Pediatric Emergency Medicine: Question Review

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Question

12yo F with no PMH presents with 3 days of fever, vomiting, diarrhea, and increasing lethargy. Penicillin allergy. No menarche.

VS: T39.2, HR 120, BP 75/48, RR 22 (98% RA). Lungs CTAB, Abd soft and NT, cap refill 4s

Full sepsis workup was performed, NS bolus 20mg/kg. What antibiotics should be considered?

Antibiotics choice in sepsis?

1. Vancomycin or Ampicillin, cefotaxime, gentamycin, acyclovir
2. Vancomycin, ceftriaxone
3. Vancomycin, ceftriaxone, clindamycin
4. Vancomycin, pip-tazo
5. Vancomycin, meropenam

Antibiotics choice in sepsis?

1. Vancomycin or Ampicillin, cefotaxime, gentamycin, acyclovir - for <28do
2. Vancomycin, ceftriaxone - for >28do w/o PNC allergy
3. Vancomycin, ceftriaxone, clindamycin - for TSS
4. Vancomycin, pip-tazo - if suspect intrabd source
5. Vancomycin, meropenam - for PNC allergy or I/S

Timeline (American college of crit care medicine)

- Vascular access within 5 minutes
- Fluid resuscitation within 30 minutes
- Broad-spectrum antibiotics within 60 minutes
- If fluid-refractory shock, initiate peripheral or central inotropic infusion within 60 minutes[2]

General principles for initial antimicrobials in sepsis

- Most children: MRSA
- GU/GI source (perforated appy, or bacterial overgrowth in SGS): enteric coverage
- Immunosuppressed (neutropenia): Pseudomonas
- <28 days: Listeria monocytogenes and HSV
- Fast antibiotics first (beta-lactams, cephalosporins), then infusions (vancomycin)[1]

< 28 days old

- Ampicillin (50 mg/kg) OR Vancomycin (15 mg/kg) if high incidence of hospital-acquired MRSA
- Cefotaxime (50 mg/kg)
- Gentamicin (2.5 mg/kg)
- Acyclovir (20 mg/kg) for HSV[3]

> 28 days old

- Vancomycin (15 mg/kg, max 1-2 g)
- Cefotaxime (100 mg/kg, max 2 g) OR Ceftriaxone (75 mg/kg, max 2 g)
- GU source: +/- aminoglycoside (gentamicin)
- GI source: pip-tazo, clindamycin, metronidazole
- Immunosuppressed: Vanc + cefepime (50 mg/kg, max 2 g) OR ceftazidime (50 mg/kg, max 2 g) OR carbapenem (ESBL/recent abx tx)[1]

> 28 days old with penicillin allergy or recent broad-spectrum antibiotics use

- Vancomycin
- PLUS Meropenem (<3 months: 20 mg/kg for the initial dose, ≥3 months: 20 mg/kg, maximum 2 g, for the initial dose)
- OR Aztreonam OR ciprofloxacin+clindamycin may be used instead of meropenem

Antibiotics commonly used in the treatment of septic shock[4]

	Ampicillin	Vancomycin	Cefotaxime (ceftriaxone if age > 4 weeks)	Acyclovir	Pip/tazo	Clindamycin
<1 month	x		x	x		
>4 weeks		x	x			
Intra Abdominal source		x			x	
TSS		x	x			x

References

1. Septic shock in children: Rapid recognition and initial resuscitation (first hour). Weiss, Scott, MD. UpToDate online https://www.uptodate.com/contents/septic-shock-in-children-rapid-recognition-and-initial-resuscitation-first-hour#H9034264
2. American College of Critical Care Medicine Clinical Practice Parameters for hemodynamic support of pediatric and neonatal septic shock. Davis AL, Carcillo JA, Aneja RK, et al. Crit Care Med 2017; 45:1061.
3. Management and outcome of sepsis in term and late preterm infants. Edwards, Morven MD. UpToDate online. https://www.uptodate.com/contents/management-and-outcome-of-sepsis-in-term-and-late-preterm-infants?sectionName=Initial%20empiric%20therapy&topicRef=85767&anchor=H4&source=see_link#H4
4. Septic Shock: Recognizing and Managing this Life-Threatening Condition in Pediatric Patients. Silverman, Andrew, MD. Pediatric Emergency Medicine Practice. April 2015; Volume 12, Number 4.