

An 18-year-old woman comes to the physician with fever. She has had throat pain, fever, and malaise for the past 3 days. She has decreased her intake of solid foods due to pain with swallowing but has been able to drink liquids. The patient has no cough, abdominal pain, nausea, or vomiting. Her mother gave her leftover amoxicillin today and she then developed a rash over her body. She has no chronic medical problems and previously took amoxicillin without reaction. Temperature is 38.3 C (101 F), blood pressure is 110/70 mm Hg, pulse is 84/min, and respirations are 12/min. Examination shows erythematous tonsils that are 3+ bilaterally with exudates and diffuse bilateral cervical lymphadenopathy. A polymorphous, maculopapular rash is present on her entire body. Infection with which of the following is the most likely cause of this patient's symptoms?

- ☐ A. Adenovirus
- ☐ B. Coxsackie virus
- ☐ C. Cytomegalovirus
- ☐ D. Epstein-Barr virus
- ☐ E. Group A streptococcus
- ☐ F. Herpes simplex virus



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- ☐ A. Adenovirus [2%]
- ☐ B. Cocksackie virus [3%]
- ☐ C. Cytomegalovirus [3%]
- ☒ D. Epstein-Barr virus [75%]
- ☐ E. Group A streptococcus [18%]
- ☐ F. Herpes simplex virus [0%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]

Common oropharyngeal lesions in children	
Diagnosis	Clinical features
<b>Aphthous stomatitis</b> ("canker sores")	<ul style="list-style-type: none"><li>• Recurrent ulcers on <b>anterior</b> oral mucosa (lips, cheeks, mouth floor, ventrum of the tongue)</li><li>• No fever or systemic symptoms</li></ul>
<b>Herpangina</b>	<ul style="list-style-type: none"><li>• Vesicles &amp; ulcers on <b>posterior</b> oropharynx</li><li>• Fever</li></ul>
<b>Herpes gingivostomatitis</b>	<ul style="list-style-type: none"><li>• Vesicles &amp; ulcers on <b>anterior</b> oral mucosa &amp; around mouth</li><li>• Fever</li></ul>



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<b>Group A streptococcal pharyngitis</b>	<ul style="list-style-type: none"><li>• <b>Tonsillar</b> exudates</li><li>• Fever, anterior cervical lymphadenopathy</li></ul>
<b>Infectious mononucleosis</b>	<ul style="list-style-type: none"><li>• <b>Tonsillar</b> exudates</li><li>• Fever, diffuse cervical lymphadenopathy</li><li>• +/- Hepatosplenomegaly</li></ul>

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This patient with fever, fatigue, and pharyngitis developed a polymorphous rash after taking amoxicillin. The presentation is most consistent with infectious mononucleosis (IM), an infection most commonly caused by the Epstein-Barr virus. Infectious mononucleosis is transmitted from person to person through saliva and typically infects patients age 15-24. The classic presentation includes the triad of **exudative tonsillitis/pharyngitis, posterior or diffuse cervical lymphadenopathy, and fever.**

A rash can be seen with IM, but it is far more likely to occur after administration of **ampicillin or amoxicillin**. The post-antibiotic rash is typically **polymorphous** and **maculopapular**. Although the mechanism is not well understood, it is not considered to



- +/- Hepatosplenomegaly

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A rash can be seen with IM, but it is far more likely to occur after administration of **ampicillin or amoxicillin**. The post-antibiotic rash is typically **polymorphous and maculopapular**. Although the mechanism is not well understood, it is not considered to be a true drug allergy, and patients can receive the same antibiotic in the future.

Splenic enlargement is also variably present on examination. Even if the spleen is not palpable on initial presentation, most patients develop splenomegaly during the first couple of weeks of illness. Therefore, patients should **avoid sports for ≥3 weeks** due to the risk of splenic rupture. The symptoms of IM typically resolve with supportive management alone within several weeks although the fatigue may persist for several months.

**(Choice A)** Adenoviruses are frequent causes of upper respiratory infections and typically present with coryza, pharyngitis, tonsillitis, and conjunctivitis. Other manifestations include fever, malaise, headache, and abdominal pain. A rash after administration of amoxicillin is not seen with adenoviral infections.

**(Choice B)** Coxsackie virus can cause hand-foot-and-mouth disease and herpangina (vesicles on the hard palate). It generally does not produce a diffuse rash after antibiotic administration.

**(Choice C)** Cytomegalovirus is a less common cause of IM and tends to have a milder presentation.

**(Choice E)** Group A beta-hemolytic streptococci are responsible for 15%-30% of cases of pharyngitis in children. Group A streptococcal pharyngitis typically presents with fever, exudative pharyngitis, and enlarged anterior cervical lymph nodes. In younger children, abdominal pain and vomiting may also be present. Although the clinical manifestations of streptococcal pharyngitis are similar to those of infectious mononucleosis, diffuse cervical lymphadenopathy, the age of the patient, and appearance of a rash after administration of amoxicillin are characteristic of an Epstein-Barr virus infection.

**(Choice F)** Herpes simplex virus tends to cause vesicles and ulcers in the anterior portion of the mouth rather than in the posterior pharynx.



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**(Choice F)** Herpes simplex virus tends to cause vesicles and ulcers in the anterior portion of the mouth rather than in the posterior pharynx.

#### Educational objective:

Infectious mononucleosis is most commonly caused by the Epstein-Barr virus and presents with fever, fatigue, exudative pharyngitis, and diffuse cervical lymphadenopathy. A polymorphous, maculopapular rash frequently develops after administration of amoxicillin. Patients should avoid sports for  $\geq 3$  weeks due to the risk of splenic rupture.

#### References:

1. [Epstein-Barr virus infectious mononucleosis.](#)
2. [Cephalexin rash in infectious mononucleosis.](#)
3. [Azithromycin eruption in infectious mononucleosis: a proposed mechanism of interaction.](#)