

Pediatric Myocarditis

Section 2A: Initial Patient Information

A. Patient Chart					
Patient Name: Kyle		Age: 4	Gender: M	Weight:	
Presenting complaint: chest pain, SOB					
Temp: 38.2	HR: 180	BP: 72/38	RR: 38	O ₂ Sat: 91%	FiO ₂ : R/A
Cap glucose:		GCS: (E V M)			
Triage note: 2 week hx intermittent fever, cough, SOB, body aches, vomiting. Now has difficulty walking.					
Allergies: none					
Past Medical History: none			Current Medications: none		

Section 2B: Extra Patient Information

A. Further History	
<p><i>Include any relevant history not included in triage note above. What information will only be given to learners if they ask? Who will provide this information (mannequin's voice, confederate, SP, etc.)?</i></p> <p>Info only given if asked: -no recent travel -immunizations up to date -mom is sick with a "cold"</p>	
B. Physical Exam	
<p><i>List any pertinent positive and negative findings</i></p>	
Cardio: no murmurs, sinus tachycardia	Neuro: Awake,
Resp: mild increased work of breathing, coarse crackles throughout	Head & Neck: normal oropharynx and tympanic membranes, no neck stiffness
Abdo: soft nontender	MSK/skin: pale, mottled skin
Other: pale, appears tired, lethargic	



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Section 5: Scenario Progression

Scenario States, Modifiers and Triggers				
Patient State/Vitals	Patient Status	Learner Actions, Modifiers & Triggers to Move to Next State		Facilitator Notes
LOC: lethargic, pale, toxic HR: 180 with weak pulse and sluggish cap refill BP: 72/38 RR: 38 Sats: 91% Temp: 38.2 Gluc: 3.2	<i>Pale, tachypneic, appears very tired, little movement and doesn't cry or smile</i>	<u>Expected Learner Actions</u> <input type="checkbox"/> Place child on cardiac monitor, apply O2 <input type="checkbox"/> Obtain IV, bedside glucose <input type="checkbox"/> Stat CXR, septic panel <input type="checkbox"/> Recognize hypotension and order IV fluid bolus 10-20cc/kg NS <input type="checkbox"/> order ECG	<u>Modifiers</u> -RN to prompt for dextrose if none given -No O2 placed >>O2 drops to 88% <u>Triggers</u> -post fluid bolus or 5 minutes passes >>clinical deterioration>>stage 2	
2. LOC: unresponsive HR: 198 and wide complex with a weak pulse BP: 68/24 RR: 48 Sats: 86%	Extremely drowsy, moans to sternal rub. Very weak peripheral pulses, cool and mottled skin.	<u>Expected Learner Actions</u> <input type="checkbox"/> Recognize wide-complex tachycardia on monitor <input type="checkbox"/> Place defib pads for synchronized cardioversion>>0.5J/kg then 2J/kg <input type="checkbox"/> Persistent tachypnea + CXR results interpreted for pulmonary edema >> consider BiPAP (call RT) or intubation, Lasix 1mg/kg <input type="checkbox"/> Consult Peds/PICU>>consider inotropes (milrinone, dobutamine), antiarrhythmics	<u>Modifiers</u> -Converts to NSR after 2 cardioversion attempts>>blood pressure improves -CXR results given after cardioversion -If no cardioversion by 5 minutes >> cardiac arrest -if no further respiratory support >> RN alerts to worsening tachycypnea>>cardiac arrest <u>Triggers</u> -Calls PICU/BiPAP>> end scenario	



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		<input type="checkbox"/> bedside EDE for pericardial effusion		
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Appendix C: Facilitator Cheat Sheet & Debriefing Tips

Include key errors to watch for and common challenges with the case. List issues expected to be part of the debriefing discussion. Supplemental information regarding any relevant pathophysiology, guidelines, or management information that may be reviewed during debriefing should be provided for facilitators to have as a reference.

- Viruses most commonly associated with myocarditis include Coxsackie virus, Adenovirus, Parvovirus B19, and Human Herpes Virus 6.
- Pathophysiology consists of three stages:
 - Myocardial cell direct viral injury
 - Autoimmune reaction leading to myocardial cell injury
 - Dilated cardiomyopathy
- Fulminant myocarditis is a distinct entity and is a sudden (< 3 days) onset of cardiogenic shock and is more often seen in infants.
- Due to nonspecific symptoms, most patients are initially misdiagnosed. Presenting symptoms include shortness of breath (69%), vomiting (48%), poor feeding (40%), URTI symptoms (39%), fever (36%), and lethargy (36).
- Physical exam often reveals tachypnea, tachycardia, cyanosis, hypoxia, crackles/rales, gallop, hepatomegaly, and peripheral edema. Workup recommended includes ECG, CXR, troponin, and POCUS to assess function. Inflammatory markers and Brain Natriuretic Peptide (BNP) lack sensitivity and specificity.
- Treatment consists of judicious fluid management, diuretics, afterload reducing inotropes, cardioversion, and anti-dysrhythmics. Mechanical ventilation and ECMO may be required to take work off of strained myocardium.

ECMO – consult PICU early in all cases to arrange for early transfer

References

1. Myocarditis and Pericarditis in the Pediatric Patient: Validated Management Strategies. EB Emergency Medicine Practice. 12 (7). 2015 (July)
2. <https://emergencymedicinecases.com/pediatric-respiratory-failure/>

