

A 16-year-old girl comes to the emergency department with fever, joint pain, and a rash that started on her face this morning and has quickly spread down her body. She also has pain in her fingers and wrists. The patient feels tired but has no neck stiffness, nausea, or vomiting. She has one male sexual partner and uses condoms intermittently. Her immunization status is unknown but she does not think she has received many. Temperature is 38.2 C (100.8 F), blood pressure is 125/75 mm Hg, pulse is 86/min, and respirations are 14/min. Physical examination shows a blanching, erythematous maculopapular rash on the face, chest, back, and extremities that spares the palms and soles. Posterior auricular and suboccipital lymphadenopathy is present. The oropharynx is clear. Which of the following organisms is the most likely cause of this patient's symptoms?

- ☐ A. Epstein-Barr virus
- ☐ B. Measles virus
- ☐ C. *Neisseria gonorrhoeae*
- ☐ D. *Rickettsia rickettsii*
- ☐ E. Rubella virus
- ☐ F. *Treponema pallidum*
- ☐ G. Varicella-zoster virus

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- ☐ A. Epstein-Barr virus [7%]
- ☐ B. Measles virus [20%]
- ☐ C. *Neisseria gonorrhoeae* [12%]
- ☐ D. *Rickettsia rickettsii* [3%]
- ☒ E. Rubella virus [53%]
- ☐ F. *Treponema pallidum* [3%]
- ☐ G. Varicella-zoster virus [2%]

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Explanation:

User Id:

Rubella (German measles)	
Clinical presentation	<ul style="list-style-type: none">• Congenital<ul style="list-style-type: none">○ Sensorineural hearing loss○ Cataracts○ Patent ductus arteriosus• Children<ul style="list-style-type: none">○ Fever○ Cephalocaudal spread of maculopapular rash• Adolescents/Adults<ul style="list-style-type: none">○ Same as children + arthralgias/arthritis

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Diagnosis	<ul style="list-style-type: none"> • Serology
Prevention	<ul style="list-style-type: none"> • Live attenuated rubella vaccine

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This patient has a maculopapular rash with a cephalocaudal spread, postauricular and suboccipital adenopathy, and arthralgia. These findings are consistent with **rubella** infection. After a prodrome of mild fever, lymphadenopathy, and malaise, a blanching, erythematous, **maculopapular rash** erupts on the face and **spreads caudally** within 24 hours, sparing the palms and soles. Adolescents, particularly females, may have **polyarthralgia** and/or **arthritis**. Although most symptoms resolve in a few days, joint pain can last up to a month.

Rubella is no longer endemic in the United States due to widespread vaccination, but sporadic or imported cases do occur. **Vaccination** with the live attenuated rubella vaccine is important as active infection in women during the first trimester of pregnancy can cause congenital rubella syndrome.

(Choice A) Fever and cervical lymphadenopathy are features of infectious mononucleosis, but exudative pharyngitis is usually prominent. The presence of a maculopapular rash is less common unless there is a history of beta-lactam antibiotic administration.

(Choice B) The prodrome and rash of measles are very similar to rubella. However, measles usually features higher fever (eg, >40 C [104 F]), cephalocaudal spread of the rash over multiple days, and cervical rather than posterior auricular or suboccipital adenopathy. In addition, arthritis does not occur in measles.

(Choice C) Disseminated gonococcal infection can present with rash, fever, and

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(Choice C) Disseminated gonococcal infection can present with rash, fever, and polyarthralgias in a sexually active patient. However, the rash of disseminated gonococcus is usually vesiculopustular and rarely involves the face.

(Choice D) Rocky Mountain spotted fever is characterized by a febrile prodrome followed by an erythematous macular rash that starts over the wrists and ankles, involves the palms and soles, and spreads centrally.

(Choice F) Secondary syphilis usually presents with fever and a maculopapular rash involving the entire trunk and extremities. It includes the palms and soles, which are spared in rubella.

(Choice G) The rash of varicella (chickenpox) follows a prodrome of fever and malaise. In contrast to rubella, it is vesicular, appears in successive crops, and crusts after several days.

Educational objective:

Rubella presents with low-grade fever, a maculopapular rash with rapid cephalocaudal spread, and posterior auricular and suboccipital lymphadenopathy. Adolescents, especially females, may also present with arthralgias or arthritis that can persist after the rash resolves.

References:

1. [Rubella.](#)
2. [Common childhood viral infections.](#)