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RESEARCH ARTICLE

A case of oral thrush and septicemia by *Candida tropicalis* in a child of leukemia.

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Abstract

Oral thrush is usually caused by *Candida albicans* but non albicans*Candida* induced oral thrush and septicemia is also increasing in frequency which is mainly due to increased use of antibiotic and antineoplastic drug and immunosuppression Here we are reporting a case of *Candida tropicalis* induced oral thrush and septicemia in a child of leukemia who was on chemotherapy .The strain was fluconazole sensitive that was quiet unusual.

Introduction:-

Infection with fungusis of increasing frequency and significance in the hospitalized patient, especially in those with impaired immune systems.Many factors have contributed to this rise, including more aggressive use of chemotherapy and immunosuppressive agents, corticosteroids, parenteral hyperalimentation, and broad-spectrum antibiotics(1) Among the fungi, Candida species are leading cause of blood stream infections. *Candida albicans* is the commonest pathogen followed by *Candida tropicalis* and *Candid parapsilosis*(2) Clinical isolation of *Candida* may represent colonization or infection .Chemotherapy affects cells with high mitotic index and children experience higher incidence of mucositis than adults(3)Oral candidiasis, a frequent and important infectious condition of the buccal cavity; is caused by the pathogenic action of Candida species There are diverse local factors that make the buccal tissues susceptible to Candida infection, such as acid saliva, xerostomia, night use of prosthetic dentures, tobacco, carbohydrate rich-diets and patients that receive radio- and chemotherapies in maxillofacial structures or systemic chemotherapy.

The colonization for species of Candida genus in patients with cancer and their later dissemination is associated with long term episodes of neutropenia, use wide spectrum antibiotics, treatment with corticosteroids and cytostatic substances, invasive surgical procedures (central and bladder catheters), xerostomia and prolonged hospitalization time . The mortality rate due to fungal septicemia, associated with a primary buccal infection, is a relevant problem in children with cancer . Candida species, existing in the mouth, have high probability to infect the digestive pathways and disseminate through the circulation, developing systemic infection that is life threatening for the patient(4)

Here we report a case of oral thrush associated with septicemia caused by Candida tropicalis in a leukaemic child who was on chemotherapy.

Case history:-

A two years old male child with complain of fever, weight loss and anorexia with vomiting came to OPD of a tertiary care hospital. On examination pallor and hepatosplenomegaly along with cervical lymphadenopathy were found. He was investigated routinely and hemoglobin was found 8 g/l, leucocyte 4000/cumm and platelet 90000/cumm Bone marrow biopsy was taken and it showed increased no of lymphoblast with decrease erythroblast and megakaryocyte and another typical feature of B cell acute lymphoblastic leukaemia.He was admitted to hospital and got first cycle of chemotherapy and after few days he was discharged . After 2 weeks he developed pain in the tongue and mild fever but it was neglected by parents. But in the next two weeks fever increased in severity that took the child again to hospital. Appropriate tests for malaria, leptospirosis, and dengue and typhoid were done and all were negative.Absolute neutrophil count was about 98 per cumm, oral examination revealed white membranous patch on tounge which was suspected as oral thrush .Blood was send to microbiology laboratory to rule out sepsis. Blood culture was negative for bacteria but on fungal culture cream colored growth was seen within 3 days. Gram stain of the colony taken from growth showed budding yeast cell and pseudohyphae.a presumptive diagnosis of candida spp was send to the clinician and they started fluconazole and they were also requested to send a repeat blood sample as well as tongue scraping before starting antifungal.Germ tube test was performed with control and was negative. Corn meal agar plate inoculated by Dalmau method showed light production of conidia irregularly along the hyphae Sabrouraudboath was inoculated and it showed typical thin surface pellicle formation on the top of the broth and the inner suface of test tube above the broth.Chrome agar showed blue with pink haloes. . The isolate was confirmed by Sugar fermentation and Sugar assimilation tests. The patient responded to fluconazole and fever subsided and oral thrush disappeared after one week.The second sampleof bloodas well as tongue scraping showed the same organism.

Discussion:-

Infections cause significant morbidity and mortality in pediatric cancer patients. Approximately 20% of pediatric cancer deaths are attributed to infections. It is reported that 17% of bloodstream infections in children with cancer are due to a fungal organism. During the last years, a considerable increase in the incidence of fungal infection, from 2.9% to 7.8%, has been observed in children with cancer. The mortality rate of invasive fungal infection has been reported as between 15% and 65% in different studies. Candida species were the most frequently isolated pathogen in cancer patients with invasive fungal infection. Candida species may cause bloodstream and deep-seated infection in neutropenic children with cancer in addition to mucosal and cutaneous infection. The gastrointestinal system, lung, liver and spleen are the most frequently involved organs. Invasive fungal infections are among the most lethal complications in patients being treated for cancer, and the direct cause of death in approximately 20% of cases. Candida species account for 10% of all nosocomial bloodstream infections and for 70% of all fungal infections in children with cancer. The mortality rate of invasive candidiasis in children has been reported as 10-35%. The spectrum of invasive candidiasis ranges from candidemia to single or disseminated organ infection with/without candidemia. Prolonged duration of candidemia with a central venous catheter, immunosuppression, prolonged neutropenia, prolonged antibiotic therapy, and total parenteral nutrition have been reported as risk factors for disseminated candidiasis.[5] Although Candida is a commensal inhabitant of oralmucosal surfaces in approximately 50% of healthy individuals,some diseases and therapies compromise host defenses, allowing Candida to become a factor in treatment morbidity that can even become life threatening.Conditions which are favorable for oral candidiasisinclude endocrine disorders, immunodeficiency states,and use of broad-spectrum antibiotics, corticosteroids, and antineoplastic drugs. Leukemia patients undergoing chemotherapy present an optimal environment for the development of oral candidiasis, especially during periods of neutropenia. Candida species are responsible for approximately one-half of all oral infections occurringduring antileukemiachemotherapy.*Candidaalbicans* is the most common species followed *by Candida tropicalis*[6]

Here in our case the patient had two predisposing factor for candidemia firstly the patient was a child secondly the patient had received chemotherapy with out any prophylactic antifungal.Chemotherapy causes immunesuppresion and leads to severe neutropenia. Neutrophil count of the patient was reduced to less than hundred per cumm(absolute neutrophil count)Candida tropicalis which was most probably oral flora of the children became invasive after chemotherapy and produce oral thrush in tongue followed by disseminating to blood causing sepsis.

Now the case may appear very simple but the interesting aspect of our case is three in number.Firstly Candida tropicalis is uncommon etiologic agent of oral thrush, about fifty percent case of oral thrush is caused by *Candida albicans*.Secondly*Candida tropicalis* is sensitive to flucanazole in this case that gives a message to us that long prophylaxis with fluconazole(which was not given to our patient) is one of the cause of emergence of fluconazole resistant strain of candida. Thirdly it was pure microbiological diagnosis rather than the clinical diagnosis and blind antifungal therapy by clinician saved the life of the patient.

Finally we can conclude from this case that patient of leukemia specially in case of child who is on chemotherapy is susceptible to a number of invasive fungal infection.so we should be vigilant about the early sign of fungal infection like oral thrush developing after chemotherapy.If there is suspicious lesion of any fungal infection develops, appropriate sample should be send to microbiology laboratory as early as possible to prevent septicemia.

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