DEMONSTRATION OF CANDIDA 'N BLOOD SMEARS

In the study, Candida sepsis associated with various conditions of altered host resistance and with use of intravenous catheters is well documented in the literature. However, as pointed out by Portnoy et al. (N Engl J Med 285:1010-1011, 1971), it is often not recognized in individual patients. Thus, it is clear that early detection of catheters is important. In addition, other fungal infections by demonstration of organisms in blood smears, as these authors reported in two patients with candida sepsis, could be a potential risk. In these patients the organisms were detected in blood drawn through intravenous catheters and from a peripheral vein on one occasion. The authors expressed uncertainty, however, about the importance of organisms that they found in catheter blood since these may have been contaminants communicating the catheter. Other authors have also been skeptical on this point.5

Our purpose in writing this letter is to describe autopsy findings in two patients suggesting that detection of candida organisms in blood smears obtained via intravenous catheters may, contrary to previously expressed doubts, have special consequence for patient management and for the pathogenesis of candida sepsis in patients undergoing prolonged intravenous therapy.

Both our patients received hyperalimentation with parenteral nutrition, a procedure previously noted to be associated with a high incidence of candida. Both patients had catheter sepsis during life and disseminated inflammatory lesions containing yeasts at autopsy. One patient was an adult who underwent colectomy for toxic megacolon due to ulcerative colitis, and in whom a postoperative wound infection containing candida developed. The second patient was a newborn infant on whom an ileal resection was performed as treatment of intestinal perforation caused by meconium ileus.

The autopsies revealed recent and organizing thrombus material at the catheter tips and on the walls of the superior vena cava right atrium in the area subpedito effluent from the catheters. Most notably, yeast forms and pseudohyphae were found to be growing in the catheter-related thrombus material (Fig. 1). Organisms were also seen within the wall of the superior vena cava in the patient with ulcerative colitis.

We have concluded from these findings that catheter-related thrombus may be a covered site for proliferation of candida, perhaps especially in patients receiving hyperalimentation with casein hydrolysate since these solutions have been shown to enhance growth of candida in vivo. Furthermore, it is conceivable that blood drawn through an intravenous catheter will be the most reliable way to demonstrate candidiasis when the organisms are growing in a thrombus located near the catheter tip. Finally, although removal of the catheter is often adequate to control candidiasis, our findings suggest that a continuing source for dissemination of the organisms may be left behind in the bloodstream when there is a catheter-related thrombus.

Figure 1. Thrombus in Superior Vena Cava (X20), Showing Outline of Catheter (G)

The inset (X600) shows yeast and pseudohyphae within the thrombus.