Fungi isolated from blood is increasing both in Japan and the United States, probably due to the increase of immunocompromised patients. Candida species are the forth commonest isolate from blood in the National Nosocomial Infections Surveillance (NNIS) system (1) and the species associated with candidemia have changed over the past decade (2). Most candidemia occurs in high risk patients, such as patients with acute lymphocytic leukemia, treatment with vancomycin and/or imipenem and in critical-care units, from colonized Candida spp. as endogenous infection. However, exogenous infection could occur as nosocomial infection from medical staff to patients, which was proved by karyotype analysis (3).

See also p 707.

Rapid detection of fungi from blood is crucial for diagnosis and particularly important for the improvement of survival rates. Lysis centrifugation and BacT/Alert are very sensitive methods (4, 5). Serological diagnosis is also useful for rapid detection of β-glucan and mannan (major cell-wall polysaccharides of Candida spp.) by Fungitex G test and Pastorex Candida, respectively (6). Fungitex G test is the most sensitive serological method for fungemia and may be useful for monitoring the response of this infection to antifungal therapy (7). Enolase antigen could be another antigen for rapid detection of candidiasis (8). The modern technique using polymerase chain reaction (PCR) is promising method to detect DNA of Candida spp. It is a rapid and relatively simple technique in order to create millions of identical copies of DNA sequence of interest. Genes coding for rRNA are considered suitable for PCR detection as rDNA genes are present in multiple copies and conservation of sequence has been identified (9). A diagnostic assay is reported to amplify a sequence from 18s rDNA gene that is present in 25 different types of medically important fungi (10). However, the method for extraction of fungal DNA could be modified to improve the sensitivity of PCR for the detection of fungi from blood.

Organ transplantation is becoming more common recently and it is also one of the important risk factors. Nieto-Rodriguez et al reported relatively low incidence of candidemia (1.4% of adult liver transplant recipients, a median of 25 days after transplantation) and a high mortality rate of candidemia (the overall mortality is 81% and 71% of these deaths were related to candidemia) (11). Hyperglycemia and multiple administration of antibiotics are predisposing factors of developing candidemia, and development of candidemia shortly after abdominal surgery, elevation of GOT, high white blood cell count, and low platelet count are associated with a high mortality rate.

Central venous catheterization is one of the most common invasive vascular procedures and catheter related fungemia has a tremendous impact due to the ubiquitous use of intravenous hyperalimentation (IVH) and consequent morbidity and even mortality. The risk factors for candidemia in cancer patients were analyzed, and central catheterization, positive peripheral cultures for Candida spp. and neutropenia were significant risk factors (12). C. parapsilosis is an important isolate in catheter-related fungemia.

Treatment of candidemia is also important to improve its survival rate. After fluconazole was introduced to clinical use in 1989 in Japan, the therapy became easier than before introduction and the incidence of an isolated strain has changed. Nguyen et al evaluated the morbidity and mortality of Candidemia in 427 consecutive patients in the prospective study and the mortality rate was 34% (13). The mortality rate for patients with catheter-related candidemia in whom the catheters were retained was significantly higher than that of patients in whom the catheters were removed (41% vs 21%, p<0.001). Furthermore, low-dose amphotericin B (total dose equal or less than 500mg) was as efficacious as high-dose amphotericin B (total dose more than 500mg) and fluconazole was as efficacious as amphotericin B. Rex et al performed a randomized comparative study of antifungals for the treatment of candidemia in non-neutropenic patients (14). Fluconazole and amphotericin B were not significantly different in their efficacy in treating candidiasis. However, there is a great concern of increasing resistant Candida strains against azoles. Infection caused by C. glabrata and C. krusei should not be treated by fluconazole.

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References


