Turning Your Clinical Cases into Scholarly Work

Course Syllabus & Readings

Fall 2011

Contact Information

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Schedule for Turning Your Clinical Cases into Scholarly Work

Please note that all classes will be held from 5-7pm in L316

BEFORE Class, review this packet, focusing on what makes a good case, and then select a case (can start using worksheet at end to organize your work)

- **Monday Sept 12 5-7pm CASE SELECTION & VIGNETTE PRESENTATION (REQUIRED)**
  - Share case ideas & artifacts/consultants needed – (Group)
  - Intro to MRView
  - How to present a clinical vignette (Arora)

- **Monday Sept 19 5-7pm ABSTRACT WRITING & PRESENTATION REVIEW (REQUIRED)**
  - Draft slide review (group)
  - How to write a clinical vignette abstract (Arora)

- **Wednesday Sept 21 5-7pm Practice presentations (OPTIONAL)**

- **Due date for power point presentations: Thursday September 22**

- **Friday, Sept 23rd 1pm – 5pm Present in Internal Medicine Interest Group Clinical Vignette Competition (REQUIRED)**

- **Due date for abstracts: Thursday September 29** (due to ACP conference on October 1st)

**required in-person activity.
Note, the bulk of the activity for this course takes place outside of formal class through preparing an abstract and presentation. To receive credit for this course, students must turn in an abstract and do a power point presentation on Friday September 23rd.
Dear students, here are some tips on how to select cases as you think about the course. You may come with several you are thinking about. Here are some very rough guidelines that we can think about.

**Selecting a Case**
- Uncommon presentation of common disease
  - Diabetic muscle infarction (uncommon presentation of diabetes)
  - Thyrotoxic periodic paralysis (uncommon presentation of hyperthyroidism)
- Unusual cause of common problem
  - Diarrhea caused by pellagra
  - Heart failure due to Takatsubo’s cardiomyopathy (broken heart syndrome)
- Common presentation of uncommon disease
  - Yellow nail syndrome
  - Hemophagocytic syndrome
- A recent diagnostic or therapeutic advance
  - Use of ADAMTS-13 to diagnose TTP
- Clinical pearl or classic sign for physical exam
  - Muerkhe’s nails in patients with low albumin

**Consulting the literature (PubMed and Google)**
- Is this common?
- How often is it reported?
- Are there any important associations relevant?

**Preparing the Case (Some of this you will do during the course but you can get a head start if free)**
- Consult with team to let them know you are interested
  - Ensure that you will take the lead on at least the IL ACP Vignette but that you are planning to include them as authors (may pose a problem if resident plans on using case. You could suggest that you would do IL ACP and they could submit to National which is in April since most 4th years are unlikely to go to a medical conference in April based on my experience)
- Obtain H&P – save what you have
  - As part of this course, you will receive access to MR View which will enable you to access the H&P (confirmation to follow)
- Review Epic for any figures that are relevant (Obtain from Epic)
  - Imaging – CXR/CT/MRI etc.
- Consult with pathology or radiology to explain any images that need interpretation
  - May need assistance from attending in radiology or pathology to interpret
  - Pathology will occasionally help by taking pictures
- If you are taking care of the patient CURRENTLY
  - Consider photos of dermatology findings or exam findings
    - Obtain consent if patients is visible (will send a form)
Sample Clinical Vignette Products (on Chalk)

Sample Papers


Sample Abstracts
Yoon JD, Ricketts PA, Clayburgh DR, Arora VM. When Occam Triumphs Over Hickam: Acute Abdomen in a Patient with an Interior Vena Cava Anomaly. 2007 Society of General Internal Medicine, April 2007. (attached)

Sample Posters
Kapoor N, Nam T, VanderWheele D, Arora VM. TTP or Not TTP? 2008 Society of Hospital Medicine Meeting, San Diego, CA, April 2008. (attached)

Sample PowerPoints

Sheth H. “Steal Your Heart Away” Myocardial Ischemia Resulting From Multiple Coronary Microfistulæ Draining into the Left Ventricle. 2008 American College of Physicians Illinois Associates’ Day, October 17, 2008. (attached)

Other Products

Web Resources
http://familymed.uthscsa.edu/facultydevelopment/elearning/anatomy.html

http://www.acponline.org/residents_fellows/competitions/abstract/prepare/clinvin_abs.htm
WHEN OCCAM TRIUMPHS OVER HICKAM:
ACUTE ABDOMEN IN A PATIENT WITH AN INFERIOR VENA CAVA ANOMALY

Yoon1 J.D., Ricketts1 P.A., Clayburgh2 D.R., Arora1 V.M.
1University of Chicago, Department of Medicine, Chicago, IL
2University of Chicago, Pritzker School of Medicine, Chicago, IL

Learning Objectives:

1. Appreciate an uncommon risk factor for idiopathic deep vein thrombosis
2. Consider how Occam’s Razor can clarify a diagnostic dilemma related to acute presentations of uncommon medical conditions
3. Recognize a situation where acute abdomen may be safely managed as an outpatient thus avoiding unnecessary surgery

Case:

50 year old male with newly diagnosed left lower extremity DVT after a prolonged airplane trip presented with 2 days of worsening abdominal and back pain. While on anticoagulation, he developed diffuse abdominal pain aggravated by movement and associated with intermittent flank pain. Past medical history included a hypercoagulable work-up that had been previously unremarkable. Physical exam was notable for tender flank pain and bilateral lower quadrant abdominal pain with rebound and guarding. His labs were remarkable only for unexplained hematuria. Infused abdominal CT surprisingly revealed an absence of the infra-hepatic inferior vena cava with multiple retroperitoneal collaterals, including an atrophic left kidney. Hospital course was characterized by persistent peritonitis. Infused MRI of the abdomen further revealed a thrombus in the left ascending lumbar vein. Patient was diagnosed with thrombophlebitis of the retroperitoneal collateral veins associated with his IVC anomaly. Patient was managed conservatively with anticoagulation, leading to resolution of his presenting symptoms 2 months later.

Discussion:

The initial differential diagnosis of an acute abdomen is broad including appendicitis, perforated viscus, obstruction, renal colic, and mesenteric or renal vein thrombosis. In this case, however, the patient presented with apparent unrelated findings, including an idiopathic DVT, hematuria, tender flank pain, peritonitis, and a congenital IVC anomaly. Based on Occam's Razor, we looked for evidence supporting a single, unifying diagnosis. We discovered case reports of similar IVC anomalies presenting as a risk factor for idiopathic DVT, presumably from increased venous stasis despite collateral flow. Patients with these anomalies can also have unexplained hematuria and flank pain from dilated or thrombosed retroperitoneal collateral veins. Lastly we found a single case report of thrombophlebitis of pelvic vein collaterals associated with this IVC anomaly mimicking appendicitis-like pain, successfully managed with anticoagulation. Therefore we postulated that the patient suffered from a case of pelvic venous “hemorrhoids" due to an inflamed thrombus lodged in the pelvic collateral veins lining his retroperitoneum. This hypothesis was further supported by his MRI finding. This unifying explanation allowed us to take a conservative approach to what initially appeared to be acute surgical abdomen. Here we report a common presentation (acute abdomen) of an uncommon condition (pelvic collateral vein thrombophlebitis associated with an IVC anomaly). The presentation of multiple diagnoses in a patient is becoming more prevalent in an aging population with chronic conditions (Saint’s triad, Hickam’s dictum). Some therefore conclude that Occam's Razor is swiftly losing clinical power in the modern era. However, the acute constellation of symptoms in a healthy patient with an uncommon condition led us to invoke Occam’s Razor to guide us through this diagnostic dilemma. Occam is not obsolete yet.
TTP or Not TTP?

Neena Kapoor, BA, Teresa Nam, MD, David VanderWheele, MD, PhD, Vineet Arora MD MA
Pritzker School of Medicine and the Internal Medicine Residency Program at The University of Chicago

Objective

• Differentiate between malignant HTN and TTP as the cause for thrombotic microangiopathy in the setting of SLE
• Discuss the importance of ADAMTS13 functional and inhibitor assays in the diagnosis of TTP in patients with SLE

Case History

• A 25 year old female with a history of systemic lupus erythematosus (SLE), hypertension (HTN), and class IIIA lupus nephritis was admitted to the ICU for a generalized tonic clonic seizure
• Temperature 36.4 and BP 197/116
• Plasma exchange started for TTP (thrombotic thrombocytopenic purpura)
• Nitroprusside drip used to stabilize her HTN
• Patient eventually transferred to a rehabilitation facility

Laboratories

<table>
<thead>
<tr>
<th>Laboratory</th>
<th>Admission</th>
<th>Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin (g/dL)</td>
<td>7.6</td>
<td>11.2</td>
</tr>
<tr>
<td>Platelets (K/uL)</td>
<td>39</td>
<td>325</td>
</tr>
<tr>
<td>Serum creatine (mg/dL)</td>
<td>6.8</td>
<td>0.8</td>
</tr>
</tbody>
</table>

• LDH 474U/L
• Haptoglobin <20mg/dL
• Direct Coombs antibody negative
• ADAMTS13 < 5%, normal >67%
• ADAMTS13 inhibitor 2.4 units, normal <0.4 units

Discussion

• Triad of ARF, microangiopathic hemolytic anemia (MAHA), and thrombocytopenia suggested thrombotic microangiopathy which could be due to TTP or malignant HTN

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>TTP</th>
<th>Malignant HTN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>Uncommon&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Not associated</td>
</tr>
<tr>
<td>MAHA</td>
<td>Present</td>
<td>Present</td>
</tr>
<tr>
<td>Decreased platelets</td>
<td>Present</td>
<td>Present</td>
</tr>
<tr>
<td>ARF</td>
<td>Rare&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Not associated</td>
</tr>
<tr>
<td>Neurological changes</td>
<td>1/3 with no changes&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Not associated</td>
</tr>
<tr>
<td>ADAMTS13 antibodies</td>
<td>Present</td>
<td>Not present</td>
</tr>
</tbody>
</table>

• ADAMTS13 functional and inhibitor assays used to differentiate between malignant HTN and TTP
• In 1998, researchers found that idiopathic TTP characterized by autoantibodies to ADAMTS13, a zinc-containing metalloprotease enzyme that cleaves von Willebrand Factor, rendering it inactive<sup>2</sup>

Mechanism of ADAMTS13

Panel A Normal: ADAMTS13 molecules attach to binding sites on endothelial cells and cleave unusually large multimers of vWF
Panel B TTP: Decreased activity of ADAMTS13 leads to large multimers of vWF, and induces adhesion and aggregation of platelets<sup>5</sup>

• ADAMTS13 inhibitor assay tests for autoantibodies by mixing heat treated patient plasma with normal plasma, and measuring residual ADAMTS13. Normal individuals have functional ADAMTS13 >67%, and ADAMTS13 inhibitor <0.4 units
• Because ADAMTS13 levels vary widely (22-172%) in SLE patients, functional assay should not be used alone to diagnose TTP<sup>3</sup>
• Therefore, ADAMTS13 inhibitor assay is used in conjunction with the functional assay to diagnose TTP in SLE patients

Conclusion

• While the annual incidence of TTP in the general population is only 4-11 cases per million, a much greater proportion of SLE patients (roughly 1-4%) will experience a TTP episode in their lifetime<sup>1,4</sup>
• This prevalence, coupled with the near 90% mortality rate of TTP without plasma exchange, makes early recognition and treatment of TTP in SLE patients essential
• To diagnose TTP in SLE patients, both ADAMTS13 functional and inhibitor assays should be performed

Acknowledgements

• Patient and family
• Dr. Gurbuxani, Ph.D. Hematology

References

Modern Version of an Ancient Disease
Secondary Pellagra due to Microscopic Colitis and Hydralazine

Tanvi Patel MSIV, Stephanie Pouch MD, Jason Griffith MD, Vineet Arora MD
University of Chicago, Pritzker School of Medicine and Department of Medicine
Midwest SGIM Regional Meeting
September 18, 2009

Case Presentation
- 56 year old African American male
- CC: leg pain, diarrhea
- Diarrhea x 1 month
- 10-12 watery, non-bloody BM/day
- Persists with fasting
- Denies fevers, N/V, abd pain, weight loss
- No history of recent travel, laxative or antibiotic use, ingestion of sorbitol-containing products

Medical & Surgical History
- PMHx:
  - Chronic pancreatitis, DM2, HTN, pancreatic head mass, PVD
- PSHx:
  - PVD s/p bypass surgery in RLE c/b persistent leg pain
- All: NKDA
- Meds: Hydralazine and Labetolol
- ROS + for pruritic rash on hands and trunk

Physical Examination
- T 36.8, BP 77/37, HR 60, RR 17, O2 99% RA
- Orthostatic
- CV: RRR; normal S1, S2; diminished peripheral pulses with stasis dermatitis on LE bilaterally; no LE edema
- Resp: CTAB
- Abdomen: NABS, soft, NT, ND
- Integument: hyper-pigmentation, hyper-keratotic plaques on dorsum of hands bilaterally
Initial Laboratory Studies

- ESR: 45
- Lipase were amylase normal
- FOBT negative
- Serial cardiac enzymes negative
- EKG: NSR, no evidence of ischemia
- Anemia markers
  - Serum iron: 11
  - TIBC: 130
  - % sat: 8
  - Ferritin: 139

Initial Management

- Patient was managed for dehydration and acute renal failure
- BP was 77/37, requiring greater than 10 L of 0.9 NS with bicarbonate to stabilize
- Home anti-hypertensives held
- Potassium & magnesium repleted
- Derm consultation for skin biopsy

Diagnostic Evaluation

- Chronic diarrhea work-up:
  - Stool analysis
    - No leukocytes, fat or organisms
    - O&P negative
  - EGD, colonoscopy and mesenteric duplex were grossly normal
  - Biopsies taken for follow-up

Evaluation of Diarrhea

- Calculation of a stool osmotic gap to narrow the differential for chronic diarrhea
  \[
  \text{Gap} = \text{stool osmolality} - [2 \times (\text{Na} + \text{K})]
  \]

- Stool osmolality: 380
- Osmotic gap: 42
  - <50 suggests secretory diarrhea
  - >100 suggests malabsorption

- Stool electrolytes
  - Na: 32
  - K: 92
  - Cl: 67
  - Mg: 13

Secretory diarrhea

- Common causes:
  - Laxative use
  - Artificial sweetener use
  - Infection
  - Hyperthyroidism
  - Celiac sprue

- Ruled out with a thorough dietary history and laboratory studies
  - TSH and TTG both within normal limits

Workup: Rarer causes

- Given patient’s known pancreatic mass, neuro-endocrine tumors were included:
  - VIPoma
  - Gastrinoma

- VIP, Gastrin, and 5HIAA all WNL
Workup: Rarer causes

- Rarer causes, such as deficiencies of:
  - Niacin
  - Folate
  - Zinc
  - Vitamins B6 and B12

- Nutrition labs:
  - Vitamin B6 level: 2 (ref: 5-50)
  - Zinc: 0.65 (ref: 0.66-1.10)

Case Resolution

- Acute renal failure resolved with aggressive hydration
- Dermatologic pathology:
  - Psoriiform rash consistent with clinical diagnosis of acrodermatitis enteropathica, which can be seen with vitamin deficiency

- Colon biopsy revealed collagenous colitis
- Diarrhea and rash resolved with B6 supplementation

Pathophysiology

- Vitamin B6, pyridoxal 5'-phosphate (PLP), principal cofactor for many reactions
  - Niacin & heme synthesis
  - B6 deficiency symptoms:
    - Diarrhea
    - Peripheral neuropathy
    - Microcytic anemia indistinguishable from iron deficiency anemia
    - Symmetric psoriasis

Clues to diagnosis...

- Isolated B6 deficiency occurs in patients taking pyrazine derivatives, such as INH or hydralazine
  - B6 repletion recommended

- Collagenous colitis is a microscopic colitis that may lead to a chronic diarrhea with multiple vitamin deficiencies

Conclusions

In our patient on hydralazine, the development of collagenous colitis likely resulted in a severe vitamin B6 deficiency and secondary pellagra, manifested by worsening diarrhea, hyperpigmentation and skin rash
Acknowledgements

- Our patient
- Patient’s PCP, Dr. Kevin Thomas
- Dermatology consultant: Drs. Jessica Maddox & Christopher Shea
“Steal Your Heart Away”
Myocardial Ischemia Resulting From Multiple Coronary Microfistulae Draining into the Left Ventricle

Harshal Sheth, MD
Oral Clinical Vignette, ACP
Oct 7th, 2008

Case Presentation
- 36 yo AA male
  - CC: Exertional chest pain, palpitations
- Denies associated SOB, leg swelling, calf tenderness, radiation of CP, pleuritic nature of CP
- No fever, chills or abdominal pain
- First occurrence of such pain
- No prior PMHx
- No medications
- Denies FHx premature CAD
- Occasional smoker, but otherwise, no illicit

Physical examination
- T 36.7, BP 120/75, HR 84, RR 18, O2 100%
- Heart exam: regular rate, rhythm; II/VI diastolic murmur heard best at apex with laterally displaced LV cavity
- Lungs clear to auscultation bilaterally
- Abdomen soft, nontender, nondistended; normoactive BS
- Peripheral pulses 2+ and symmetric
- No peripheral edema

Laboratory studies
- Elevated WBC count of 18,000/µL
  - 75% neutrophils, 3% bands
- Hemoglobin 15.9g/dL
- Platelet count 199,000/µL
- Electrolytes within normal limits including K, Mg
- Cardiac biomarker elevation
  - CK 326U/L (~2x ULN)
  - CK-MB 9.0ng/mL
  - Troponin T 0.15ng/mL (~0.10)
- Total cholesterol 129
  - LDL 80
  - HDL 39
  - TG 49

Initial Management
Patient managed for acute coronary syndrome
Taken to cardiac catheterization for further evaluation
Management cont.

- Patient managed for acute coronary syndrome
  - Cardiac catheterization revealed nonobstructive coronary artery disease with multiple arterio-sinusoidal coronary microfistulae draining into LV
  - Subsequent treatment with oral nitrates and beta-blockers achieved reduction in symptoms
  - At 6 months, patient remains asymptomatic with good exercise tolerance

Discussion

- Multiple coronary microfistulae draining into LV is a rare phenomenon
- Anatomical, clinical and hemodynamic effects incompletely understood
- Communications generally classified into one of the following morphological categories:
  - Arterial-luminal
  - Arterio-sinusoidal
  - Arterio-capillary

Etiology

- Anomalies suspected to be congenital in origin
  - Partial persistence of embryonic myocardial sinusoids into intertrabecular spaces
  - Normally these structures regress
  - Formation of Thebesian vessels of adult heart
  - Incomplete development results in microfistulae

Pathophysiology

- Up to 20% of total cardiac output can be shunted through these connections creating a "coronary steal" phenomenon resulting in symptoms of angina
- Diastolic murmur and LVH (both of which our patient had) suggest significant left-to-left shunt volume causing diastolic volume overload
Management

- Remains a controversial issue
- Surgical intervention warranted if shunting leads to hemodynamic significance
- Medical therapy alone often employed with calcium channel blockers, beta-blockers and/or nitrates has seen greatest success

Acknowledgements

- Patient and family
- Jim Woodruff, MD, Internal Medicine Residency Program Director
- Rajiv Swamy, MD, Chief Resident
- Vineet Arora, MD, FACP, Associate Program Director
Preparatory Checklist for Turning your Clinical Cases into Scholarship
Name _____________________________________________

Potential Case
Brief one liner

Does it have a diagnosis?  Yes    No

Teaching Points

Classification
☐ Uncommon presentation of common disease
☐ Common presentation of uncommon disease
☐ A recent diagnostic or therapeutic advance
☐ Clinical pearl for physical exam or history

Literature Search
☐ PubMed (MeSH terms?)
☐ Google
☐ Other

Chart Artifacts
First need MRN

From MR View
☐ Admission H&P
☐ Relevant notes
☐ EKG

From Epic: Labs
☐ Routine Labs (CBC/ BMP/ LFTs)
☐ Coags and other heme labs (i.e. anemia workup)
☐ Endocrine or Nutrition Labs
☐ Relevant rheumatology labs
Preparatory Checklist for Turning your Clinical Cases into Scholarship

Name _____________________________________________

☐ Microbiology

☐ ABG

☐ Other Labs

From Epic: Imaging

☐ CXR

☐ Other plain films

☐ CT

☐ MRI

☐ Other

☐ Need to discuss with radiologist?

From consultants: Other images

☐ Hematology (smears)

☐ Pathology (biopsies, surg path)

☐ Microbiology (cultures)

☐ GI imaging

☐ Cardiology (Echocardiogram /Angiogram)

☐ Other

Patient Pictures?   Yes   No

Notifications

☐ Contact Team Members to Discuss Writeup (invite as coauthors)

☐ Patient?
  o  if considering publishing into a case report, need consent for some journals (do not need to do this for clinical vignette competition)
  o  to take photos