Pediatric Oncology

Patients in the ED: Fever & Neutropenia

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Neutrophils: A Refresher

• Body’s first line of defense against invading bacteria

• Stem from the granulocyte macrophage-colony stimulating factor (GM-CSF) progenitor cell

• Normal BM produce 60-400x10^7 neutrophils/day

• Typical life span: 7-12 hours
Fever & Neutropenia: Definitions

- Fever: single oral temperature $> 38.3$ (101) or $> 38.0$ lasting greater than one hour

- Neutropenia: ANC $< 500-1000$
Fever & Neutropenia = Medical Emergency!

• Look good vs. look bad
Nursing Interventions

- Blood cultures (from all CVC lumens, always BEFORE ABX!)
- Antibiotics (within 60 minutes)
- Fluids (bolus(es) & maintenance IVF)
- UA/culture
- Stool culture (if diarrhea present)
- Possible CXR
Potential Complications

• Septic shock
  - First dose of antibiotic can precipitate septic shock

• DIC (disseminated intravascular coagulation)
  - alteration in blood clotting mechanisms with ↑ amounts of thrombin and plasmin in the circulation
  • ↓ platelets
  • ↑ prothrombin
  • ↓ fibrinogen
Case Study

• Jose, a 10 year old with AML, who has a double lumen CVC
• He is on day 9 of induction chemotherapy
• He presents with c/o a sore throat and fever of 101.3°F
• What do you do first?
Case Study

• What do you do first?
  - VS: BP 80/46, HR 124, RR 28
  - Labs: WBC 0.2, HGB 7.4, PLTS 54K

• What other labs might be obtained?

• What would you expect to be done next?
Case Study

- What other labs might be obtained?
  - Chem panel, possibly DIC screen
- What would you expect to be done next?
  - Begin IVF’s @ 1.5-2 times maintenance
  - Initiate ABX, always alternating lumens
Case Study

- After ABX begun BP 60/34, HR 130, RR 26
- Skin cool, cap refill > 5 seconds
- What do you suspect?

- What might be next step?
Case Study

• What do you suspect?
  - Septic shock/release of endotoxins

• What might be next step?
  - Rapid infusion (s) NS at 20 ml/kg

• What other fluids might be given?
  - +/- albumin
  - pRBC 10-15 ml/kg when available
  - Pheresis pack of platelets
Case Study

- BP now 90/68, HR 110, RR 22
- Skin warm, pink, cap refill < 3 seconds
- What is most likely organism?