

Candidiasis in Cancer Patients

Pages with reference to book, From 191 To 192

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Abstract

One hundred clinical specimens from hospitalized cancer patients were examined microscopically for evidence of yeast cells and cultured for Candida colonization. Candida cells were observed microscopically in both unstained and Gram-stained preparations and culture in 60% of specimens (JPMA 47:191, 1997).

Introduction

More than 81 species of Candida are known, but Candidiasis is caused most commonly by Candida albicans¹. Under normal conditions, members of Candida family are found in small numbers as a commensal of skin, mouth², vagina, sputum, urine and stool and disease results only when a major change in normal flora or a disturbance of normal immune response occurs. Clinically, the disease may be acute, subacute, chronic or episodic. The infection may be localized to mouth, throat, skin, scalp, vagina³, fingers, nails, bronchi or become systemic as in septicemia, endocarditis and meningitis. Candidiasis can occur in all age groups but is most common in the newborns and the elderly. In healthy individuals, Candidiasis usually is a result of a damage in the epithelial barrier function. It occurs almost exclusively in debilitated patients whose normal defense mechanisms are impaired⁴. A patient with cancer may be immunocompromised because of the underlying malignancy or anticancer therapy. Specific malignancies may be associated with immune deficit that predisposes to infection with a particular pathogen. Therapy with corticosteroids or cytotoxic drugs and localized or widespread irradiation result in further deterioration of the host defense mechanism. Cancer patients thus remain vulnerable to a wide variety of infections. The infectious complications may be life threatening and may limit the benefits of anticancer therapy. Control of infections is thus important to reduce morbidity and mortality in cancer patients⁵. This study was conducted to determine the spectrum of Candidiasis in cancer patients.

Material and Methods

One hundred clinical specimens were obtained from hospitalized cancer patients to detect yeast cells and cultured for Candida. The specimens obtained for laboratory identification were urine, throat swab, blood, sputum, stool, pus and high vaginal swabs (HVS). A smear from each specimen and of deposit of centrifuged specimen of urine was prepared and examined microscopically as unstained and Gram-stained preparation for the presence of small, round to oval thin walled clusters of budding yeast cells (blastoconidia) and branching pseudohyphae. The specimens were inoculated onto Sabouraud's dextrose agar and incubated at room temperature for 48 hours. Creamy, white, smooth, shiny colonies with a characteristic odour were regarded as presumptive positive for Candida. Several colonies of the yeast were emulsified into 0.5 ml of serum in a test tube to give a slight opalescent suspension and incubated at 37°C for 3 hours. A drop of serum was then examined microscopically (one drop between the slide and the cover slip) for the presence of finger tubes. This test does not replace other tests, but is simple, quick and least expensive. A negative result excludes C. albicans and a positive result strongly indicates its presence. Although germ tube test is typical of C. albicans, it is not entirely

specific. Some species of *C. stellatoidea* strain behave in the same way as do some strains of *C. rugosa* and *C. utilis*, but these are rarely found in man. In addition to the germ tube test the strains were confirmed with the help of other physiological tests like urea hydrolysis, growth on cycloheximide at 37°C and fermentation reactions.

Results

A total of 100 clinical specimens were obtained from hospitalized febrile cancer patients. Sixty patients were found positive for *Candida* both on microscopy and culture (Table).

Table. Showing site of carcinoma and colonization of *Candida*.

Specimens/ (numbers)	Microscopy/ Gram stain	No. colonized with <i>C. albicans</i>	Nature of carcinoma
Urine (15)	10	10	Carcinoma bladder
Throat swab (12)	07	07	Non-Hodgkin lymphoma
Blood (5)	01	01	Carcinoma lung
Sputum (15)	12	12	Carcinoma lung
Stool (18)	11	11	Carcinoma rectum
Pus (20)	10	10	Carcinoma skin
HVS (15)	09	09	Carcinoma cervix

Discussion

All patients in this study had histologically confirmed cancers and were febrile at the time of hospitalization. Such patients are immunocompromised and are therefore, at high risk of acquiring a number of serious infections including Candidiasis, particularly when they present with fever. Malignancy itself can cause fever but 55 to 70% of fevers that occur in cancer patients are caused by infections especially in granulocytopenic patients⁶. The results of this study have confirmed the earlier findings⁶ that *Candida albicans* is the most common cause of Candidiasis, as 60% of the patients were found colonized with the yeast. Our results are also in line with those of Krammer et al⁷, who cultured *C. albicans* from the oropharynx and stomach of more than 80% of patients on broad spectrum antibiotics. The cancer patients in this study were found to be colonized with *C. albicans* only. The incidence and cause of Candidiasis in cancer patients however, varies from study to study. Fourteen out of 25 patients were found to be colonized and infected by *C. tropicalis* in other studies⁸. Similarly *C. krusei* has been observed in cancer patients receiving fluconazole for antifungal prophylaxis⁹. Lack of immunity in cancer patients, the use of antibiotics, steroids, cytotoxic drugs and exposure to radiation may be responsible for such a high incidence of Candidiasis detected in this study. The reason for urinary Candidiasis may be prolonged catheterization along with the use of antibiotics. Candidiasis as high as 98% has been reported¹⁰ in 155 episodes of catheter-associated fungemia. The evidence of

Candida colonization in these patients was correlated with invasive disease. A positive blood culture for Candida was highly correlated with invasive or disseminated infection in cancer patients. Undetected and untreated fungal infection can be rapidly fatal as a few patients have shown in this study. Early detection of Candidiasis is thus highly desirable to stop morbidity and mortality in cancer patients.

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