2015 ACP Colorado Chapter Meeting

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February 7, 2015
My Background

2007 – present: Internal Medicine Primary Care Provider with Kaiser Permanente Colorado

Current Peer Review Lead for Internal Medicine – CPMG (5 years)

2005 – 2007: Hospitalist at University of Colorado Health Sciences Center

2001 – 2005: Internal Medicine / Pediatric training at Banner Good Samaritan Medical Center, Cart T. Hayden VAMC and Phoenix Children’s

1997 – 2001: University of Louisville Medical School

1993 – 1997: Bachelor of Science in Chemistry and Molecular Biology – BYU
Objectives

• Review how heuristics influence our clinical practices and differential diagnoses

• Present cases to illustrate how to assess contradictory information

• Share best practices

• Provide an “Encounter Checklist” that will help providers give better patient care, avoid common pitfalls and potentially reduce exposure to litigation risk
Most errors in clinical reasoning are not due to incompetence or inadequate knowledge but to frailty of human thinking under conditions of complexity, uncertainty, and pressure of time.

Ian Scott, MD
Heuristics

Rules of thumb that have served us well…?

- Looks like a duck; sounds like a duck; walks like a duck
- Common conditions are common
- Occam’s Razor
- When you hear hoofbeats look for horses not zebras
Diagnostic Errors

• Availability (ease of recall of a past similar case / common conditions)

• Anchoring (first impression, ignore new evidence)

• Blind Obedience (showing undue deference to authority or technology)

• Premature closure (acceptance before confirmation)

• Framing effect (being swayed by subtle wording)

• Momentum (drawing others into your belief or following the herd of others in the chart)
Management Errors

• Commission bias (doing something even if actions are unsupported)

• Omission bias (tendency to judge harmful actions as worse, or less moral than equally harmful omissions (inactions))

• Outcome bias (evaluating the quality of a decision when the outcome of that decision is already known)

• Contextual error (overlooking elements of a patient's environment or behavior that are essential to planning appropriate care)

• Extrapolation (tendency to generalize treatments or trial results to groups that were not included)
Peer Review
Goals of Peer Review at CPMG

• Concerns are anonymously submitted by providers, staff or patients

• Identify potential quality of care issues and work through communication and education to improve quality over time
  • Individual provider feedback / coaching / teaching
  • Ongoing CMEs to strengthen provider knowledge gaps

• Peer Review work is mandated for accreditation and carries legal protection (findings not discoverable)
Goals of Peer Review at CPMG

• Identified concerns are presented to the Peer Group to review

• At Peer Review the issue is reviewed and presented to the committee in blinded fashion – fully confidential
  • Our group has 7 physicians, 1 NP and 1 PA
  • Each case is assigned to a provider who reviews the chart and presents a detailed review of the care provided

After the case is presented the group must assign a Provider and a System “value”, these are tracked over time to look for patterns
Learning Cases

Misses and Near Misses
“The fool doth think he is wise, but the wise man knows himself to be a fool”

W Shakespeare
CASE 1
Case 1 - History

63 M with IDDM (A1C = 8.1%), hyperlipidemia, HTN, smoker, IBS, GERD and depression e-mails his PCP:

“I have had a bad stomach ache since Saturday. Only able to be up for short periods of time. Have taken pepto bismol and it doesn't help. Ache is above belly button and I feel tight all around stomach area up to chest. Any recommendations on resolution?”

PCP forwards note to a nurse to set up a same day appointment.
Case 1 - History and Exam

63 M presents w epigastric abdominal pain for 5d, Non radiating, No melena or hematochezia, No GERD symptoms, No n/v, food does not change symptoms, No etoh, takes ibuprofen before going to bed every night, No coffee/dark chocolate, consuming lots of tomatoes and lots of spicy food, No urinary sx, No chest pressure or dyspnea, no palpitations, No dizziness, Smokes a pack a day, Pain is 5/10, Fatigue past 6 months with activity

BP 112/66 | Pulse 77 | Temp(Src) 96.5 °F | Resp 16 | Wt 155 lb 3 oz

Exam was very detailed and normal except (+) tenderness in epigastric area
Case 1 - Further Information
Case 1 - Assessment and Plan

ECG was interpreted as “borderline ST depression anteriolateral leads and anterioseptal leads”, no prior comparison was available

GI cocktail given and “helped” with symptoms

“Routine” thallium stress test ordered

Patient sent home with omeprazole and blood work

Lab results showed liver inflammation that was worked up

Stress test was not done by patient and 2 weeks later calls in with fatigue on exertion and is sent to the ED resulting in 4 vessel bypass
Case 1 - Teaching Points

Anchoring seems likely

The provider overlooked the patient’s risk factors and also unexplained ECG changes.

Given this patient’s risk factors, symptoms and findings on ECG, a more urgent evaluation should have been considered.
CASE 2
Case 2 - History

90 M with CAD, hypercholesterolemia, hyperparathyroidism, osteoporosis, hypothyroidism and BPH. Family sends an e-mail with patient complaints of congestion and trouble breathing:

“Dad has been having trouble breathing. We think it is because his nose is so stuffed up. I gave him a Zertek D and it seemed to help. Just wanted to make sure it is okay to give him one when he needs it? I don't know if it will conflict with any of his other meds.”

A note was forwarded to the clinical pharmacist regarding the safety of zyrtec-D in this situation. The pharmacist recommended changing doxazosin to tamsulosin as another consideration for nasal congestion.
Case 2 - History

Daughter called 2 days later that her dad’s dyspnea has increased and an office appointment was booked.

OFFICE NOTE: HS a 90 M here with chronic rhinitis. Patient states he saw ENT who started a nasal steroid and saline rinses. He continues to have congestion, trouble breathing through nose. Patient also notes trouble breathing while sleeping sitting up in chair in an attempt to control the post nasal drip. When his head falls forward he cannot breath well through mouth and has difficulty breathing through nose due to congestion. His family has noted episodes of awakening gasping for air when sleeping upright with head forward. Patient has taken zyrtec-D with significant improvement in congestion and breathing. Family is wondering what they can take if zyrtec-D is not appropriate to use.
Case 2 - Exam

BP 124/74 | Pulse 93 | Temp NL | Resp 32 | BMI 25.50 kg/m2 | SpO2 93%

General: Well developed, well nourished, in no acute distress.

HEENT: Normal sclera and conjunctiva. Oropharynx cobblestoned.

Lungs: Normal breath sounds without any adventitious sounds.

Cardiovascular: Regular rate and rhythm without any murmurs, gallops, or rubs.

Extremities: No cyanosis, clubbing or edema.
Case 2 - Assessment and Plan

ASSESSMENT: Chronic rhinitis

PLAN: Continue nasal saline rinses, nasal steroid, NO zyrtec-D
Case 2 - Follow-up

2 days later patient is admitted for dyspnea secondary to congestive heart failure and atrial fibrillation with rapid ventricular response.
Learning from Case 2

• ALWAYS comment on abnormal vital signs
• ALWAYS repeat abnormal vital signs and document
• Expand your differential as needed based on the information at your disposal
• ALWAYS repeat vital signs after administration of a substance that may affect blood pressure in the clinic and/or document the patient’s status at discharge after proper observation
• Discuss with your staff how to handle abnormal vital signs and how you want to be prompted if needed when there is an abnormal VITAL SIGN
CASE 3
Case 3 - History

AW is a 51F with hx/o breast cancer discussing with PCP her concerns about rectal bleeding. The patient is experiencing recurrent bleeding with the last 4-5 bowel movements. Noticing bright red blood in the toilet and on the toilet tissue. The last one was yesterday morning. The bleeding has been off and on for about 4-5 months and nothing has really been tried up to this point. Upon chart review you see the patient had a good prep normal colonoscopy one year prior (contracted GI outside of network).
Case 3 - Exam

AVSS

Gen NAD
Lungs Clear

CV RRR with no MRG

ABD (+) BS, NTTP

EXT no CCE

Rectal normal tone, no masses noticed

Anoscopy no obvious abnormality noticed
Likely bleeding internal hemorrhoids is diagnosed and the patient is recommended anti-inflammatory suppositories. The patient is given detailed home information about hemorrhoid treatment and follow-up is explained.
Case 3 - Follow-up

6 months later the patient presents with recurrent bleeding. Labs done indicate an iron deficiency anemia and a follow-up colonoscopy is done to completely evaluate the lower gastrointestinal system for source of bright red blood per rectum.

The patient is found to have a rectal mass and biopsies unfortunately confirm a rectal cancer.
Case 3 - Teaching Points

- “Interval Colon Cancer” = Cancer that develops before a follow-up colonoscopy is due
- Our gastroenterologists get approximately 57000 referrals per year, perform 43700 procedures per year and about 75% are colonoscopies
- In 2012-2013 there were 7 “self reported” cases of interval colon cancer
- Average interval was 3.8 years
- 6/7 were right sided colon cancer
- Right sided colon cancers often have a different phenotype and exhibit “microsatellite instability”. They tend to be less aggressive and respond to conventional treatment as well as other colon cancers.
- Anecdotal input from our chief of gastroenterology is that the time taken to withdraw the colonoscope does influence this statistic; longer withdraw time = more potential abnormality is seen
CASE 4
Case 4 - History

80 yo M presents to PCP with history of sudden onset of L arm problems about 5 days prior to appointment. At that time the patient woke feeling a tight pain in L bicep like a band around the arm. The L fingers would not move, they felt flaccid as if paralyzed. The whole arm was hard to move like it was asleep. Within 10 minutes the fingers were working fine.

The day of the appointment the patient called in at 9 am. A routine appointment was booked with the PCP by the call center at 2:10 PM for, “L arm twitching and not working.” At follow-up with the PCP the patient complains of weakness in L arm 5 days ago. He was unable to comb his hair using the L hand that morning. He was not able to, “tell the hand to comb his hair and when typing, had to really concentrate to get L fingers to go to the right key.”

ROS - remarkable for a “fall” with head trauma about 3 weeks ago
Case 4 - Exam

BP 110/60 | Pulse 64 | 98.1 °F | Resp 18 | Wt 212 lb | SpO2 96%
CTAB
RRR
No edema
CN 2-12 intact
Strength symmetric and all arm movements appear normal
NL finger to nose though he has to concentrate on L side
No tremor
Rapid alternating movements slow, had to stop once due to not alternating with the L hand
Mental acuity seems almost at baseline
Case 4 - Assessment

PCP was concerned for CVA, subdural bleed given recent fall, mass or less likely a peripheral nervous system injury.

The patient is sent to the lab and radiology for a STAT head CT done that afternoon. CBC / BMP / LFT were all normal at 5:45 pm. The CT was read at 6:10 pm as, “Moderate age-related volume loss. Otherwise unremarkable CT of the head.”
Case 4 - Plan

What is your differential diagnosis?

How would you manage this patient in your clinic?

What is this patient’s ABCD2 score?
**ABCD² Score**

The ABCD² score is a risk assessment tool designed to improve the prediction of short-term stroke risk after a transient ischemic attack (TIA). The score is optimized to predict the risk of stroke within 2 days after a TIA, but also predicts stroke risk within 90 days. The ABCD² score is calculated by summing up points for five independent factors.

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Points</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 60 years</td>
<td>1</td>
<td>□</td>
</tr>
<tr>
<td>Blood pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic BP ≥ 140 mm Hg OR Diastolic BP ≥ 90 mm Hg</td>
<td>1</td>
<td>□</td>
</tr>
<tr>
<td>Clinical features of TIA (choose one)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unilateral weakness with or without speech impairment OR Speech impairment without unilateral weakness</td>
<td>2</td>
<td>□</td>
</tr>
<tr>
<td>Duration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIA duration ≥ 60 minutes</td>
<td>2</td>
<td>□</td>
</tr>
<tr>
<td>TIA duration 10-59 minutes</td>
<td>1</td>
<td>□</td>
</tr>
<tr>
<td>Diabetes</td>
<td>1</td>
<td>□</td>
</tr>
</tbody>
</table>

**Total ABCD² score**

0-7 □
Using the ABCD² Score

Higher ABCD² scores are associated with greater risk of stroke during the 2, 7, 30, and 90 days after a TIA (Figure). The authors of the ABCD² score made the following recommendations for hospital observation:

<table>
<thead>
<tr>
<th>ABCD² Score</th>
<th>2-day Stroke Risk</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>1.0%</td>
<td>Hospital observation may be unnecessary without another indication (e.g., new atrial fibrillation)</td>
</tr>
<tr>
<td>4-5</td>
<td>4.1%</td>
<td>Hospital observation justified in most situations</td>
</tr>
<tr>
<td>6-7</td>
<td>8.1%</td>
<td>Hospital observation worthwhile</td>
</tr>
</tbody>
</table>

Case 4 - Plan

• Timing of TIA/stroke evaluation:

• ABCD 0-3: (low risk) = Work-up needs completed within 4 weeks

• ABCD 4-6: (moderate to high risk) = Work up needs done within 24 hours if symptom onset <48 hrs

• Full work-up should be done within 1 week of presentation
Case 4 – ABCD2 Score

This patient has a score of: 5

According to the validation study, 4-5 points: Moderate Risk.

- 2-Day Stroke Risk: 4.1%.
- 7-Day Stroke Risk: 5.9%.
- 90-Day Stroke Risk: 9.8%
Case 4 - Plan

- Labs: BMP, A1c, Lipids, CBC, PT/PTT, ESR

- Vascular imaging: anterior circulation (CUS<CTA<MRA)

- Posterior circulation (CTA<MRA<CUS). Carotid u/s if results needed quickly

- EKG in office; 7 day Holter monitoring if idiopathic

- Consider TEE in appropriate settings

- CT if high pre-test probability of atherosclerotic etiology OR MRI if pre-test probability is not high

- Treat: anti-platelet/anticoag, statin, and other identified risks. If ABCD2 score is 4+ then treat with ASA and Plavix (CHANCE, SAMMPRIS)
Case 4 - Follow-up

9 days after initial presentation the patient was found down and minimally responsive in his home. He was taken to Rose medical center, where he was found to have a dense L hemiparesis. Head CT revealed a large MCA territory CVA. He was transferred to St. Joe’s where a carotid ultrasound showed a mobile thrombus in the R ICA. MRI confirmed a large R MCA stroke. The patient was subsequently discharged to a SNF after stabilization in the hospital.
Case 4 - Teaching Points

- Use ABCD2 tool for patients with TIA symptoms to determine 2, 7, 30 and 90 day risk and to help guide an appropriate disposition for your patient.
- TIAs are high risk situations for patients and you can influence outcomes if you act early.
- Order the appropriate imaging for the situation.
- Have a high index of suspicion for CNS abnormality in our older patient population with appropriate presentation.
CASE 5
Case 5 - History

A 54 yo M calls in at 9:40am with fever over the last 2 days and is worried about pneumonia. An appointment is booked through the call center with a covering provider at the closest clinic at 11:30.

Patient reports illness x 1 week with body aches, cough and fevers. Urine has been dark with no dysuria or hematuria. Nausea and emesis at onset of illness, but since resolved. Cough is mostly dry but occasional bloody sputum. The past 4 days the patient has dyspnea on exertion that seems worse with laying down. Patient is a 1 PPD smoker. No nasal congestion, no GERD. He has not taken any OTC remedies, drives a truck cross country for a living and does not like to come to see doctors. He does not have any medications listed or PMHx.
Case 5 - Exam

138/86 | 88 | 97.2 °F | Resp 18 | Wt 149 lb | SpO2 93%
PF 450 L/min – Predicted 561 L/min
TMs: Fluid with no erythema
Sinuses: NT
Throat: cobblestoning, no pus, no erythema
Neck; no nodes, thyroid nl
Chest: CTAp
Cor: RR, sl tachy, 3/6 systolic murmur LLSB without rad to carotids, no gallop appreciated. No ectopy
Case 5 - Assessment

EKG: NSR, rate 99, LVH and borderline prolonged QT

CXR: FINDINGS: There is right perihilar opacification which could reflect pneumonia or focal edema. Small pleural effusions are present. The cardiac silhouette is mildly enlarged. There is a bilateral diffuse reticular prominence of the interstitium which probably reflects edema.

PEF as noted 450 with predicted 567
Case 5

What is your differential diagnosis?

How would you manage this patient in your clinic?
Case 5 - Plan

The provider considered the cough multifactorial: smoker, post nasal drip, possible CHF (CXR findings and PND with murmur not otherwise noted in chart), bronchospasm with low PF.

Patient was prescribed a cough suppressant, antibiotic, proair and prednisone. Also, the provider ordered an echocardiogram for further evaluation.

Seen by a PA 7 days later and patient is very upset that treatment was not effective and caused great side effects and asked, “why do I have to get this echocardiogram?” With ongoing dyspnea a CXR was repeated with: “interval improvement”. The murmur was still present and the PA reinforced the plan for the patient to get his echocardiogram.
<table>
<thead>
<tr>
<th>Status</th>
<th>Provider Status</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Final result</td>
<td>Reviewed</td>
<td></td>
</tr>
<tr>
<td>10/7/2013</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Result Narrative**

- **FACILITY**: EXEMPLA GOOD SAMARITAN MEDICAL CENTER
- **PATIENT'S NAME**: [Redacted]
- **GENDER**: Male
- **DOB**: [Redacted]
- **Interpreting Physician**: [Redacted]
- **Ordering Physician**: [Redacted]
- **Attending Physician**: [Redacted]
- **REPORT TYPE**: ECHOCARDIOGRAM - ADULT
- **Exempla Good Samaritan Medical Center**
- **200 Exempla Circle, Lafayette, CO 80026**
- **(303)689-4000**
- **Trans-thoracic Echocardiogram**
- **2D, M-mode, Doppler, and Color Doppler**
- **STUDY DATE**: 07-Oct-2013
- **TEST TIME**: [Redacted]
- **LOCATION**: Echo lab
- **DOB**: [Redacted]
- **AGE**: 53 years
- **GENDER**: Male
- **RACE**: [Redacted]
- **HR**: 115 bpm
- **BP**: 128/80
- **HT**: 69 in
- **WT**: 148.7 lb
- **BSA**: 1.82 m squared
- **ACCOUNT NUMBER**: 146666701
- **MD Group**: KP Physicians
- **Ordering Physician**: [Redacted]
- **Sonographer**: [Redacted]
- **Reading Physician**: [Redacted]

**REASON FOR STUDY**: Cardiac murmur 3/6, likely MVP

**HISTORY**: PRIOR HISTORY: Patient has no history of cardiovascular disease.

**PROCEDURE**: The procedure was performed in the echo lab. The transthoracic approach was used. The study included complete 2D imaging, M-mode, complete spectral Doppler, and color Doppler. Image quality was adequate.

**LEFT VENTRICLE**: The ventricle was mildly dilated. Systolic function was normal. Ejection fraction was estimated in the range of 70% to 75%. There were no regional wall motion abnormalities. Wall thickness was normal. DOPPLER: The study was not technically sufficient to allow evaluation of LV diastolic function.

**AORTIC VALVE**: The valve was trileaflet. Leaflets exhibited normal thickness and
normal cuspal separation. DOPPLER: Transaortic velocity was decreased due to decreased transaortic flow (decreased stroke volume). There was no stenosis. There was no regurgitation. AORTA: The root exhibited normal size.

MITRAL VALVE: There was normal leaflet separation. There was a severe, holosystolic prolapse involving the posterior leaflet. DOPPLER: Transmitral velocity was increased due to increased transvalvular flow. There was no evidence for stenosis. There was severe regurgitation.

LEFT ATRIUM: The atrium was severely dilated.

RIGHT VENTRICLE: The size was normal. Systolic function was reduced. Wall thickness was normal. DOPPLER: Systolic pressure was severely increased. Estimated peak pressure was at least 71 mmHg.

FULMONIC VALVE: DOPPLER: The transpulmonic velocity was within the normal range. There was trace regurgitation.

FULMONARY ARTERY: The artery was dilated.

TRICUSPID VALVE: The valve structure was normal. There was normal leaflet separation. DOPPLER: The transtricuspid velocity was within the normal range. There was mild regurgitation.

RIGHT ATRIUM: The atrium was dilated.

SYSTEMIC VEINS: IVC: The inferior vena cava was dilated. The respirophasic change in diameter was less than 50%.

PERICARDIUM: There was no pericardial effusion.

2D
Ao: 2.87 cm
Left Atrial Diameter: 5.25 cm
Ao ansc: 3.04 cm
EF Biplane: 74 %
IVC Diam Exp: 2.77 cm
IVC Ratio: 40.4 %
LAESV Index (A-L): 90.99 ml/m²
LVESV MOD BF: 173.49 ml
RAESV A-L: 69.58 ml
RVIDD: 2.01 cm

CF
MR Rad: 2.88 cm
CW
AV Vmax: 0.46 m/s
AV maxPG: 2.39 mmHg
TR Vmax: 3.74 m/s
RAP: 15 mmHg

IMPRESSIONS
1. Mildly dilated LV with normal wall thickness and normal systolic function
2. Normal RV size, mildly reduced systolic function
3. Severe LA enlargement
4. Mild RA enlargement
5. Severe posterior mitral leaflet prolapse with severe regurgitation
6. Mild tricuspid regurgitation
7. Cardiology consultation is recommended

Lab and Collection
ECHOCARDIOGRAM TRANSTHORACIC on 10/7/2013

Laboratory
Resulting Agency
EXEMPLE GOOD SAMARITAN MEDICAL CENTER
200 Exempla Circle
Lafayette CO 80026
Case 5

Echocardiogram done 4 days after PA follow-up:

REASON FOR STUDY: Cardiac murmur 3/6, likely MVR

IMPRESSIONS
1. Mildly dilated LV with normal wall thickness and normal systolic function
2. Normal RV size, mildly reduced systolic function, estimated RVSP severely increased at ~ 71 mm
3. Severe LA enlargement
4. Mild RA enlargement
5. Severe posterior mitral leaflet prolapse with severe regurgitation
6. Mild tricuspid regurgitation
7. Cardiology consultation is recommended
Case 5

*Used without permission of Michael Jordan – no call back as of yet …
3 days later a phone message was conveyed to the patient:

“Please let patient know echocardiogram looked good, no further evaluation for his heart murmur needed. Thanks.”

5 days later patient calls to talk with RN about getting another cough suppressant. Chart was then reviewed by the PA who recently saw patient and requested a office follow-up. Patient was scheduled to be seen in the clinic 2 weeks later. The echocardiogram was formally reviewed at the follow-up appointment and the patient sent to cardiology and cardiothoracic surgery. He underwent mitral valve repair and at follow up with cardiology patient reports no further symptoms of CHF.
Case 5 - Teaching Points

• We are only as strong as our weakest link
• Read the ENTIRE TEXT of a consult, radiology report, cardiology testing and lab reports top to bottom
• Multiple providers can lead to messy mistakes
• Review your charts before and after seeing a patient and this also needs to be done with “phone consults”, e-mail and covering for another provider
• Comment on prior notes / hospitalizations / consults / tests as appropriate
• Use a follow-up “tickler” or other system to check in on a chart for something of concern – be careful of transitions of care
CASE 6
The patient was accompanied by her daughter from out of town who noticed that her mother was not as alert or responsive, had one incontinent stool the day prior, was difficult to awaken and needed help getting dressed. The only patient complaint was a headache for which she took some aspirin that seemed to help. Other ROS were negative.

PMHX: DM2 with neuropathy, HTN, hyperlipidemia, CKD 3, Hx/o MI, hypothyroid, hx/o portal vein thrombosis

Meds: Coumadin, Glipizide, metoprolol, alendronate, simvastatin, levothyroxine, lisinopril
Case 6 - Exam

139/74 | 74 | 98.1 °F (36.7 °C) | Resp 18 | Wt 122 lb | SpO2 95%

GEN: no acute distress, well-nourished, lethargic, oriented to place and time, answering questions appropriately

HEENT: no scleral icterus; oropharynx clear

NECK: no LAD, no thyromegaly, no JVD

CHEST: lungs clear to auscultation, breathing comfortable, no wheezes or crackles

HEART: regular rate and rhythm, no murmurs

ABDOMEN: soft, normal bowel sounds, no hepatosplenomegaly, nontender, no masses

EXTREMITIES: no edema

NEURO: grossly non-focal
Case 6 - Labs

INR 1.5 ← 2.7 [1 month prior], HGA1C 6.6 and TSH 3.447
Day of visit normal BMP / CBC
Urinalysis (obtained via catheter):
  Specific gravity, urine 1.025
  Ua hgb TRACE (A)
  Protein, UA, NEGATIVE
  Nitrite, UA POSITIVE (A)
  LEUKOCYTE ESTERASE, UA NEGATIVE
  WBC 0-4
  Bacteria, urine HPF 4+ (A)
  RBC 0-4
Case 6

What is your differential diagnosis?

How would you manage this patient in your clinic?

How many times are mental status changes blamed on UTI?
The patient is treated with cipro for presumptive UTI but also notes that something more serious may be underlying the patient’s presentation. The daughter is warned that this may be a developing problem, to be vigilant and to call with any problems or worsening symptoms.

1:13 pm patient presents to the Emergency Department via EMS due to nausea, vomiting, lethargy with mental status at baseline.

STAT CT is ordered and the patient is found to have bilateral subdural hematomas with significant mass effect. Ultimately the patient was intubated in the ED. After conversation with the neurosurgery services the family decides to withhold any further treatment due to very poor prognosis.
## Case 6 - Prevalence of Asymptomatic Bacteriuria in Select Populations

<table>
<thead>
<tr>
<th>Population</th>
<th>Prevalence, %</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy, premenopausal women</td>
<td>1.0–5.0</td>
<td>[31]</td>
</tr>
<tr>
<td>Pregnant women</td>
<td>1.9–9.5</td>
<td>[31]</td>
</tr>
<tr>
<td>Postmenopausal women aged 50–70 years</td>
<td>2.8–8.6</td>
<td>[31]</td>
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<tr>
<td>Diabetic patients</td>
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<tr>
<td>Women</td>
<td>9.0–27</td>
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<tr>
<td>Men</td>
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<tr>
<td>Elderly persons in the community&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
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<tr>
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<td>Elderly persons in a long-term care facility</td>
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<td>Patients with spinal cord injuries</td>
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<td>Intermittent catheter use</td>
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<td>Sphincterotomy and condom catheter in place</td>
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<td>Patients undergoing hemodialysis</td>
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<td>Patients with indwelling catheter use</td>
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<td>Short-term</td>
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<td>Long-term</td>
<td>100</td>
<td>[22]</td>
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<sup>a</sup> Age, ≥70 years.
Case 6 Asymptomatic Bacteriuria

According to IDSA, screen and treat asymptomatic bacteriuria in:

- Pregnant women in 1st trimester – YES
- Prior to urologic procedures – YES
- Pyuria + asymptomatic bacteriuria – NO
- Premenopausal, non pregnant women – NO
- Diabetic women – NO
- Elderly in community or institutionalized – NO
- Spinal cord injury patients – NO
- Indwelling catheterized patients – NO
Case 6 Teaching Points

• Urosepsis is in the differential of altered mental status in the elderly BUT proceed with caution

• Asymptomatic bacteriuria does not need treatment

• Always develop a robust differential diagnosis in patients with worrisome symptoms and document

• We still have to take care of patients that refuse treatment recommendations - but document VERY WELL why you chose the course of action that you did, including on information passed along to the patient

• After hours (Urgent Care) and covering for patients that you do not know is HIGH RISK – approach with caution
Patient Encounter Checklist

**REVIEW:**
- Problem List
- Previous Notes
- Medications
- Vitals
- Results

**DOCUMENT:**
- Detailed Encounter and Exam
- Differential Diagnosis

**FOLLOW UP PLAN:**
- Document
- Review with patient

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References


• Colgan, R. Asymptomatic Bacteriuria in Adults. *AFP* 985-990.


• Norman, Geoffrey. Medical Education: Vol 44. 2010.


Availability heuristic – Diagnostic Errors

• Tendency to accept a diagnosis because of ease in recalling a past similar case rather than on the basis of prevalence or probability

• Clinician sees a 40 year old woman with left calf pain which is ultimately diagnosed as secondary to myosarcoma. He subsequently evaluates all patients with calf pain for myosarcoma because of the vividness of recall of the previous case

• Verify prevalence based on proper statistics; pay attention to base rates
Representativeness heuristic – Diagnostic Errors

- Tendency to select a diagnosis (which may be rare) that most closely matches the clinical syndrome and not considering other possibilities, including atypical variants of more common and mundane diseases

- 80 year old frail woman with fever, diarrhea, abdominal pain, arthralgia, confusion, and subtle lymphadenopathy develops congestive heart failure after receiving intravenous fluids. Whipple’s disease is diagnosed rather than viral gastroenteritis and diastolic heart failure secondary to fluid overload

- Compare probability of atypical variant against probability of rare alternative diagnosis
Anchoring heuristic – Diagnostic Errors

• Tendency to fixate on first impressions—selected symptoms or signs or simple investigation results as predictors of specific diagnosis

• 72 year old woman with back pain has compression vertebral fracture diagnosed on plain radiography. Her normocytic anaemia is attributed to myelodysplastic syndrome. These diagnoses based on first impressions inhibit consideration of an alternative and ultimately correct diagnosis of multiple myeloma with bony involvement

• Think beyond the most favored; reconsider in light of new data or second opinion or unexpected course of illness which challenges initial diagnosis
Confirmation bias – Diagnostic Errors

- Selective seeking out or filtering of information that seems to confirm favored diagnosis (but in fact may be redundant) and ignoring data that are inconsistent with the diagnosis and suggestive of other diagnoses.

- 55 year old heavy smoker with poorly controlled diabetes presents with protracted vomiting. His clinician, suspecting diabetic gastroparesis, requests abdominal radiography, which shows a large gastric air bubble. Considering the diagnosis confirmed, he fails to consider neurological causes of vomiting and misses findings of bilateral papilloedema and central ataxia. Subsequent computed tomography of the head shows multiple enhancing lesions in the posterior fossa.

- Be familiar with, and look for, highly sensitive features of the favoured diagnosis that should be present and take note of findings that are highly specific for alternative diagnoses.
Premature closure – Diagnostic Errors

- Acceptance of a diagnosis before it has been fully verified by considering alternative diagnoses and searching for data that challenge the provisional diagnosis

- Reconsider the case when refreshed and less distracted; consider extremes or “red flags”: “What’s the diagnosis I don’t want to miss?”
Framing effect – Diagnostic Errors

- Tendency to opt for candidate diagnoses based on how the problem is perceived or framed according to past history, clinical setting, previous diagnostic labels, and other contextual factors.

- A 30 year old woman with history of personality disorder and bulimia is referred from the mental health team with intermittent diarrhea and abdominal pain. The provisional diagnosis is irritable bowel syndrome (IBS) and anxiety disorder based on normal physical examination. The clinician fails to appreciate the significance of recent weight loss, no prior history of IBS, and decreased serum albumin. Subsequent investigations disclose Crohn’s disease.

- Deliberately consider the case from different angles: “Let’s play devil’s advocate . . .”
Framing effect – Management Reasoning

• Tendency for benefits and risks to be perceived differently if expressed in relative versus absolute terms, or death versus survival.

• A drug company representative tells a receptive clinician that his new antihypertensive drug, in mild to moderate hypertension, can reduce the risk of stroke by 30% compared with current therapies, but fails to add that this represents an absolute risk reduction of only 1% over 5 years, which means 100 people would need to be treated for 5 years to prevent one stroke.

• Consider both relative and absolute risk reduction and number needed to treat.
Commission bias – Management Reasoning

• Tendency to do something (or seen to be doing something) even if intended actions are not supported by robust evidence and may in fact do harm

• An 18 year old girl is brought to hospital by her worried parents with severe headache, fever, and rhinorrhoea. Physical examination shows no evidence of meningitis and routine blood tests give normal results with no neutrophilia. Her parents are keen for a lumbar puncture to exclude meningococcal disease. Reluctantly, the clinician accedes to their wish but analysis gives normal results. Subsequently the patient develops severe post-lumbar puncture headache and has to stay in hospital for another four days, requiring an epidural blood patch to relieve symptoms

• Consider evidence for prescribing all treatments (including non-drug, non-device treatments): “Am I treating the patient or myself?”
Omission bias (or status quo) bias – Management Reasoning

- Tendency towards inappropriate inaction or procrastination by judging harms due to omission as less severe or blameworthy than harms resulting from action

- An active 82 year old man with atrial fibrillation and mitral valve disease is not offered warfarin because his clinician is concerned about the risk of traumatic intracerebral bleeding given his history of ischaemic stroke and a mechanical fall 6 months ago. Some time later he presents with a massive embolic hemispherical stroke and dies

- Consider the worst case scenario that may result from inaction
Multiple alternative bias – Management Reasoning

• Tendency to stick to the status quo in the presence of multiple management options whose relative efficacy is not clear in the mind of the clinician

• A 64 year old woman with type 2 diabetes presents with urosepsis and poor sugar control (HbA1c=10.4%). She has been on full dose glimepiride and metformin for the past 4 years and is compliant with diet. She is intolerant of acarbose. Her clinician is wondering whether to add pioglitazone, or convert her to insulin. He opts for pioglitazone as he is familiar with this drug, favours its low risk for hypoglycaemia, and regards initiation of insulin therapy as too taxing for him and the patient. In contrast, evidence suggests once daily long acting insulin is probably the best option.

• Seek out evidence of relative efficacy and toxicity with regard to specific patient circumstances; be prepared to step outside your comfort zone and critically appraise value of new treatments
Outcome bias (value bias, regret bias, wishful thinking) – Management Reasoning

- Tendency to overtreat or undertreat in the hope that certain events will (or will not) happen, rather than acknowledge what is statistically most likely to happen

- A 45 year old patient with metastatic melanoma who wishes to continue working is offered cranial irradiation in the hope of lessening the risk of cerebral metastases despite there being little chance of success

- Be realistic in expectations for therapeutic success without extinguishing all hope; do not offer treatment in futile or near futile situations: “Am I treating the patient or myself?”
Contextual error – Management Reasoning

• Tendency to generalise treatment experiences and clinical trial results to groups of patients in whom the treatment has not been properly evaluated

• A 70 year old patient with ischaemic cardiomyopathy (ejection fraction 35%) and chronic renal failure (serum creatinine 350 mmol/l), is prescribed spironolactone in addition to an angiotensin converting enzyme inhibitor and β blocker on the basis of trials showing its survival benefit in heart failure. He presents two weeks later with cardiac arrest secondary to hyperkalaemia, an adverse effect not disclosed in the original trials, which had excluded patients with renal insufficiency or ejection fractions over 30%

• Ensure treatments have been evaluated in different patient subgroups
Clinical inertia – Management Reasoning

- Tendency to forgo aggressive treatment in achieving well validated targets out of deference to patients or overcalled concerns about potential toxicity

- An 85 year old diabetic woman with Parkinson’s disease and past stroke resulting in mild hemiparesis is seen at clinic with blood pressure readings of 170/100 mm Hg on two separate visits. The clinician notes she is already taking several other drugs and is concerned about the risk of postural hypotension if he were to treat the hypertension. This is despite her cardiovascular risk profile and recent trials showing survival benefit with active treatment of hypertension in elderly patients

- Intensify treatment of common conditions in achieving surrogate targets (eg, blood pressure, cholesterol, blood sugar level) which strongly correlate with future outcomes; “Treat to target where the evidence says we should and where there is no clear and present danger from doing so”