

# A QUESTION

Castro Bonny, PGY-I

Family Medicine

A 7-year-old male is brought to the emergency room by his mother due to left knee swelling and pain after he fell while playing soccer four days earlier. The patient has been complaining of pain at the knee and has been walking with a limp for the past 2 days. On physical examination the patient appears tired but in no acute distress. The left knee is swollen, erythematous and tender, range of motion is painful and limited. An abrasion is noted inferior to the patella. All other physical exam findings are within normal limits. Vitals Signs and labs are done and recorded below.

<b>Vital Signs</b>	<b>Laboratory</b>	
<b>T- 39 C</b>	Glucose: 90	WBC (X10 <sup>3</sup> /microliter): 18.6
<b>HR- 95</b>	Sodium: 139	Neutrophils(%): 73
<b>RR- 21</b>	Potassium: 4.0	CRP: 15 mg/L
<b>O2 sat: 97</b>	Chloride: 100	
	CO2: 26	

Septic arthritis is suspected, and a knee arthrocentesis is performed. Which of the following results is the most consistent with the suspected diagnosis?

	WBC (cells /mm <sup>3</sup> )	Neutrophils (%)	Glucose	Appearance	Crystal
A	30,000	60	60	Yellow	Positive
B	75,000	90	30	Yellow	Negative
C	45,000	65	91	Yellow	Negative
D	1000	60	88	Red	Negative
E	200	15	90	Clear	Negative

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**B** is the correct answer; the aspirated joint fluids that are the most consistent with septic arthritis include: WBC greater than 50,000 with predominance of Neutrophils often above 90%, Glucose less than 40. While these findings are not diagnostic and neither sensitive nor specific for bacterial septic arthritis, they do support the diagnosis in combination with history and physical exam. Additionally, removal of the fluid does remove the pressure on the joint and does provide some comfort.

**A and C** are not the correct answers. They resemble more closely to inflammatory effusions including but not limited to Rheumatoid arthritis or lupus. They have moderately elevated WBC with neutrophil predominance but not as significant as in an infectious cause. The crystals seen in answer A may indicate a crystal-induced arthritis.

**D** is not the correct answer. It resembles more closely to hemarthrosis. It has mildly elevated WBC and is red in color which is more consistent with blood in the joint.

**E** is not the correct answer. It resembles more closely to normal synovial fluids. It has WBC less than 200, lower percent of neutrophils, while glucose is similar to that of the patient's normal body levels and it is clear in color.

Knee Arthrocentesis: <https://www.nejm.org/doi/full/10.1056/NEJMvcm051914>

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