

A 9-year-old girl is brought to the emergency department due to a sudden onset of uncontrollable and continuous writhing and jerking of the arms and hands. One month ago, she had a sore throat that resolved spontaneously after a few days. During that time, she also had a low-grade fever with no chills. The patient takes no medications and her vaccinations are up-to-date. Physical examination shows a pericardial friction rub and subcutaneous nodules over the hands. Laboratory studies show an elevated erythrocyte sedimentation rate. Electrocardiogram shows diffuse PR depressions and ST elevations. Infection with which of the following organisms is the most likely cause of this child's symptoms?

- ☐ A. Coxsackievirus
- ☐ B. Epstein-Barr virus
- ☐ C. *Mycoplasma pneumoniae*
- ☐ D. Parvovirus B19
- ☐ E. *Streptococcus pneumoniae*
- ☐ F. *Streptococcus pyogenes*

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- ☐ A. Coxsackievirus [20%]
- ☐ B. Epstein-Barr virus [1%]
- ☐ C. *Mycoplasma pneumoniae* [0%]
- ☐ D. Parvovirus B19 [2%]
- ☐ E. *Streptococcus pneumoniae* [5%]
- ☒ F. *Streptococcus pyogenes* [72%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]

Acute rheumatic fever		
Epidemiology	<ul style="list-style-type: none">• Peak incidence: Age 5-15• Twice as common in girls	
Clinical features	Major	<ul style="list-style-type: none">• Joints (migratory arthritis)• ♥ (Carditis)• Nodules (subcutaneous)• Erythema marginatum• Sydenham chorea
		<ul style="list-style-type: none">• Fever• Arthralgias

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Clinical features	Major	<ul style="list-style-type: none"> • Joints (migratory arthritis) • ♥ (Carditis) • Nodules (subcutaneous) • Erythema marginatum • Sydenham chorea
	Minor	<ul style="list-style-type: none"> • Fever • Arthralgias • Elevated erythrocyte sedimentation rate/ C-reactive protein • Prolonged PR interval
Late sequelae	Mitral regurgitation/stenosis	
Prevention	Penicillin for group A streptococcal (<i>Streptococcus pyogenes</i>) pharyngitis	

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Acute rheumatic fever (ARF) should be suspected in a child with **pericarditis** (friction rub, diffuse ST elevations), **chorea** (continuous, irregular, and rapid irregular jerks), **subcutaneous nodules**, and elevated erythrocyte sedimentation rate following a history of **untreated sore throat** and fever. Diagnosis is made if the patient has 2 major Jones criteria; or 1 major and 2 minor criteria; or if either Sydenham chorea or carditis is present (Table).

Pharyngitis from *Streptococcus pyogenes* (group A *Streptococcus*) is often self-resolving, as seen in this patient. However, a 10-day course of oral penicillin is recommended to prevent ARF. Even in the absence of active pharyngitis, patients with ARF should still be treated with long-acting intramuscular **benzathine penicillin G** until adulthood. This treatment is meant to eradicate bacterial carriage to prevent recurrent ARF and

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(Choice A) Coxsackievirus is the most common organism responsible for pericarditis and myocarditis. It also causes a vesicular pharyngitis (herpangina) in young children. However, it would not cause the chorea or subcutaneous nodules.

(Choice B) Epstein-Barr virus (EBV) can cause general malaise, pharyngitis, cervical adenopathy, and splenomegaly. However, carditis is uncommon. EBV does not present with subcutaneous nodules or chorea.

(Choice C) *Mycoplasma pneumoniae* is an uncommon cause of bacterial pharyngitis. It is not associated with subcutaneous nodules, chorea, or carditis.

(Choice D) Manifestations of parvovirus B19 infection include arthralgias, arthritis, and myocarditis but not pharyngitis and chorea.

(Choice E) *Streptococcus pneumoniae* is the most common cause of bacterial pneumonia. However, it is rarely implicated in pharyngitis and not responsible for acute rheumatic fever.

Educational objective:

Untreated group A streptococcal pharyngitis can be complicated by acute rheumatic fever. This condition should be suspected in a child with sore throat, fever, pericarditis, erythema marginatum, arthritis, chorea, and subcutaneous nodules.

References:

1. [Sydenham's chorea in western Pennsylvania.](#)
2. [Prevention of rheumatic fever and diagnosis and treatment of acute](#)

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References:

1. Sydenham's chorea in western Pennsylvania.
2. Prevention of rheumatic fever and diagnosis and treatment of acute Streptococcal pharyngitis: a scientific statement from the American Heart Association Rheumatic Fever, Endocarditis, and Kawasaki Disease Committee of the Council on Cardiovascular Disease in the Young, the Interdisciplinary Council on Functional Genomics and Translational Biology, and the Interdisciplinary Council on Quality of Care and Outcomes Research: endorsed by the American Academy of Pediatrics.
3. Seminar on choreas.