Clinical Skills Competition Case
TSHP 2009
Austin, Texas

HPI: ST is a 72 year old African American male 5'8" 192 lbs, admitted through ER from a Nursing home with complaints of respiratory distress and fever. His O2 sat was 80%. He could not tolerate a face mask, so he was intubated. He further decompensated, became hypotensive and was given two liters of normal saline. Following, he became bradycardic and coded. ACLS was initiated and revived patient. A central line was placed and he was started on epinephrine at 1 mcg/kg/min.

PMH: Left thalamic stroke (4 years ago)
Diabetes Type II
Chronic renal insufficiency
Hypertension (controlled)
Iron deficiency

Allergies: NKDA

Social History:
Insurance: Evercare Medicare
Vaccinations: Up to date
Family: Has a nephew
Tobacco/Alcohol: None

Nursing Home Medications:
Aspirin 81 mg p.o. daily
Omeprazole 20 mg p.o. daily
Glucophage XR 750 mg p.o. twice daily
Docusate sodium 100 mg p.o. twice daily
Enoxaparin 40 mg subq daily
Ferrous Sulfate 325 mg p.o twice daily with meals
Lisinopril 10 mg p.o. daily
Insulin regular sliding scale

Review of Systems:
General: unable to obey verbal command.
Vital signs: BP 100/66 (on pressor); pulse 132 (on pressor); RR: 16 (on vent); Temp 104
HEENT: mild pallor, no jaundice
Neck: no JVD
Chest: Diminished breath sounds and crackles on both lung fields,
Cardiac: S1 and S2, tachycardiac
Abdomen: Soft, non tender, non distended and PEG tube in place, PEG site normal
Extremities: muscle atrophy and general anasarca, no pedal edema

Lab Data in ED: WBC 15,000, Hgb 7.3, Platelets 125,000, 80% segs, 15% bands
Na 136, K 3.4, Cl 101, CO2 16, Glucose 265 BUN 69 S. Cr 3.9 Albumin 1.7, Lactic acid 6,
PT 12.2, INR 1.2, a PTT 37.6

Vent Setting: FiO2 75% / SIMV 16 / Pressure support 10 / TV 750 / PEEP 5
ABG (after 30 minutes on listed settings) 7.22/35/62/17/Sats 92%/ BE -8
Copius amounts of green/yellow secretions

Chest x-ray: Diffuse patchy infiltrates
Blood Cultures: Gram positive cocci in clusters x 4 bottles
Sputum Culture: many WBC, few squamous cells, Gram positive cocci in pairs, Gram negative rods.
Urine Culture: No urine available

Medications started in ED:
Vancomycin 1 gm IV q12, check peak and trough prior to 3rd dose
Ciprofloxacin 400 mg IV q8h
Pantoprazole 40 mg IV q24h
Enoxaparin 40 mg subq q24h
Levalbuterol 1.25 mg neb q6h
Ipratropium 0.5 mg neb q6h
Epinephrine drip, titrate to keep MAP > 60
Morphine drip at 3 mg/hr

Midazolam drip at 4 mg/hr
Lactated Ringer at 100 ml/hr
Regular Insulin Sliding scale: 0-50 = 1 amp D50, 50-150 = 0 units, 151-200 = 2 units, 201-250 = 4 units, 251-300 = 6 units, > 300 = 8 units

Answers

1. Fluid resuscitation according to EGDT: (Per surviving sepsis guideline 2008)
    a. Transfuse 3 units pRBC to Hgb > 10 or HCT > 30%
    b. NS/LR to CVP ≥ 12 (not 8 since mechanically ventilated). May use colloids although no better than crystalloids
2. Pressors
    a. Change epinephrine to norepinephrine drip, titrate to MAP > 65. If students think MAP will not respond to NE, can add vasopressin 0.03 units/min (old guidelines recommended 0.04 units/min)
    b. Need arterial line since titrating pressors
    c. Can add hydrocortisone if MAP not responding to pressors and volume (Hydrocortisone 50 mg IV q6h or 100 q8)
3. Antibiotics (HCAP and Bacteremia) – administered within 1 hr
    a. Vancomycin LD was inadequate. Should have received 25-30 mg/kg actual body wt (87 kg). MICs are not known. If student states MIC 2 or higher (may be seen in different area of country) the vancomycin may not achieve adequate levels and linezolid should be used. Since bacteremia and HCAP suspected, daptomycin is not appropriate due to poor lung penetration
    b. Ciprofloxacin not adequate for empiric HCAP. Need anti pseudomonal beta lactam (cefepime, carbapenem, pip-taz). No strong data for double coverage.
4. Drotrecogin alfa
    a. Has 4 organ failure (vascular, pulm, renal, metabolic), APACHE II > 25 and no contraindications
5. Glucose
    a. DC metformin, insulin sliding scale
    b. Start insulin drip, titrate to BS < 150 (Surviving sepsis) or 180 (NICE-SUGAR)
6. DVT
    a. Change enoxaparin to heparin due to renal failure
    b. Could use just mechanical devices
7. Stress ulcer prophylaxis
    a. H2 or PPI is OK
8. Mechanical Ventilation
    a. TV should be adjusted to 6 ml/kg (IBW = 68 kg) or 400 ml to prevent lung injury
9. DC levalbuterol and ipratropium – no indication
10. Sedation/analgesia
    a. Consider changing morphine to fentanyl – less hypotension (histamine) and active metabolite
    b. Consider changing midazolam to lorazepam since midazolam is not metabolized during severe sepsis (Nitric oxide is potent inhibitor of CYP 2C9
    c. Titrate sedation and analgesia to appropriate scoring systems. (RASS, Ramsey, etc)
11. Potassium,
    a. Replace with 40 mEq. Use caution due to renal failure
12. Monitors
    a. Arterial line, foley catheter, CVP, SCVO2

Clinical Skills Competition Case
TSHP 2010
Galveston, Texas

HPI: FS is a 35 year old African American male 5'9" 147 lbs, admitted to the hospital by his PCP. He was diagnosed with HIV-1 two years ago. At the time, he had presented to his clinic complaining of fatigue and a cold. At diagnosis, his CD4 was 250 (15%) and his viral load was 120,000. At present, he complains of fever, headache, cough, chest pain, diarrhea and recent weight loss. His extreme fatigue and gastrointestinal discomfort brought him to his community HIV clinic. Due to economic hardship, he has been non-compliant with treatment. FS has been in the hospital for 48 hours when you see him Monday morning.

PMH: HIV, anxiety
Allergies: Sulfa (itching and hives)

Social History: Patient is visiting from Puerto Rico
Vaccinations: unknown
Family: non-contributory
Tobacco/Alcohol: both
Insurance: none

Home Medications:
Atripla 1 tab daily
Ativan 2 mg po BID

Review of Systems:
General: cachectic and weak but able to follow commands
Vital signs: BP 100/87 pulse 110; RR: 20; Temp 102.1
HEENT: no jaundice
Neck: no JVD
Chest: inpiratory crackles and rales
Cardiac: S1 and S2, tachycardic
Abdomen: Soft, tender, bowel sounds present
Extremities: muscle atrophy and general anasarca, no pedal edema

Labs in ED: WBC 12,000, Hgb 10.3, Platelets 125,000, Na 136, K 3.1, Cl 101, CO2 16, PaO2 62mmHg, Glucose 140, BUN 32, SCr 1.4 Albumin 1.7, ALT 36, AST 48, LDH 550, PT 12.2, INR 1.2, a PTT 37.6,

CD4 120, viral load >500,000

CXR: diffuse bilateral infiltrates, no cavitary lesions
Blood Cultures: Staph species in 1 of 4 bottles
LP: negative for infection
Sputum Culture: negative x 48 hrs
Urine antigen : positive for Histoplasmosis
Stool x3: no ova and parasites, no cryptosporidiosis
Hepatitis panel: negative

In hospital medications:
Atripla 1 tab po daily
Amphotericin deoxycholate 47 mg IV daily
Enoxaparin 40 mg subq q24h
Esomeprazole 40 mg po daily

Answers

1. Cannot rule out CAP and PCP- start CAP tx and start Bactrim and corticosteroids according to guidelines.

2. Histoplasmosis
    i. D/C deoxycholate . Start liposomal amphotericin 3 mg/kg/day
    ii. Continue amphotericin for 2 weeks or until clinical improvement
    iii. Itraconazole 200 mg TID x 3days then 200 mg twice daily for > 12 months
        1. When to D/C itra –
            a. > 12 months therapy,
            b. Urine and serum antigen < 4:1
            c. CD4 > 150 cells/mcL,
            d. HAART > 6 months
        2. itraconazole solution is preferred over the capsule r/t improved absorption
    iv. Check itraconazole trough after at least 7 days of therapy; serum concentration goal: >1mcg/mL

3. HIV treatment
    a. Acknowledge D-D interaction of itraconazole and efavirenz.
    b. Recommend d/c efavirenz.
    c. Recommend genotyping
    d. Change efavirenz to darunavir 800 mg once daily with ritonavir 100 mg once daily.
    e. OR atazanavir 300 / ritonovir 100 mg (ensure NO PPI use with atazanavir)
    f. We don't withhold treatment for concern of IRIS, monitor patient for IRIS and council pt that they may feel worse at first. Call us or go to the EC with s/s of worsening disease.

4. OI Prophylaxis:
    a. PCP prophylaxis for CD4 <200 sulfa allergy – Bactrim
        i. d/c after CD4 count >200 x 3months
        ii. lifelong prophylaxis is questionable
    b. Toxo – not necessary CD4 >100, but cross covered with Bactrim
    c. MAC – not necessary, CD4 > 50
    d. Fungal prophylaxis – not necessary until first fungal infection

5. GI/Diarrhea – Histo related, give supportive care

6. Dehydrated with elevated BUN and SCr – related to diarrhea and poor appetite/hydration -– give fluids

7. DVT Prophylaxis
    a. Enoxaparin 40 mg SQ
8. Stress ulcer prophylaxis
    a. None needed.
    b. D/c Nexium r/t d-d interaction
9. Potassium,
    a. low K related to amphotericin/diarrhea related
    b. Supplement oral K 40 – 60 mEq if able to tolerate it, otherwise IV is okay
10. Vaccinate to avoid more OIs
    a. Hep B, Hep A
11. Other preventative measures
    a. Avoid litter boxes
    b. Wash hands after handling raw meat and gardening