

MYOCARDITIS

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ED Conference

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A 6 yo previously healthy pt presents with cough, congestion, and decreased activity levels, which additional symptoms and PE findings are most suggestive of myocarditis?

- A) Tachycardia, fever, vomiting, and poor feeding.
- B) Afebrile, regular heart rate, and poor feeding.
- C) Tachypnea, wheezing, tachycardia, and fever.
- D) SOB, tachypnea, regular heart rate, and vomiting.

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Specific symptoms and physical examination findings	No. of patients (n = 62)
Most common presenting symptoms	
Shortness of breath	43 (69%)
Vomiting	30 (48%)
Poor feeding	25 (40%)
Upper respiratory symptoms	24 (39%)
Fever	22 (36%)
Lethargy	22 (36%)
Most common physical examination findings	
Tachypnea	37 (60%)
Hepatomegaly	31 (50%)
Respiratory distress	29 (47%)
Fever	22 (36%)
Abnormal lung exam	21 (34%)
Heart rate findings	
Normal heart rate	41 (66%)
Tachycardia	20 (32%)
Febrile and tachycardic	9 (45%)
Afebrile and tachycardic	11 (55%)
Bradycardia	1 (2%)

Other important History and PE findings:

- 1) The majority of patients required more than 1 visit within 2 weeks before being diagnosed with myocarditis (82%). The majority were diagnosed with a respiratory illness.
- 2) Respiratory complaints with evidence of circulatory problems: abnormal cardiac findings, hepatomegaly, or edema on exam should heighten concerns for myocarditis.
- 3) SOB with subsequent finding of tachypnea and associated respiratory distress are present in a majority of patients with myocarditis.
- 4) Remember to ask about medications and autoimmune disorders.

You are concerned your patient has myocarditis and order a CBC, CXR, EKG, and cardiac enzymes which results are most consistent with a diagnosis of myocarditis?

- A) WBC 20,000; RML infiltrate, sinus tachycardia, normal cardiac enzymes
- B) WBC 9,000, cardiomegaly, ventricular hypertrophy, elevated cardiac enzymes.
- C) WBC 15,000, pleural effusion, normal EKG, normal cardiac enzymes
- D) WBC 10,000, CXR normal, SVT, elevated cardiac enzymes.

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Table 6 Major findings on laboratory and radiographic analysis

Mean WBC count ($[\times 1000]/\text{mm}^3$)	11.4 (SD \pm 5.4)
Elevated troponin	7/13 (54%)
Elevated CK	16/22 (73%)
Elevated ESR	6/16 (38%)
Elevated CRP	4/15 (27%)
Abnormal EKG	59/59 (100%)
Sinus tachycardia	27 (46%)
Ventricular hypertrophy	24 (41%)
ST wave abnormality	19 (32%)
T wave abnormality	18 (31%)
Bundle-branch block	6 (10%)
Arrhythmia	4 (7%)
AV block	3 (5%)
Prolonged QT interval	3 (5%)
Abnormal CXR	53/59 (90%)
Cardiomegaly	37 (63%)
Pulmonary edema	9 (15%)
Pulmonary infiltrate	3 (5%)
Pleural effusions	1 (2%)
Other abnormality	3 (5%)
Abnormal echo	60/61 (98%)

WBC indicates white blood cell; AV, atrioventricular.

Further work up

- 1) Echo-often shows segmental wall abnormalities
- 2) Endomyocardial biopsy- is considered the gold standard for diagnosis, but is insensitive.
- 3) PCR and in-situ hybridization for viral genetic material
- 4) Cardiac MRI w/ gadolinium contrast and delayed enhancement images.

References

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