

Case 11

E.C. is a 15-year-old high school student who presented to his local pediatrician with severe sore throat, headache and fever. He was in his usual state of excellent health until one week prior to presentation when he noted the onset of sore throat and malaise. During the week the sore throat progressively worsened and he felt feverish. Four days ago he noted the onset of severe headache that was only slightly relieved by aspirin. He also noted swelling in his neck. Physical exam revealed a muscular young man in distress due to pain. His temp was 104°F, his BP 110/70, pulse 90 and respiratory rate 16. His neck was supple and he had visible anterior and posterior cervical nodes that were 2-3 cm in diameter, firm, and slightly tender. His chest and cardiac exams were normal. His abdominal exam was remarkable for a palpable spleen tip felt 4 cm below the left costal margin.¹ The neurologic exam was negative. There was no arthritis or edema. Pertinent laboratory results included a Hct 45%, WBC 16 (X 10⁹/l) with 40% atypical lymphocytes (see Fig. 1), 40% granulocytes and 20% monocytes. A pharyngeal swab for Group A *Streptococcus* was negative. A heterophile test was positive. IgM and IgG antibodies to capsular EBV antigens were detected. HIV serology was negative. The diagnosis of infectious mononucleosis was made and the patient was treated with supportive therapy alone. After several days the symptoms abated and the patient was entirely normal within one month.

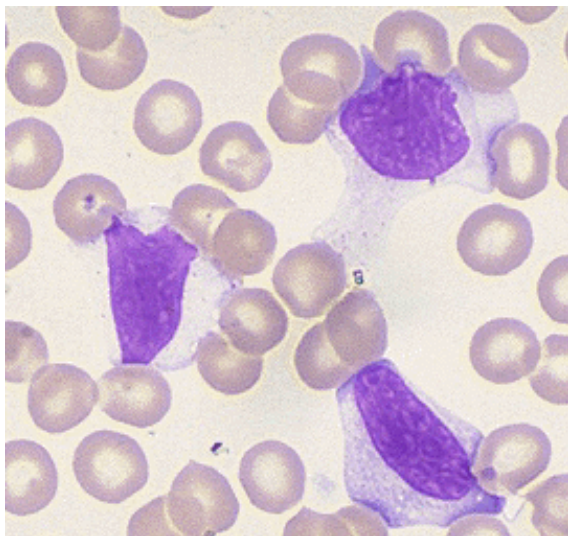


Fig. 1. Atypical, or reactive, lymphocytes vary greatly in size and shape. The shape of the nucleus ranges from elliptic to cleft to folded. The chromatin patterns appear similar to those of a blast and faintly stained multiple nucleoli are visible. The cytoplasm may range from large, deeply basophilic, and abundant to unevenly stained and granular.

¹The ability of the examiner to feel (palpate) the spleen on physical examination almost always represents an abnormal finding, and is indicative of an enlarged spleen.

²IgM from the patient's serum reacting with erythrocytes from other (hetero) species

Questions for Case 11

(1) Over 90% of the world's population is infected with EBV; the most common clinical presentation of symptomatic EBV infection is infectious mononucleosis. Name at least three other clinical disorders associated with EBV infection.

Case 11, cont'd

(2) What cells can be infected by EBV and what is the known mechanism of viral tropism and entry into these cells? How does infection of these cells typically result in a positive heterophile test?

(3) What is the phenotype and function of the atypical lymphocytes seen in mononucleosis? In what other clinical scenarios might you expect to see these cells?

(4) Patients undergoing renal or bone marrow transplantation are susceptible to EBV-induced malignancy. What is the nature of this malignancy and what is the evidence that depressed functions of T cells account for this susceptibility to malignant growth.

(5) EBV-encoded small RNAs (EBERs) are nonpolyadenylated, untranslated RNAs that exist most abundantly in latently EBV-infected cells. It was recently demonstrated that EBERs are recognized by the intracellular dsRNA sensor, RIG-I. What are some components of the early recognition machinery for viral infections?

(6) The patient's spleen was enlarged. What major complication can arise from this?