



### To Draw or Not to Draw: Drawing Blood Cultures From a Potentially Infected Port Site

**Q**UESTION: Should blood cultures be drawn from an unaccessed implanted vascular access device if signs or symptoms of infection are apparent over the port site?

**A**NSWER: Evaluation of patients with cancer who are febrile should be conducted with particular attention directed to the most frequent sites of infection, including the mouth, lungs, soft tissues, and urinary and gastrointestinal tracts (Pizzo, 1999). Patients who are immunocompromised may present with fever and no localizing symptoms (e.g., erythema over a port site) and no evidence of a specific site of infection. A complete history and physical examination should be performed, as well as a complete blood cell count, cultures of blood and urine, and a radiographic chest film, with stool and oropharyngeal cultures when indicated (Pizzo). Further specific studies are necessary when patients' presenting symptoms warrant additional examination. This may include lumbar puncture or additional radiographic films.

Because vascular access devices alter the skin defense barrier of patients who are immunocompromised, their presence increases the risk for infection (Pizzo, 1999). Although these devices can greatly improve vascular access for patients with cancer, they must be considered as a potential source of infection in patients who are febrile and immunocompromised. Totally implanted intravascular devices (IVADs) have the lowest reported rate of catheter-related bloodstream infections, possibly because they are located beneath the skin without entry points for microorganisms when not cannulated (Pearson & Hospital Infection Control Practices Advisory Committee [HICPAC], 1996).

Patients with IVADs who are immunocompromised can present with a local port-pocket infection or a catheter-related bloodstream infection. Comprehensive clinical assessment is necessary to determine the extent of the infection. Port-pocket infections are defined as infections that may contain purulent fluid in the subcutaneous pocket that could be associated with necrosis of the overlying skin, as well as erythema and tender-

ness over the port site, without a concomitant bloodstream infection (Mermel et al., 2001; Pearson & HICPAC, 1996; Silberzweig, Sacks, Khorsandi, & Bakal, 2000). If superficial exudate can be aspirated and cultured from the port pocket, this should be done in an attempt to identify the organism and tailor antibiotic therapy appropriately (Wickham, Purl, & Welker, 1992). The catheter tunnel also should be inspected and palpated, as a tunnel infection may be present in the absence of a port-pocket infection.

Drawing blood cultures from IVADs (without evidence of infection) is necessary in patients who are febrile and immunocompromised; in fact, two sets of blood cultures through the central venous catheter, along with a peripheral set, should be obtained using a quantitative or semiquantitative culture method (Mermel et al., 2001). A positive blood culture result drawn through a catheter requires clinical interpretation, but a negative result is useful for excluding catheter-related bloodstream infection (Mermel et al.). However, if patients present with signs and symptoms of port-pocket infections, obtaining cultures through unaccessed devices is not recommended (Rumsey & Richardson, 1995; Wickham et al., 1992). By placing a needle through an infection, the possibility exists of tracking infectious material through the skin into the port septum. This can allow microorganisms to enter the bloodstream, and a systemic infection may result (Rumsey & Richardson). However, if port-pocket infections occur while the ports are cannulated already, then leaving the needle in place to obtain catheter cultures and administer IV antibiotics is acceptable (Wickham et al.).

Treatment of uncomplicated port-pocket infections requires meticulous site care and either oral or IV antibiotics for 10–14 days (Mermel et al., 2001; Rumsey & Richardson, 1995). Common pathogenic organisms seen with port-pocket infections include staphylococcus aureus, coagulase-negative staphylococci, and gram-negative bacilli (Mermel et al.). It may not be necessary to surgically remove the implanted device (Raad & Bodey, 1992). However, the device must be removed for all candida infections, port abscesses, and complicated infections, and a course of appropriate antibiotic therapy should be started (Mermel et al.).

Reinsertion of IVADs should not be attempted until systemic antibiotic therapy has begun and repeat blood cultures show nega-

tive results (Mermel et al., 2001). Although IVADs have helped to provide patients with cancer with needed infusion therapy, they are not without risks. Prompt assessment of patients who are febrile and immunocompromised is essential, with particular attention paid to likely sites of infection. Assessment of central venous catheter sites is crucial, and blood cultures should be obtained to determine the presence of infectious microorganisms and identify appropriate antibiotics for therapy. Patients with port-pocket infections require expert clinical assessment and should not have cultures drawn directly from the unaccessed port septum itself. Instead, clinicians should rely on peripheral cultures only. The possibility of seeding the bloodstream of patients who are immunocompromised with microorganisms by accessing a port with signs or symptoms of infection should be avoided.

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