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**Clinical Conundrum:**

Are severely immunocompromised patients capable of mounting a diagnostic leukocytic response to acute infection?

**Background:**

Complete blood counts (often with cytologic differentials) and body fluid cytology studies are commonly ordered by physicians to assess for leukocytosis. Leukocytosis is one sign of humans' intrinsic inflammatory response, and can serve as a helpful diagnostic adjunct in the setting of suspected infection. However, for those with suppressed immune systems (HIV patients, transplant or rheumatoid patients on chronic immunosuppressive therapy and, to a lesser extent, the elderly), this ability to mount an appropriate inflammatory response may be impaired. Thus, the utility of routine test results negative for leukocytosis in these patients must be called into question.

**Findings:**

- 1.) **Immunocompromised patients are at increased risk of infection and are less likely to manifest signs, symptoms, and laboratory abnormalities** associated with the inflammatory response to infection. Immunocompromised patients may have fever as their only presenting feature of infection.
- 2.) **Blood, urine, and/or body fluid cultures should be drawn in a febrile immunocompromised patient and, if an indwelling catheter is suspected as the source of possible infection, cultures should be drawn simultaneously** from the catheter and a peripheral vein.
- 3.) Negative routine diagnostic tests such as fluid cytology and chest x-ray **do not rule out infection** in the immunocompromised patient.
- 4.) **Empiric, broad-spectrum antibiotics should be started promptly in a febrile, immunocompromised patient**, regardless of the presence of leukocytosis on routine lab testing. Antibiotic coverage should be narrowed once a causative organism is identified. If no causative organism is identified, and the patient **remains febrile after 3 days, antifungal therapy should be added**. Antimicrobial therapy should be continued until the fever and/or immunocompromised state resolve.

**Conclusions:**

Immunocompromised patients may not manifest many of the typical signs and symptoms of infection, including leukocytosis on routine studies. As a result, the utility of many routine diagnostic adjuncts in the acute care setting must be called into question in this patient population. Index of suspicion for infection should be high in a febrile, immunocompromised

**References**

- 1.) Adams, James G. "Infections in the Immunocompromised Host." Emergency Medicine, 173, 1458-1464.e1
- 2.) Thomas E. Andreoli, Ivor J. Benjamin, Robert C. Griggs and Edward J. Wing. "Infections in the Immunocompromised Host". Andreoli and Carpenter's Cecil Essentials of Medicine, Chapter 109, 1028-1033
- 3.) Coburn B. Morris AM. Tomlinson G. Detsky AS. JAMA. 308(5):502-11, 2012 Aug 1.

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patient, regardless of the presence of leukocytosis. In these patients, fluid cultures and appropriate anti-microbial therapy should be initiated promptly.

#### **References**

- 1.) Adams, James G. "Infections in the Immunocompromised Host." Emergency Medicine, 173, 1458-1464.e1
- 2.) Thomas E. Andreoli, Ivor J. Benjamin, Robert C. Griggs and Edward J. Wing. "Infections in the Immunocompromised Host". Andreoli and Carpenter's Cecil Essentials of Medicine, Chapter 109, 1028-1033
- 3.) Coburn B. Morris AM. Tomlinson G. Detsky AS. JAMA. 308(5):502-11, 2012 Aug 1.