ 6-20 mos

Kardar et al. Steroid Tx for RPF Dose and Duration of Tx. J Urol 2002

Corticosteroids

• Patient Selection
  - More likely to benefit are pt’s w evidence of inflammat’n
    • Leukocytosis
    • +ve ANA titer
  • In early stage when fibrotic tissue is rich in inflammat cells → better steroid response
**Corticosteroids**

- No agreement on duration of Tx
- Prednisolone 20-60 mg po eod for 2 mos
  - taper to 5 mg po od for w 2 yrs then stop
- Administer H2 blockers, Ca supplementat’n to minimize side effects

**Other Agents**

- Use of several immunosuppressants alone or in combination with glucocorticoids has been reported
- Azathioprine
- Oral cyclophosphamide
- Mycophenolate mofetil

Marcolongo R et al. Immunosuppressive Tx for iRPF. Am J Med 2004
Grotz et al. Tx of RPF by mycophenolate and steroids. Lancet 1998
SeRMs

**Tamoxifen**
- Effective in regression of desmoid tumors
- Both desmoid tumors and RPF are characterized by locally invasive fibrous tissue
- MOA unknown

• Tamoxifen is an alternative if corticoid Tx fails

Clark et al. Response of RPF to tamoxifen. Surgery 1991
Bourouma et al. Tx of iRPF with Tamoxifen. Nephrol Dial Transplant 1997
Tziomalos et al. Tx of iRPF w combined steroids & tamoxifen. Clin Nephrol 2004

Surgical Mgt

• Traditional approach to RPF
• Presently, surgical exploration w ureterolysis after failure of medical Rx
• Excludes RP malignancy
• Principle of surgery
  - Ureterolysis w manipulation to prevent recurrent obst’n
Surgical Mgt

• **Approach**
  - Midline incision xyphoid to pubic symphysis
  - White line of Toldt
  - Reflect L & R colon medially
  - Deep Bx of mass for frozen & permanent
  - Commence dissection @ non dilated ureter to avoid injury to thin dilated proximal segment

• Consider Tx of both ureters even if only 1 ureter is involved

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Surgical Mgt

• Reposition ureters & protect them from further entrapment
  - Retract ureters laterally
    • Secure peritoneum medially to psoas to maintain ureters in this position
  - Displace ureters into peritoneal cavity with closure of peritoneum behind them
  - Omental wrap
  - Ureteral wrap in polytetrafluoroethylene vascular graft

Loh A et al. iRPF Tx w PTFE vascular graft. Br J Urol 1991
Surgical Mgt

• Remove plaque around renal arteries and iliac vessels
  - restore renal arterial P
  - prevent L/E claudication

Post Op Care

• Remove ureteral stents 6-8 wks after surgery after obst’n has resolved
• Consider post op steroids
• Recurrence has been seen 9 yrs post op
  – Long term f/u req’d

Cerfolio RJ et al. iRPF: is there a role for post op steroids? Curr Surg 1990
Laparoscopy

- Lap ureterolysis has been performed
  - Kavoussi et al. 1992
- 3-4 trocars are placed along the midline
  - Umbilicus
  - Between umbilicus and pubis
  - Between umbilicus and xyphoid process

Fugita, Kavoussi et al. Lap Tx of RPF. J Endourol 2002
Kavoussi et al. Lap ureterolysis J Urol 1992

Laparoscopy

- Difficult procedure
- Approach has been proven less morbid with all advantages of laparoscopy
- Open conversion ~15%
- 90% long term success rate

Elashry et al. Lap vs Open Ureterolysis for RPF. J Urol 1996
Technical Considerations

- If ureterolysis is impossible d/t ++ fibrosis and ureteral stricture
  - Autotransplantation
  - Ileal substitution
  - Appendix substitution
- If lower ureter is involved
  - Boari flap
- If poor kidney fn and N contralateral kidney → consider Nx

Surgical Complications

- Ureteral injury m/c
  - Urine leak
- SBO
AAA Considerations

• Aneurysmectomy and ureterolysis
  - Excellent results
  - Improv’t of renal fn > 75% pt’s
• Endovascular graft repair
  - Resolution of obst’n of both ureters

Case Presentation

• The pt is started on glucocorticoids
• Her back pain and symptoms begin to improve
Summary

• **RPF**
  - Idiopathic 30%
  - Secondary causes 70%
    • Identify and correct
• **Non specific SSx**
• **CT and MR gold std imaging**
• **Bx mass to r/o malignancy**
• **Medical Tx w steroids, immunosuppressants, Tamoxifen**
• **Surgical Tx for failed medical Tx**