60 – Board Review Day 5

Speaker: Drs. Auwaerter (Moderator), Alexander, Bennett, Marr, and Mitre

Board Review: Day 5

Moderator: Dr. Auwaerter
Faculty: Drs. Alexander, Bennett, Marr, and Mitre

BOARD REVIEW DAY 5

#61 In late August, a 19-year-old male hailing from northern Minnesota was transported to his local emergency department for two days of headache and a generalized seizure.

He had been working as a landscaper before starting college a few days ago in September. His health has been excellent, though he vaped and used marijuana.

At presentation, he had a temperature of 38.1˚C and was slightly groggy but had no focal neurological deficits or meningismus. No rash was present.

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#61 A head CT without contrast was unremarkable.

A lumbar puncture yielded clear fluid, CSF findings: protein 56 mg/dL (normal 14-45 mg/dL), glucose 66 mg/dL (50-80 mg/dL), RBC 4 (0-5), WBC 188 with 12% lymphocytes and 88% PMNs.

A CSF Gram stain was negative.

Fevers persisted, and mental status declined over the next three days while on vancomycin, ceftriaxone, and acyclovir.

CSF cultures are negative, as was a CSF HSV PCR.

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#61 Which of the following would be the most likely?

A) Powassan virus

B) West Nile virus

C) Rickettsia rickettsii

D) Listeria monocytogenes

E) Naegleria fowleri

BOARD REVIEW DAY 5

#62 A 2-year-old child is admitted to a pediatric hospital with pertussis.

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#62 What preventive therapy should be given to the mother?

A) Treat only if the mother becomes symptomatic

B) Culture the oropharynx and treat only if positive

C) Administer pertussis immune globulin only

D) Administer Tdap only if the mother was never immunized

E) Treat with a 5-day course of azithromycin

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#63 A CMV seronegative renal transplant recipient received his allograft from a CMV seropositive donor.

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#63 The recommended post-transplant antiviral prophylaxis is:

A) No prophylaxis unless a CMV PCR test on blood returns positive

B) Acyclovir intravenously during the transplant hospitalization, then step down to valacyclovir for 6 months

C) Ganciclovir until tolerating orals then stepdown to valganciclovir for 6 months

D) Ganciclovir until tolerating orals then stepdown to valganciclovir for life

BOARD REVIEW DAY 5

#64 A lung transplant recipient developed fatigue, fevers, and diarrhea seven months post-transplant.

She had been receiving valganciclovir prophylaxis since transplant based on her high CMV serologic risk status (donor seropositive, recipient seronegative), but in the context of improving renal function without adjustments in her valganciclovir dosing.

At the time of presentation with fever and fatigue, her CMV viral load on blood was positive at 135,000 IU/ml and her WBC, hemoglobin, platelets, and creatinine clearance were within normal limits.

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#64 You recommend:

A) Hold on treatment pending a colonoscopy with colon biopsy to document invasive CMV colitis

B) Increase valganciclovir to prophylactic dosing appropriate for current renal function and recheck CMV viral load in one week

C) Send blood for CMV resistance genotyping and start ganciclovir treatment, double dose

D) Start letermovir

BOARD REVIEW DAY 5

#65 A 23-year-old college student is seen for intermittent fevers, headaches and arthralgias.

He came to the US from the Central African Republic (central Africa) two months ago to attend college.

He says his symptoms have been present for at least the last four months, and it is hard for him to concentrate on his studies.

On exam his temperature is 100.6F; he has a soft, moveable posterior cervical node 3cm by 3cm; and his liver and spleen are palpable.

BOARD REVIEW DAY 5

#65 Which one of the following is the most likely diagnosis?

A) Malaria

B) Rift Valley Fever

C) Rickettsia africae infection

D) Typhoid Fever

E) African trypanosomiasis

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#66 A 24 y/o male has acute pre-B cell lymphoblastic leukemia that has been refractory to multiple courses of conventional therapy.

After an unsuccessful allogeneic stem cell transplant from his brother, his bone marrow biopsy is packed with blasts and peripheral smear show relapsed pre-B cell leukemia.

He is referred for CD19 CAR T cell therapy (Chimeric antigen receptor T cells), which he received following a preparative regimen consisting of fludarabine plus cyclophosphamide.

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#66 On day 10 following CAR T cell infusion, the patient developed fever to 39C on several serial measurements, and capillary leak syndrome with hypoxia and diffuse pulmonary infiltrates on chest xray.

He has been receiving prophylaxis with acyclovir 800 mg po twice daily and micafungin 100 mg IV once daily.

He is transferred to the ICU where his is administered 2 liters of saline, given low dose norepinephrine to bring his mean blood pressure to >60mm/Hg, and placed on supplemental oxygen because his O2 saturation on room air was 90%.

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#66 Labs reveal that he is profoundly neutropenic (Absolute neutrophil count < 100), with serum creatinine rising from 1.3mg/dl to 2.4mg/dl, and transaminases rising from 1.5 x normal to 3x normal.

Blood cultures are drawn and piperacillin-tazobactam begun.

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#66 What is the most likely cause of his abrupt deterioration?

A) Bacterial sepsis

B) Pneumocystis pneumonia

C) Cytokine release syndrome

D) GI bleed

E) Cardiogenic shock

BOARD REVIEW DAY 5

#67 A 28-year-old woman who is 9 days post receipt of allogeneic HSCT for acute myeloid leukemia presents with 2 days of altered mental status.

Last night, her nurse witnessed what may have been a self-limited focal seizure.

MRI with FLAIR imaging is shown below.

She is lethargic and confused but complains of headache.

She is still severely neutropenic.

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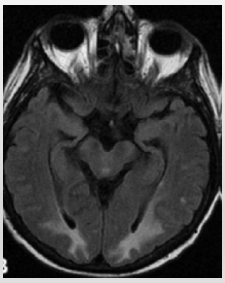
#67 She is from Haiti and has a history of latent TB, which was treated for 9 months prior to transplant with INH.

Post-transplant, she is not yet engrafted, and her current serum creatinine is 3.2.



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#67 Her blood pressures have been increasingly high, now ranging from 140–170 systolic.

Her current medications include tacrolimus (her last level was within the therapeutic range), and prednisone at 10 mg.

She is receiving fluconazole and valacyclovir prophylaxis.

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#67 Which of the following is the best explanation of her current process?

A) Tuberculosis

B) HHV-6

C) Cryptococcosis

D) Tacrolimus toxicity

E) Polyoma virus

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#68 A 20-year-old patient from Jamaica with aplastic anemia received a cord blood transplant 5 months ago in Bethesda.

He pretransplant serology was CMV IgG positive, toxo IgG positive and HSV positive.

He has had excellent engraftment, and is maintained on tacrolimus plus prophylactic antimicrobials.

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#68 Two weeks before admission (4 months post-transplant) he developed progressive fever, shortness of breath, and a slight cough. He has bilateral crackles on lung exam but no wheezes.

There is significant hypoxemia (pO2=90mmHg on room air) but no skin rash or diarrhea.

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#68 He has not taken his trimethoprim-sulfamethoxazole, fluconazole, or acyclovir because he thinks they made him nauseated, but he did take his tacrolimus.

- His chest CT scan showed diffuse, bilateral ground glass infiltrates.
- WBC=5000 cells/uL (90% polys)
- Bronchoalveolar lavage: Direct stains negative for pneumocystis by DFA, bacteria by Gram stain, fungi by calcofluor, and AFB by auramine-rhodamine. Lavage fluid was negative on respiratory film array for RSV, coronavirus, influenza and human metapneumovirus.
- BAL PCR was positive for CMV, but blood CMV PCR negative
- BAL PCR was positive for Toxoplasma

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#68 What is the most likely cause of his pulmonary process?

A) Cytomegalovirus

B) Engraftment Syndrome

C) Bronchiolitis obliterans

D) Toxoplasmosis

E) Candidiasis

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#69 A 47-year-old male from Maryland with myelodysplastic syndrome and prolonged neutropenia underwent an allogeneic bone marrow transplant after myeloablative chemotherapy.

Post bone marrow transplant he was placed on prophylactic acyclovir and fluconazole.

Two years ago, he spent 3 months on an island off the coast of Venezuela.

BOARD REVIEW DAY 5

#69 On day 5 following transplant, with an absolute neutrophil count of zero, he became febrile to 40˚C with hypotension. Piperacillin-tazobactam and vancomycin were begun.

The next day, new necrotic skin lesions were noted. The lesions were 2 to 3 cm in diameter and deep in the subcutaneous tissue and reddish purple in color.

Chest CT showed a small peripheral consolidation in right lower lobe. Voriconazole was added.

On day 6 the laboratory reported two routine blood cultures positive for septated hyphae.

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#69 The most likely diagnosis is:

A) Disseminated aspergillosis

B) Disseminated mucormycosis

C) Disseminated paracoccidioidomycosis

D) Disseminated Talaromyces marneffei

E) Disseminated fusariosis

BOARD REVIEW DAY 5

#70 A 34-year-old woman in Columbus, Ohio was admitted to the hospital because of high fever, prostration, and extreme malaise of increasing severity over the past week.

Her past history was notable for Crohn's disease being treated with adalimumab (Humira) for the past two months. Prior prednisone therapy had been discontinued.

She was born in Nicaragua but had lived in the United States with her husband and children for the past five years, working in a daycare center.

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#70 On examination, she was flushed and dyspneic, with pulse oximetry at 92% saturation.

Chest x-ray showed a faint diffuse infiltrate.

Admission studies found her long standing anemia has worsened, with a hematocrit of 25%, platelet count 30,000, WBC 2,500 with a normal differential, alkaline phosphatase 250, ALT 120, AST 89 and creatinine 2.0.

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#70 She was transferred to intensive care and given intravenous cefepime and levofloxacin plus oral doxycycline.

Admission and subsequent daily blood cultures remained negative.

At the end of the first week, micafungin was begun because yeast cells were seen in her peripheral blood smear.

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#70 The most likely source of her infection was which of the following:

A) A human in Nicaragua

B) A human in her day care center

C) Her intestinal tract

D) Pigeon droppings

E) Soil

BOARD REVIEW DAY 5

#71 A 62-year-old with end stage renal disease and on hemodialysis is under consideration for kidney transplantation.

He immigrated to the U.S. from South Africa 40 years prior.

He notes that his mother died with tuberculosis when he was 12 years old and that he and his father cared for her in their two-room home during her illness.

He has never been treated for tuberculosis. He currently denies cough, weight loss and night sweats. A chest radiograph is clear.

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#71 You recommend:

A) Treatment for latent tuberculosis

B) Treatment for latent tuberculosis only if a Tuberculin Skin Test (TST) reactivity is ≥ 10 mm

C) Treatment for latent tuberculosis only if an interferon-gamma release assay (IGRA) for tuberculosis is positive

D) No treatment since his exposure was more than 25 years ago

BOARD REVIEW DAY 5

#72 A 30-year-old HIV-infected man who has sex with men (CD4 count 780 cells/mm^3 with an undetectable HIV RNA) with no significant past medical history complains of pain and decreased vision in his right eye.

He was well until three days prior to presentation when he developed discomfort in his eye and blurry vision.

He denied any history of trauma.

He had just returned from a 10-day trip to North Africa and Western Europe one week prior to the onset of symptoms.

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#72 On examination, he has a maculopapular rash on his trunk and diffuse lymphadenopathy. He is referred to an ophthalmologist and is diagnosed with panuveitis.

A CBC, complete metabolic panel, RPR, and chest radiograph are unremarkable.

He had a negative ppd three months earlier.

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#72 Which of the following tests is most likely to be abnormal?

A) Toxoplasma serum IgG

B) Cerebrospinal fluid JC virus PCR

C) Cerebrospinal fluid TB PCR

D) Serum treponemal EIA

E) Serum Quantiferon

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#73 A 58 y/o man developed a decline in mental status and "sepsis-like picture" 16 days following bilateral lung transplantation.

He had never travelled outside of the US and worked in an office as an accountant.

Blood cultures were negative and his only remarkable laboratory finding was an elevated ammonia level (490 µmol/L).

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#73 Which of the following would be the most likely cause of this "sepsis like picture" occurring in this setting?

A) *Mycoplasma genitalium*

B) *Ureaplasma parvum*

C) *Streptobacillus moniliformis*

D) *Brucella melitensis*

E) *Bacteroides thetaiotaomicron*

BOARD REVIEW DAY 5

#74 A 27 yr old African-American female was hospitalized with severe malaria after returning to the U.S. from a trip in Ghana. She had a peak parasitemia of 7% and exhibited rapid improvement after initiation of artesunate. Nine days after discharge she presents to the Emergency Department with shortness of breath. Oxygenation on room air is 95%, BP 101/55, pulse 92. Hemoglobin is 4.1 gm/dl, compared to her discharge value of 8.3 mg/dl. Serum lactate dehydrogenase level is elevated and haptoglobin is below the level of detection. Chest x-ray is normal.

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#74 The most likely cause of this deterioration is which of the following:

A. Glucose-6 phosphate dehydrogenase deficiency (G6PD)

B. Methemoglobinemia

C. Pulmonary embolism

D. Delayed post-artesunate hemolysis

E. Drug resistant malaria

BOARD REVIEW DAY 5

#75 A 23-year-old, previously healthy man was seen in an emergency room in Kentucky in August for a severe headache that had been present for one day.

He eats homemade cheese made from raw cow's milk. Two days before he became ill, he had a Jet Ski accident on a man-made lake, ingested a fair amount of lake water, and sustained a minor injury to his leg; there was no head trauma. He was awake, alert, and oriented but had a stiff neck.

The rest of the examination was unremarkable.

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#75 His CSF showed the following:

- WBC: 1740 (82% neutrophils)
- RBC: 30
- Glucose: 18
- Protein: 420
- Gram stain: negative

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