

## Fungal infection

Fungal infection either superficial ,subcutaneous and systemic infection

### Systemic fungal infection

#### 1- Candidiasis :

There are 200 species of candida ,10% of them are pathogenic to human 50% of them are caused by *candida albicans* other less common are *C. tropicalis* , *C. glabrata* , *C. krusei* . Candida infection originate from patients endogenous flora in the oral cavity or genitourinary system so first presentation of candida infection are either oropharyngeal candidiasis or vaginal candidiasis . Neutrophil is the main cells which eradicate and limit fungal infection , fungal infection occur when broad spectrum antibiotics used or neutropenia ,due to immunocompromised diseases , immunosuppressive drugs ,diabetes mellitus ,chronic renal failure ,liver cirrhosis ,leukemia ,cancer or autoimmune diseases like systemic lupus erythematosus .

### Clinical features

Candidiasis has many presentation and can affect any system some time it is occult condition need high suspicion for diagnosis even may need therapeutical trial to prove its infection . But usually it presented as :

- A- Ophthalmic infection : As cotton wool exudates then vitreous haze if it progressed it lead to loss of sight .
- B- Skin infection : As red or purple non tender nodules which may coalesce as infection progress .
- C- Disseminated hepatosplenic candidiasis : It usually occur in leukemic and neutropenic patients presented as fever hepatosplenomegally and fever which persist after improvement of neutropenia and fever persist for months ,by abdominal CT –scan multiple infiltration of the liver and spleen appear with raised serum alkaline phosphatase enzyme level .
- D- There may be constellation of symptoms where it presented as ophthalmitis ,skin presentation ,hepatosplenomegally ,meningitis ,endocarditis and may be peritonitis , bone and joint involvement also may occur .

## Diagnosis

Candida need to be proved by KOH stain and culture if culture positive it should never be ignored .

## Management

Systemic candidiasis need to be treated by systemic anti- fungal drugs which is serious drugs because of its serious side effects . Amphotericin B infusion in dose of 0.5 mg /kg in 500 ml glucose water over 6 hours then gradually increased to 1 mg /kg ,its side effects are nausea ,vomiting ,fever ,headache ,venous thrombosis ,hypokalemia and impaired renal functions , now new generation of lipid formulation of Amphotercin B with less side effects and less toxic drug . Fluconazole ,voriconazole and caspofungin are alternative antifungal drugs .

## Histoplasmosis

It is caused by *Histoplasma capsulatum* which is the commonest type world wide *Histoplasma duboisii* is larger and less common ,it multiply as yeast inside the body in the reticuloendothelial system (in macrophage or monocytes ) while in soil it multiply as filamentous way where it grew in faeces of bats and birds and remain in soil for years , it infect human by air droplets or contact with infected dusts of birds or bats dropping through cleaning of birds cages or in caves .

## Pathology

Histoplasmosis multiply as yeast in monocyte ,macrophage form foci of infection then it get transmission to blood stream where metastatic infection to liver ,spleen ,meninges ....etc . occur . Histoplasmosis of the lung similar to pulmonary tuberculosis where it presented as primary complex ( lung lesion plus lymphadenopathy ) or cavity or small discrete lesions and heals by calcification .

## Clinical features

The patients complains of pulmonary symptoms of fever, cough with or without expectoration ,dyspnea ,pleuritic chest pain associated with anorexia ,nausea and vomiting if there is pre-existing lung disease like emphysema or fibrosis may progress to chronic histoplasmosis . Disseminated histoplasmosis presented in addition to pulmonary symptoms with fever ,lymphadenopathy ,hepatosplenomegally and meningitis usually it occur in immunocompromised patients .

## Investigations

The disease is suspected in any case with obscure fever not responding to antibiotics with pulmonary symptoms ,hepatosplenomegally and lymphadenopathy . By chest X-ray showed pulmonary infiltrate ,cavity with lymphadenopathy and calcification . Prick skin test for histoplasmin intradermal injection lead to delayed hypersensitivity. Anti- histoplasma antibody if positive for IgM is diagnostic .

## Management

It treated with amphotericin B . Or Itraconazole 200- 400 mg daily ,prednisolon tablets 20 -40 mg is used for dyspnic patients with pulmonary histoplasmosis .

Another systemic anti-fungal infection but rare incidence are :

Coccidioidomycosis , Paracoccidioidomycosis , Blastomycosis and cryptomycosis .