Rising Incidence of Catheter-Related Bacteremia/Fungemia

Recently the incidence of catheter-related bacteremia/fungemia has increased with the common use of indwelling catheters placed in the central veins. Banerjee et al reported that hospital-acquired primary bloodstream infections, particularly those caused by gram-positive cocci or Candida species, increased dramatically over the period from 1980 to 1989. They described that one of the main reasons for the increase of such infections was the increase in the use of indwelling catheters (1). Beck-Sauge et al also suggested that nosocomial fungemia frequently occurs with parenteral nutrition (2).

It is considered that the reasons for the increase in catheter-related bloodstream infections include not only the general increase in the use of indwelling catheters, but also their application even to patients with poor conditions. In the past, central venous catheters were usually inserted only in patients of relatively good condition and for only a short period, for example, during the acute phase of myocardial infarction, or after gastrointestinal surgery. At present, catheters are used also in chronically ill patients including aged, emaciated, and immunocompromised hosts and they are often placed for a long duration. The relative increase of the ratio of such compromised hosts with indwelling catheters for an extended period may be another reason for the increase in incidence of catheter-related infections.

Another important point of catheter-related bacteremia/fungemia is its effect on the prognosis of patients. Inoue et al found no improvement in clinical symptoms could be obtained simply by the removal of the catheter in most of the patients, particularly in patients with MRSA bacteremia (3). Our unpublished data revealed that indwelling catheters had been inserted in more than 80% of patients with MRSA bacteremia and that catheter tips were considered to be the foci of bacteremia in about half of these patients. Only 4 of the 21 patients were improved by the removal of the catheter alone, 5 patients died in spite of adequate antibiotic therapy, and another 5 died before establishment of the definite diagnosis.

In septic patients with neutropenia, antibiotics are usually administered before a definite diagnosis has been established. Such empirical therapy is recommended because the mortality of infections associated with neutropenia is high if left without immediate antibiotic therapy. In these cases, β-lactam antibiotics which are especially effective against *Pseudomonas aeruginosa* are used, because gram-negative bacilli including *P. aeruginosa* are the commonest pathogens of infections complicated with neutropenia. Recently, however, an increase in the incidence of infections by gram-positive cocci or fungi has been noted also in neutropenic patients. Infectious Diseases Society of America suggested that β-lactams should be chosen in the initial antibiotic therapy for febrile patients with neutropenia, and vancomycin should be added in patients suspected of infections by MRSA, for example those who have central venous catheters (4). From our experience, MRSA is the most common pathogen in patients with bacteremia complicated with neutropenia, particularly in those with inserted central venous catheters. Neutropenic patients complicated with MRSA bacteremia often die before a definite diagnosis has been established (5). These findings indicate it is necessary to develop new regimens for empirical antibiotic therapy in febrile neutropenic patients which take into account the rising incidence of catheter-related infections.

Catheter-related fungemia, in particular when caused by Candida species, was considered to be improved by the removal of the catheter alone, and it was thus unnecessary to administer antifungal agents. However, the study by Inoue and coworkers published in this Journal indicated that many of the catheter-related fungemia require therapy with antifungal agents (3). Klein and Watanakunakorn described that fungemia of a duration of longer than 72 hours or with evidence of endophthalmitis requires amphotericin B therapy, and that more than half of the total cases of fungemia fall into this category (6). Antifungal agents should be more readily used in patients suspected of catheter-related fungemia today, because many antifungal agents which are less toxic than amphotericin B are on the market.

In cases of catheter-related infections, the causative pathogens are not always isolated, and there are some cases in which the infections are diagnosed by the clinical improvement following the catheter removal (3). Taking into account the high incidence of catheter-related bacteremia/fungemia, we should consider the possibility of such infections when we examine febrile patients with indwelling catheters.

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References

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