

A Case of Pharyngitis

by

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Case Presentation

Jason Hornbuckle is not a happy little boy. For the past 12 hours he has complained of pain when he swallows, has a headache, and has vomited twice. His mother decides to take the seven-year-old to his pediatrician. Upon examining Jason, the doctor finds that Jason's pharynx, tonsils, and uvula are swollen and erythematous (red) and his tonsils are studded with white areas of exudate. He is febrile (temperature 40.3 degrees centigrade) with tender, bilateral, cervical lymphadenopathy (enlarged lymph nodes).

A Complete Blood Count (CBC) performed on a sample of Jason's blood reveals that he has a leukocytosis (increased number of WBCs) due to a neutrophilia (increased number of neutrophils).

Jason is diagnosed as having acute bacterial pharyngitis and treated with phenoxymethyl penicillin for five days. A throat swab taken before starting antibiotics grows beta-hemolytic streptococci (Group A). After three days of treatment, Jason's temperature has returned to normal and he has made an uneventful recovery.



Questions

1. The pediatrician described Jason's pharynx, uvula, and tonsils as swollen and red. What are the four *cardinal signs of inflammation*, and how does each relate to changes in the blood vessels at a site of inflammation?
2. The exudate on Jason's tonsils consisted primarily of neutrophils, and the CBC that was performed indicated that the number of neutrophils in his circulation was increased. What role do neutrophils play in the resolution of a bacterial infection? In the course of your answer explain terms such as *adhesion molecules*, *diapedesis*, *chemotaxis*, *opsonization*, and *phagocytosis*.
3. Jason's physician noted that Jason's cervical lymph nodes were enlarged, a condition referred to as lymphadenopathy. Describe the structure and function(s) of lymph nodes, and list the other organs and tissues that comprise the lymphatic system.
4. Describe the anatomic location and function of tonsils.
5. What is the mechanism by which fever is induced and what are its benefits in terms of combating an infection?
6. What is the mechanism by which the number of circulating white blood cells is increased?

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