CASE REPORT

Invasive Aspergillosis in an Immunocompetent Host

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Abstract

Invasive aspergillosis is a disease known to manifest in immunocompromised hosts. It is a opportunistic disease which spreads by air and occurs predominantly in lungs, although dissemination to virtually any organ is possible. We report an unusual case of invasive aspergillosis with invasion of lung, lymph nodes and esophagus without having any apparent immunodeficient state.

Key words

Aspergillosis, Immunocompetent, Immunocompromised host.

Introduction

Aspergillus is a mold with septate hyphae about 2-4 microm in diameter (1). It is ubiquitous in the environment and spreads by inhalation of spores.It manifests mainly in 4 forms - acute / chronic pulmonary aspergillosis, tracheobronchitis and obstructive bronchial disease, acute invasive rhinosinusitis and disseminated aspergillosis. Invasive disseminated form is mainly a disease of immunocompromised host and is often a fatal infection. Here we present a case with invasive aspergillosis having no underlying immunideficiency state apparently.

Case Report

A 35 year old gentleman, resident of Haridwar, pharmacist by occupation was admitted with history of low grade fever of 5 months duration which was associated with chills along with loss of weight of 5 kg in 4 months, loss of appetite and vomiting off and on of 15 days duration. He also complained of dry cough off and on but there was no history of hemoptysis, yellowish discoloration of sclera, pain abdomen or loose stools. Patient was non diabetic and normotensive. He was non alcoholic and had no other addictions. Patient took antimalarials and antibiotics as self medication but there was no relief. Chest X-ray PA view was done in Haridwar which showed mediastinal lymphadenopathy. With history of long standing fever, loss of weight and appetite and chest X-ray PA view showing mediastinal lymphadenopathy, patient was started on 4 drugs anti tubercular treatment by local practitioner which he took for 3 months. However, he continued to have fever and loss of weight and was transferred to our hospital for further management.

On examination, he was conscious, oriented with pulse rate 92/min, blood pressure 120/70mmHg, temperature 101°F, no pallor/icterus/cysnosis/clubbing / lymphadenopathy/pedal edema. Examination of abdomen, cardiovascular and nervous system was normal. Investigations revealed hemoglobin 12.1 gm%, total leucocyte count 9900/mm3, Polymorphs-70%, lymphocytes-27%, eosinophils-1%, monocytes-2%,

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platelets 2.42 lacs, ESR 58 mm in 1st hour, blood sugar fasting and postprandial were normal, BUN - 13.5 mg%, creatinine - 0.9 mg%, uric acid, calcium and phosphorus were normal. Serum protein was 6.5/3.4 gm%, SGOT / SGPT / serum alkaline phosphatase were 20/ 23/ 96 IU/ L. Chest x-ray showed mediastinal widening with parenchymal infiltration, which had increased in size as compared to previous skiagram. CT scan thorax showed multiple mediastinal lymphadenopathy with parenchymal lesions. Ultrasound abdomen was normal. A working diagnosis of multi drug resistant tuberculosis was made and to confirm our diagnosis a thoracoscopic biopsy from lymph node was done. Histopathology examination revealed mycotic granulomatous lymphadenitis suggestive of Aspergillosis (Fig.1). An endoscopy was also done as patient had repeated vomiting which showed midoesophageal plaques, biopsy was taken and sent for histopathological examination which also revealed Aspergillosis. Serology for Aspergillosis was sent and was positive for IgG.

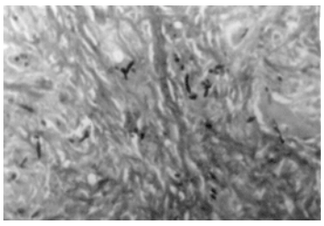

Fig. 1: Histopathology section of lymph node depicting aspergillus.

The patient thus had histopathological and serological diagnosis of aspergillosis. Some of the filamentous fungus such as Fusarium and Pseudallescheria resemble Aspergillus and in absence of fungal culture one may argue that the diagnosis of Aspergillosis is highly probable. However, serology for aspergillus in these fungi is negative, making the diagnosis of invasive aspergillosis more firm. Patient was evaluated for immunocompromised status. HIV was negative and glucose tolerance test was normal. Mantoux test was positive. Absolute CD4 count was normal (932cells/ cumm). C3, C4 and immunoglobulin levels were also normal. There was no evidence of other opportunistic infections.

Patient was started on Amphoterecin-B which he took for 2 months following which he started improving and his fever subsided and there was gain in his weight. Following this improvement patient opted for some homeopathic treatment and we lost him for follow up.

Discussion

Aspergillosis comprises of mainly 4 syndromes which are acute/chronic pulmonary aspergillosis, tracheobronchitis and obstructive bronchial disease, acute invasive rhinosinusitis and disseminated aspergillosis (2). Invasive aspergillosis is a disease of immunocompromised host and is a rapidly progressive often fatal infection. This infectious process is characterized by invasion of blood vessels and lymphatics resulting in multifocal infiltrates. Immunosuppression which predisposes to invasive disease is in the form of profound neutropenia, bone marrow transplant recipient patients and patients of AIDS or chronic granulomatous disease.

Invasive aspergillosis in immunocompetent hosts has been documented in literature and only few reports have been published (3). Our patient had invasive aspergillosis with involvement of mediastinal lymph nodes, lung and esophagus. No underlying immunodeficiency status was found in the form of diabetes, alcoholism, past respiratory infection and other immunodeficiency status. Natural immunity plays a major role in the defense against aspergillosis by recognition and clearance of the organism in immunocompetent host (2). It includes three major lines of defense anatomical barriers, humoral factors such as complement, and phagocytic cells and their related antimicrobial products. The role of phagocytic cells in protection against Aspergillosis has been studied by several research groups and both in vitro

and vivo studies demonstrate a major role for phagocytic cells in protection against aspergillus (2). The lungs are the site of infection of Aspergillus species and since alveolar macrophages are the major resident cells of the lung alveoli, they along with neutrophils, are the major cells involved in the phagocytosis of aspergillus. In our patient invasion of alveolar spaces could be explained by a silent lung infection since aspergilla are air born and there may be a partial defect of phagocytic cells (alveolar macrophages and neutrophils) which are recruited during inflammation and play a significant role in protection. Its spread can be explained by lymphatic spread to the mediastinal lymph node and esophagus (4). Studies of cell mediated T-cell immunity in humans are lacking and the putative role of these cells is suggested only by increase incidence of invasive aspergillosis seen in HIV infected patients in whom dysfunction CD4 T-cell lymphocytes is well known.

In our patient cell mediated immunity as measured by delayed hypersensitivity skin test to tuberculin antigen and positive serology for Aspergillosis showed that cell mediated immunity response was normal. Granulomatous reaction in contrast to fibropurulant necrotic pattern which occur in immunodeficiency status could be explained by a partial impairment of T-lymphocytic function which could be implicated in other so called primary invasive aspergillosis and which we were not able to demonstrate.

Treatment with IV amphoterecin-B (1-1.5 mg/kg/ daily) results in arrest of invasive aspergillosis(1). Now a day liposomal amphoterecin-B at doses of 1-4 mg/kg gives comparable results with less side effects. Itraconazol 200 mg twice daily is useful in some less immunocompromised patients and with indolent invasive aspergillosis. Surgery is needed in case of treatment of fungal ball. The prognosis is better for less immunocompromised patients and is poor in immunodeficient hosts.

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