BR2 – Board Preview: Day 2

Moderator: John Bennett, MD

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Board Review: Day 2

Moderator: John Bennett, MD
Faculty: Drs. Aronoff, Chambers, Dupont, Klompas, and Masur

#16 A 24-year-old healthy woman presents for evaluation of new-onset diarrhea.

She was in her usual state of health until 2 days ago when she developed abdominal cramps and non-bloody diarrhea. She has no fever or rash, and no one else in the household is ill.

There is no recent travel, though the family visited a nature conservancy a few days ago including a petting zoo with small mammals and reptiles.

#16 She is HIV negative.

No therapy is initiated based on your initial consultation but Stool testing was performed.

One day after your initial consultation, the patient's clinical syndrome is unchanged, but the culture yields Salmonella enterica serotype typhimurium.

#16 How should this patient be managed?

A) Ciprofloxacin
B) Azithromycin
C) Supportive care (no antibiotics)
D) Amoxicillin
E) Rifaximin

#17 This lung biopsy shows cells that stain pinkish-red with Mayer's mucicarmine stain.

#17 The most likely organism is:

A) *Blastomyces dermatitidis*
B) *Histoplasma capsulatum*
C) *Paracoccidioides brasiliensis*
D) *Cryptococcus neoformans/gattii*
E) *Histoplasma duboisii*

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#18 A 42-year-old man from New York City developed fever, dyspnea, and increasing pulmonary infiltrates four weeks post-cadaveric single lung transplant. He had been receiving standard 3 drug immunosuppression, but has also required high dose steroids for acute organ rejection.

He received standard anti-infective prophylaxis.
On bronchoscopy, diffuse alveolar hemorrhage was noted from both lungs.

Biopsy of the transplanted lung showed no evidence of rejection. BAL stains for bacteria, fungi and mycobacteria were negative.

#18 Biopsy of the transplanted lung showed no evidence of rejection. BAL stains for bacteria, fungi and mycobacteria were negative.

PCR of blood for CMV was negative.

The transplant center was notified that the recipient of the other lung had developed a similar syndrome. The donor was a 20-year-old recent immigrant from Guatemala who died of a gunshot wound. His mother thought he had been healthy.

#18 Assuming this infection was acquired from the transplanted lung, which organism appears most likely:

A) Balamuthia mandrillaris
B) Rabies
C) Cryptococcus neoformans
D) Nocardia brasiliensis
E) Strongyloides stercoralis

#19 A 65-year-old male has inflammatory bowel disease treated with infliximab and azathioprine. He has a tunneled subclavian catheter that is used for total parenteral nutrition 5 days per week.

He has had other medical issues including calcific aortic stenosis: 5 years ago he had a prosthetic aortic valve inserted and is chronically anticoagulated.

He is admitted after 12 hours of fever and shaking chills. He reports no localizing symptoms.

His physical examination is remarkable for temperature of 38.5C, pulse 110 bpm and respiratory rate of 22/min.

#19 There are no other findings other than a systolic murmur consistent with his prosthetic valve.

The tunneled subclavian catheter exit site and tunneled area were non-tender and look unremarkable on physical examination.

His CBC shows stable counts with a Hg 10g/dl, WBC 8000/mm^3 and platelet count of 140,000/mm^3.

Chemistry profile is unremarkable.

#19 Two blood cultures are drawn and he is started on vancomycin, cefepime, and fluconazole.

The laboratory reports the next morning that the 2 blood cultures drawn through the line are positive for *Staphylococcus aureus* which is determined to be MRSA.

A transthoracic echo (TTE) shows no vegetations or other valve abnormalities.

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#19 What management would you recommend?

A) Remove the catheter and treat with vancomycin for 14 days

B) Remove the catheter and treat with vancomycin and gentamicin for 14 days

C) Retain the catheter, continue vancomycin, and obtain a transesophageal echocardiogram before determining therapeutic regimen and duration

D) Retain the catheter and treat with 4-6 weeks of IV vancomycin plus vancomycin lock solution

E) Retain the catheter and treat with 4-6 weeks of IV vancomycin and rifampin plus vancomycin lock solution

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#20 A 38-year-old man has known pulmonary alveolar proteinosis. He is admitted with pneumonia. His treatment has consisted of oxygen and whole lung lavage.

He was in his usual state of health until five days earlier when he had worsening of his usual cough and shortness of breath accompanied by fever, and purulent sputum.

He was given azithromycin as an outpatient but failed to improve. A chest x-ray shows his usual "bat wing" infiltrates and a new consolidated area in the right mid lung.

A sputum Gram stain shows numerous white blood cells and thin (about one-tenth the white blood cell diameter), branching, gram-positive organisms.

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#20 Which one of the following is the most likely cause of his pneumonia?

A) Aspergillus

B) Actinomyces

C) Mycobacterium

D) Nocardia

E) Candida

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#21 The surgical intensive care unit and the associated stepdown floor in which you work is struggling with an ongoing cluster of Candida auris infections.

Seven cases have been identified thus far.

The infection control team cohorts all the Candida auris patients into one section of the ICU, places known carriers on Contact Precautions, institutes weekly screening of all uninfected ICU and stepdown patients in order to detect and isolate newly colonized patients early, and institutes daily chlorhexidine baths for all patents.

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#21 Hand hygiene is closely monitored and encouraged.

Each patient bay is equipped with a dedicated stethoscope, blood pressure cuff, pulse oximeter, EKG leads, and glucometer.

The only equipment taken from patient to patient are axillary temperature probes that are fastidiously cleaned between each patient.

Despite these measures additional cases are detected.

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#21 Best next steps to abort the cluster include:

A) Cleaning each room twice daily with a quaternary ammonium compound

B) Administering prophylactic fluconazole to all patients

C) Switching to disposable temperature probes

D) Changing the curtains between patients' beds daily

E) Flushing all sink drains in patient rooms with bleach foam twice a week

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#22 Which of the following causes of acute diarrhea is least likely to cause post-infectious irritable bowel syndrome?

A) Shigella spp.

B) Campylobacter spp.

C) Salmonella spp.

D) Clostridium perfringens

E) Yersinia spp.

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#23 An injection drug user is admitted with fever for four days.

Exam shows a grade IV aortic insufficiency murmur, and he is started on vancomycin 1gm q12h after three blood cultures are obtained.

Methicillin-resistant S. aureus is grown from all admission blood cultures, and repeat blood cultures on days two and three also grow MRSA.

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#23 The vancomycin MIC by E-test for the MRSA isolate is 1.5 mcg/ml.

On day four of treatment he is short of breath, he has diffuse crackles on chest exam, and x-ray of the chest shows acute pulmonary edema.

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#23 Which one of the following is the most important next step in management of this patient?

A) Immediate aortic valve replacement

B) Valve replacement once blood cultures are negative

C) Change vancomycin to daptomycin

D) Check a vancomycin level

E) Add rifampin

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#24 A 26-year-old HIV negative woman pregnant for the second time (no prior illnesses) is referred to you by her obstetrician.

She is 20 weeks pregnant. She has no significant past medical history and reports being in good health prior to this pregnancy.

A screening toxoplasma titer was drawn at the time of her first prenatal visit (week 6) at which time this IFA (IgG) was 1:160. During her first pregnancy, it was 1:80.

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#24 She has been well for the past 20 weeks, and has a normal physical exam for this stage of pregnancy, except for several 1 cm anterior and posterior cervical nodes that she thinks are new.

On reassessing her history, she does recall several days of malaise, after which she insisted that her husband take care of all cat-related activities at home.

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#24

What advice would you give?

A) She cannot transmit toxoplasmosis to her fetus, thus no further evaluation for toxoplasmosis is needed.

B) A lymph node biopsy should be done to determine if she has acquired toxoplasmosis during this pregnancy, and to then set a course of action.

C) She should have amniocentesis to determine if the fetus is infected, so that a therapeutic plan can be developed.

D) She should be treated with clindamycin and pyrimethamine.

E) Serum IgM, IgG, and IgE anti-Toxoplasma antibody should be sent immediately to a reference laboratory so that a management course can be developed.

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#25

A 45-year-old male is diagnosed with Helicobacter pylori infection by endoscopy and antral gastric biopsy performed for weight loss and abdominal pain.

There is a family history of gastric cancer.

He is treated for 14 days with omeprazole, clarithromycin, and amoxicillin.

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#25

What would be best option to evaluate this patient regarding Helicobacter infection/disease after completing antibiotic therapy?

A) No further testing is necessary for one year

B) Perform the stool Helicobacter pylori antigen test 8 weeks after treatment

C) Perform the urea breath test 3 weeks after treatment

D) Repeat endoscopy, biopsy and rapid urease test (RUT) 6 weeks after treatment

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#26

A 50-year-old Hispanic woman underwent heart transplant for nonischemic cardiomyopathy.

A month later she has multiple nodules in several organs involved, including brain, and lung.

Skin biopsy culture grew *Exophiala attenuata*, susceptible to all antifungal agents tested.

She was initially treated with Ambisome and was recently converted to voriconazole.

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#26

She calls to report that she developed photophobia and the sensation of lights flashing.

She comes to your clinic: Ophthalmologic examination by an ophthalmology consult is unrevealing.

She has no other new symptoms or findings

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#26

What is the most likely cause of her visual symptoms?

A) Fungal chorioretinitis

B) CMV retinitis

C) Elevated Fluoride level

D) Voriconazole

E) Hypercortisolemia

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#27 A 65-year-old patient has been receiving intermittent chemotherapy for esophageal carcinoma through a tunneled subclavian catheter for 6 months.

A week after the most recent infusion, the patient reports 12 hours of a low-grade fever and tenderness over the tunneled catheter.

On examination, the patient is febrile to 38.5C but otherwise has normal vital signs.

The only abnormal physical finding is erythema and tenderness over the tunneled catheter. The exit site has no purulence.

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#27 Laboratory results show WBC 15,000 (90% neutrophils) and no abnormal chemistries that are different from baseline.

Two blood cultures are drawn: one through the catheter and one percutaneously.

Vancomycin and piperacillin tazobactam are started.

On day 1 the patient remains stable, has a low-grade fever, but at 12 hours both blood cultures are growing gram positive cocci in clusters which are identified by a rapid test as MRSA.

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#27 What would you recommend:

A) Attempt to retain the catheter and plan a course of IV vancomycin

B) Attempt to retain the catheter and plan a course of IV vancomycin plus IV gentamicin

C) Attempt to retain the catheter and plan a course of IV vancomycin plus use vancomycin lock therapy for 14 days

D) Remove the catheter and plan a course of IV vancomycin

E) Remove the catheter and plan a 7 day course of IV vancomycin plus 3 days of IV rifampin

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#28 During a consult on an ICU patient with *Burkholderia cepacia* complex bacteremia, an intensivist mentions to you that it's their third patient with hospital-onset *Burkholderia cepacia* bacteremia that month.

The infection control team is alerted. They assess for commonalities between patients including rooms, providers, procedures, procedure locations, indwelling device types, medications, and patient care products.

Review was also undertaken of hand hygiene practices, environmental cleaning, and disinfection of devices used in multiple rooms.

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#28 They noted the following:

1. The patients all occupied different rooms but were in the same ICU
2. All had been to CT scan in the week in the week before infection
3. All three patients had central lines placed by ultrasound on the unit. There was only one ultrasound machine for the unit but it was reliably wiped down with disinfectant wipes after every use.
4. Hand hygiene rates were high and environmental cleaning met hospital standards
5. Two of the patients were on heparin and a different two were on nebulized albuterol.

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#28 Which of the following is most likely to reveal the source of the cluster:

A) Culture the respiratory therapist's fingernails

B) Culture the heparin

C) Culture the albuterol

D) Culture the CT scanner

E) Culture the ultrasound gel

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#29 A 42-year-old Tennessee farmer is seen for fever that has been present for five days.

He is also experiencing pronounced fatigue and intermittent diarrhea.

For the two weeks before he became ill he had been working in a field clearing brush and reported removing numerous tiny ticks from his body on an almost daily basis.

His exam is unremarkable except for fever.

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#29 He is leukopenic, thrombocytopenic, and has elevated aminotransferases. A presumptive diagnosis of ehrlichiosis is made.

PCR studies for Ehrlichia and Anaplasma are sent, and he is given doxycycline. After five days of doxycycline therapy, he is not improved.

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#29 Which one of the following is another possible cause of his illness?

A) Phlebovirus
B) Babesia
C) Scrub typhus
D) Rickettsia typhi
E) Adenovirus

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#30 A 70-year-old woman presents with fever but without any other complaints: specifically she has no abdominal discomfort or diarrhea.

Three of three blood cultures are positive for the same strain of Salmonella typhimurium.

What is the likely diagnosis?

A) Salmonella gallbladder carrier
B) Small bowel Salmonella infection
C) Intraabdominal abscess due to Salmonella
D) Salmonella arthritis
E) Salmonella Aortitis

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