



Skin, eye and heart involvement in candidemic patients

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Introduction

Candidemia is a major cause of nosocomial bloodstream infections, especially in ICUs and hematology-oncology departments. Due to lack of specific early diagnostic tests, it can cause high mortality rates. There are no specific symptoms or signs of candidemia. The clinical manifestations of candidemia vary from minimal fever to severe sepsis. *Candida* spp can easily spread to various organs and tissues, such as eyes, skin, joints and bones, central nervous system and heart by hematogenous way.

Clinical guidelines on the management of invasive candidiasis recommend to check for any organ involvement in candidemic patients, such as endocarditis and endophthalmitis. Unfortunately, to perform an ophthalmological examination and echocardiography is not possible in each case regarding to patient's worsened clinical condition, especially in critically ill patients.

We aimed to evaluate the frequency of skin, eye and heart involvement, and their relationship with mortality in candidemic patients.

Materials and Methods

- This study was performed in five tertiary care hospitals in Turkey. During 1st January and 31st December 2012, all consecutive candidemia patients from five centers were prospectively screened and followed by an infectious diseases specialist.
- Clinical characteristics of the patients and microbiological features of the isolates were recorded. Skin lesions were evaluated by an infectious diseases specialist.
- Ophthalmological examination was performed by an ophthalmologist, and cardiac involvement was evaluated with transeusophageal/transsthoracic echocardiography by a cardiologist.
- The percentages of performing examination of organ involvements in clinical settings were detected, and the reasons not to perform was evaluated using a form.
- Besides the risk factors for any organ involvement in candidemic patients, the association between any organ involvement and mortality was using SPSS version 17.0 software package.
- *Candida* strains were typed and tested for antifungal susceptibility in Microbiology Laboratory of each center.

Results

- Totally 81 candidemia patients were enrolled during the study period. Male/Female ratio was 1,18. Median age of patients was 60 years (SD 60,63±19,71). Twentyfive of patients were in ICU.
- Skin examination was done in all patients, and in 17 (21%) patients, a skin lesion related to candidemia was detected. The most seen skin lesions were nodular lesions (12 cases), followed by pustular lesion (6 cases), and petechial lesions (2 cases). There was no association between skin lesion related to candidemia and mortality ($p=0.171$). The delay to start an antifungal therapy (>48 hours) was found to be related with higher mortality rate ($p=0.031$).
- Ophthalmological examination was performed in only 31 patients (38.3%) because of its difficulty in ICU patients. Eye involvement was seen in 22 of 31 patients (71%). Endophthalmitis was the most frequent finding (20 cases), followed by Roth spot and vitritis (11 cases). Presence of endophthalmitis was associated with higher mortality rate ($p=0.009$). All patients with eye involvement died.
- Echocardiography was performed in 66 patients (81.5%), and infective endocarditis was detected in 4 patients (6%). All patients with infective endocarditis also died, but the number of patients was not enough for statistical analysis.
- There was at least one organ involvement in 33.3% patients (27 cases). Seventynine percent of the patients had a central venous catheter. Presence of a central venous catheter was associated with an organ involvement ($p=0.009$). Early removal of catheter was associated with lower mortality rate ($p=0.03$).
- Identification of *Candida* strains was performed in 69 strains (85%). The most seen *Candida* species was *C. parapsilosis* (42%), which followed by *C. albicans* (33.3%), *C. tropicalis* (7.2%), *C. glabrata* (7.2%) and other species (10.1%; *C. holmii*, *C. krusei*, *C. kefyr*, *C. pelliculosa*, and *C. sake*).

Conclusions

- In candidemic patients, organ involvements should be evaluated carefully, especially in patients with central venous catheter. Early removal of catheter is seen as a life-saving method in candidemic patients.
- Ophthalmological examination might be difficult to perform in ICU patients, but the presence of endophthalmitis is related to higher mortality rate. Therefore it should be performed in all patients.
- The percentage of cardiac involvement is not much higher as other organ involvements but still leads to higher mortality rate. It should be evaluated carefully in all candidemic patients using TTE/TEE.
- Skin lesions, even though they are not related with higher mortality, can be an early clinical finding to detect candidemia for beginning appropriate empirical antifungal therapy. The delay in antifungal therapy is found to be associated with higher mortality.