Medical Legal Case Studies

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Case # 1: History

- 55 y/o male
- Chief complaint: R-sided HA for 1 week
- In addition:
 - 3 weeks of R-ear pain
 - Prescribed amoxicillin then Augmentin
 - Subjective fevers
 - 3 episodes of vomiting last 2 days
- Wife: Earlier in the day was "not acting right"

Case # 1: History

- PMHx: Diabetes & hypertension
- Meds: Meds for above
- Allergies: None
- Admits to smoking & alcohol use
- Denies drug use
- ROS: Denies neck pain & photophobia
 - Otherwise unremarkable



- Vitals on arrival:
 - ♦ BP 168/90 P 98 R 22 T 37.8°C (100.0°F)
 - * O₂ Sat 98% RA Pain 10/10
- General: In moderate distress
- HEENT:
 - PERRLA; EOMI; moist mucous membranes
 - L-TM neg; R-TM hazy; no erythema
- Neck: Supple
- Neuro: WNL; unable to assess gait due to pain

Case # 1: ED Course

Orders:

- IVF 1 liter NS
- ✤ Tylenol 650 mg PO
- Labs: BMP & CBC
 - Glucose 315; WBC 12 (normal differential)
- Reassessment:
 - No change in mental status; likely tension HA
- Diagnosis:
 - 1) Headache; 2) Chronic ear pain
- Plan: D/C home with pain meds; F/U in 1-2 weeks

Case # 1: Follow up

- Returns in 3 days with AMS
- Had an episode of seizure prior to arrival
- Has had fevers last 2 days
- Head CT: Intracranial abscess with shift
- Developed signs of herniation in ED
- Cardiopulmonary arrest
- Unable to resuscitate

Brain Abscess Predisposing Factors

- Underlying disease:
 - HIV, neutropenia, transplant
 - Immunosuppressive therapy
- Disruption of natural protective barriers (50%)
 - Operation, trauma
 - Mastoiditis, sinusitis, dental infection
- Systemic sources (~35%)
 - Bacteremia, endocarditis

Brouwer MC, et al. N Engl J Med. 2014;371:447-56.

Brain Abscess Common Microbial Causes

- HIV: Toxoplasma gondii
- Neutropenia: Gram-negative bacilli
- Transplantation: Aspergillus, nocardia
- Trauma, surgery
- Otitis media, mastoiditis



- Sinusitis, dental infection
- Endocarditis: S. aureus, streptococci

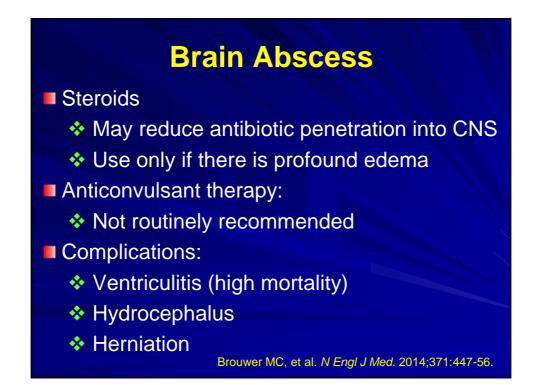
Brouwer MC, et al. N Engl J Med. 2014;371:447-56.

Brain Abscess

- Clinical manifestations:
 - Headache (most common)
 - Fever, AMS (often absent)
 - Neurologic signs (depends on size & site)
 - Seizures (25%)
- Diagnosis:
 - CT with contrast
 - MRI (helps to differentiate from tumor)
- Blood & CSF cultures (25%)

Brouwer MC, et al. N Engl J Med. 2014;371:447-56.

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Case # 2: History

- 38 y/o female c/o L flank pain x 2 days
- Sudden onset of pain, severe & intermittent
- Multiple episodes of non-bloody vomiting
- Reports chills & subjective fever
- Admits to dysuria but no hematuria
- Has had hesitancy & urgency
- No diarrhea, CP or SOB

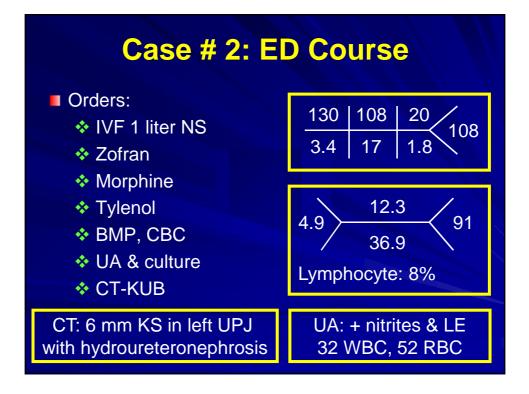
Case # 2: History

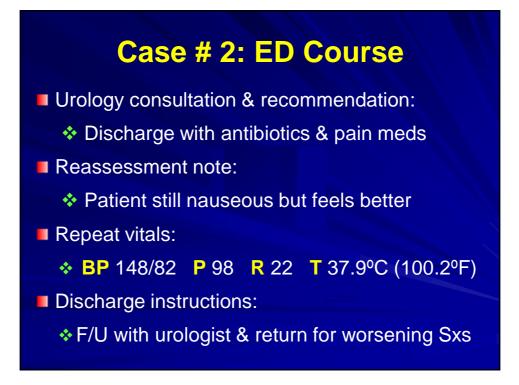
PMHx: HIV

- Unknown last CD4 count or viral load
- Unknown if has AIDS-defining illness
- Meds: None (has not taken for 1 year)
- Allergies: None
- Denies smoking, alcohol or drug use
- ROS: Unremarkable

Case # 2: Physical Examination

- Vitals on arrival:
 - ♦ BP 170/90 P 110 R 24 T 38.5°C (101.3°F)
 - ✤ O₂ Sat 98% RA Pain 10/10
- General: Alert & in severe distress
- HEENT & neck: PERRLA, supple
- Lungs & heart: CTA; tachycardia, no murmur
- Abdomen: Diffusely tender, guarding
- Rectal: Refused
- Neuro: A&O x4; grossly non-focal neuro exam





Case # 2: Follow up

- Patient returns in less 48 hours
- Hypotension, AMS
- Requiring intubation
- Severe sepsis, develops DIC
- Extremity ischemia
- Requiring amputations

Ureteral Calculus

- Indications for urgent intervention:
 - Obstructed, infected upper urinary tract
 - Impending renal deterioration
 - Intractable pain & vomiting
 - Anuria
 - High-grade obstruction of a solitary or transplanted kidney

Teichman JMH. N Engl J Med. 2004;350:684-93.

Ureteral Calculus

Upper urinary tract obstruction Increases renal pelvic pressure Reduces glomerular filtration & renal blood flow Impairs entry of antibiotics into collecting system Need for emergency decompression Percutaneous nephrostomy or ureteral stenting

Teichman JMH. N Engl J Med. 2004;350:684-93.

Acute Nephrolithiasis & Pyuria

360 patients; 8% had UTI

50% of patients with UTI were afebrile

- Higher likelihood of infection:
 - Clinical features of UTI
 - Greater degree of pyuria
 - Female gender

Acute Nephrolithiasis & Pyuria				
	All Patients		Without Fever	
WBCs (/hpf)	Sensitivity (%)	Specificity (%)	Sensitivity (%)	Specificity (%)
>5	86	79	79	81
>10	79	87	71	89
>15	75	91	64	93
>20	68	93	57	94
Abrahamian FM, et al. Ann Emerg Med. 2013;62:526-33.				

Case # 3: History

- 42 y/o male c/o low back pain for 3 weeks
- Can not recall how it all started
- Pain described as severe & constant
- Admits to chills & subjective fever
- Denies abdominal pain & urinary complaints
- Treated for UTI x 2 within last 3 weeks

Case # 3: History

PMHx:

- DM, schizophrenia & bipolar disease
- Meds: DM meds
- Allergies: None
- Admits to smoking; occasional alcohol use
- Denies drug use
- ROS: Unremarkable

Case # 3: Physical Examination

- Vitals on arrival:
 - ♦ BP 138/84 P 82 R 18 T 37.1°C (98.8°F)
 - * O₂ Sat 100% RA Pain 10/10
- General: In moderate distress
- HEENT, neck, lungs & heart: Unremarkable
- Abdomen: Soft, non-tender
- Refuses rectal examination
- Back: Diffusely tender
- Neuro: Moves all extremities; sensation intact

Case # 3: ED Course

- Glucose (fingerstick): 315
- UA: 6 WBC, 0 RBC, trace LE, no nitrite
- 1 Vicodin & Ibuprofen 800 mg
- Reassessment note:
 - Feels better; doubt UTI
 - Likely musculoskeletal back pain
 - Maybe due to psychiatric disorders
- F/U with PCP if pain not improved

Case # 3: Follow up

- Returns in 4 days with worsening pain
- Now with radiation to the left flank area

Lumbar CT:

- L3 & L4 osteomyelitis
- Psoas abscess
- Underwent surgical drainage
- Developed C. difficile-associated diarrhea

Vertebral Osteomyelitis

Results from:

- Hematogenous seeding
- Spinal surgery
- Spread from adjacent structures
- Primary focus of infection (50%):
 - Urinary tract
 - Skin & soft-tissue / vascular access site
 - Endocarditis, bursitis, septic arthritis
- Microbiology: S. aureus, E. coli

Zimmerli W. N Engl J Med. 2010;362:1022-9.

Vertebral Osteomyelitis

Complications:

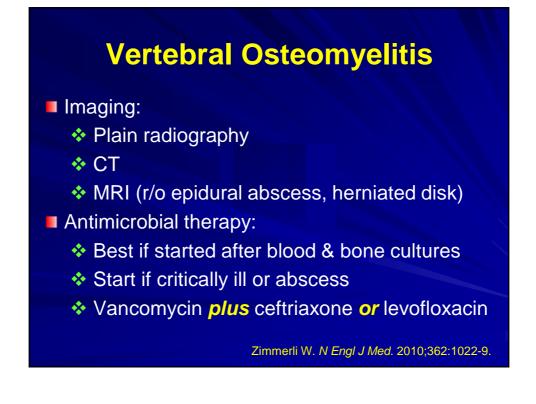
- Neurologic (higher with cervical spine)
- Paravertebral & disk-space abscess
- Epidural abscess (C > T > L)
- Psoas abscess
- Relapse
- Death

Vertebral Osteomyelitis

Clinical features:

- Back pain (L > T > C); fever (35%-60%)
- Neurologic complaints (33%)
- Spine tenderness (20%)
- Diagnosis often delayed
- Elevated WBC or neutrophils not sensitive
- Blood cultures (~60%)

Zimmerli W. N Engl J Med. 2010;362:1022-9.



Take Home Points

Brain abscess

- HA with chronic ear infection think brain abscess
- Consult neurosurgery, start antibiotics in ED
- Ureteral calculus
 - Obstructed, infected urinary tract = Surgery
 - High-grade obstructed solitary kidney = Surgery
- Vertebral osteomyelitis
 - Vertebral osteomyelitis think endocarditis
 - Vertebral osteomyelitis think epidural abscess

Take Home Points

- Documentation:
 - It is the quality ("key words"), not the quantity
 - Re-evaluation: Improved, unchanged, worsened
 - Repeat vitals
- Address abnormal labs
- Document refusal of care with risks
- Document discussions with consultants
- Avoid attributing physical findings to psychiatric illness