Case report

A rare case of *Pneumocystis jirovecii pneumonia* in a seropositive patient with high CD4 count

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Introduction

Pneumocystis jirovecii erstwhile known as *Pneumocystis carinii* is an uncommon opportunistic organism, which induces a severe and mostly fatal pneumonia in immunocompromised patients. *Pneumocystis jirovecii* pneumonia (commonly called Pneumocystis pneumonia or PCP) is an opportunistic infection that generally affects Human Immunodeficiency Virus (HIV) infected patients with a low CD4 counts i.e. below 200/µl[1].It remains as one of the most prevalent opportunistic infections which even with its decreased incidence is still an AIDS defining illness. Due to the insufficient specificity of clinical symptoms, the affirmation of PCP is an important detail for correct patient management. Previously it was thought that *P. jirovecii* did not infect the immunologically normal host. We are reporting a case of *Pneumocystis carinii* pneumonia in a patient with high CD4count.

Case Report

A 39 year old woman working as a nurse was admitted with the complaints of parasternal pain associated with breathlessness. She had fever for 18days associated with headache and vomiting. There was no history of chest pain, sweating or palpitation. She was a known seropositive case for past two years but is not on Anti-retroviral therapy as her CD4 count was higher than the value considered for initiation of ART. Her husband is a known seropositive case and was on ART for past four years. She was suspected with *Pneumocystis jirovecii* pneumonia clinically and was referred to our microbiological laboratory which confirmed the organism on Gomori Methanamine Silver Staining.

On analysis her blood picture showed normal studies with Hb-10.1%, Total leucocyte count 5600/cu mm, Platelets 2, 64,000/cu mm. Her pulse rate was 92/min. Blood Pressure 110/70 and Respiratory Rate was 22/min. Her liver enzymes were within normal range. Her PaO_2 was 67mmHg. Alveolar-arterial gradient (A-a gradient) was 35mmHg.

Her chest X-ray was normal. The Ultrasound of abdomen gave normal findings. On HRCT diffuse ground glass appearance and nodules were seen which was reported to be “highly suggestive of PCP”. Her CD4 count was 577 around 6 months back and 455 now.

She was asked to send the ‘induced sputum’ sample to the microbiology laboratory. The sample was stained with Gomori Methanamine Silver Stain (GMS). On examination black particles of pneumocystis cysts were seen on green background of alveolar exudates. Secondary smear from colony of *Candida albicans* was used as control in GMS staining method. The control strain of *Candida albicans* appeared as brownish black cells and budding yeast cells.

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She was reported as being *Pneumocystis jirovecii* pneumonia positive. Patient was started with trimethoprim – sulphamethoxazole. A repeat sample was asked after the 21 days course of Trimethoprim-Sulfamethoxazole. Her chest pain and breathlessness had decreased with the administration of TMP-SMX. The repeat sample after 21days was found negative for *Pneumocystis* cysts. Her radiologic findings also revealed resolution of lesions and attenuation in haziness seen on CT.

Discussion

Due to the insufficient specific symptoms and lack of correct diagnosis a lot of *Pneumocystis jirovecii* pneumonia cases are under diagnosed and do not receive proper treatment. A considerable proportion of persons who develop *Pneumocystis* pneumonia are unaware of their HIV infection or are outside of medical care, thus minimizing opportunities for additional reductions in the incidence of the disease. The Indian data on PCP is restricted to a few isolated case reports or small autopsy series[2]. The first case report on PCP in India was from Udwadia et al in 1987.[3] Patient had wide immunosuppression and died in spite of TMP-SMX and ventilator support. Since then there are only few case series from India, there have been various postulated reasons including the absence of PCP from the environment, differences in host susceptibility to the organism and death at an earlier stage from more pathogenic organisms like *Mycobacterium tuberculosis*. Many cases have been reported where PCP was suspected on clinical and radiological grounds but have not been proven microbiologically.

The traditional method for diagnosis of PCP depends on the microscopic visualization of *P. jirovecii* organisms in respiratory samples. Bronchoalveolar lavage (BAL) coupled with colorimetric as well as an immunofluorescent stain of BAL fluid is recognized as the technique of choice with sensitivity and specificity more than 95%. A different option is evaluation of material obtained by induced sputum. In spite of this, the sensitivity of this procedure is 50 to 90%. The usage of cytochemical stains for diagnosis is a very slow process, and it requires a laboratory diagnostic expertise considering the reduced incidence of PCP after the introduction of significantly active antiretroviral therapy. Diagnosis of *P. jirovecii* infection is hampered by the lack of a sustainable in vitro culture method[4].

The bronchoscope techniques required to make a firm diagnosis of PCP are not available in the majority of Indian hospitals. The availability of expensive immunofluorescent staining techniques, an experienced cytologist and the presence of a CT scanner are other luxuries beyond the reach of an average Indian hospital. Other studies from the developing world have reported PCP and TB co-infection in 13-66% of thereto lack of recognition leading to late diagnosis and treatment. In conclusion, HIV-AIDS is gaining a firm foothold in India. With at least 4 million Indians already infected, India houses the world's second largest HIV positive population.

The drug resistance of Trimethoprim –Sulfomethoxazole is also an upcoming issue as the drug is given for other bacterial infections as well as prophylactically once the CD4 counts go below 300. So an early diagnosis and timely treatment is required.

Conclusion

Pneumocystis jirovecii Pneumonia which is common in immunocompromised patients with low CD4 counts can also cause morbidity and mortality in immunocompetent patients if it is not diagnosed and cured timely. India has the second largest HIV infected world's population and has records of deaths due to undiagnosed

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Pneumocystis jirovecii pneumonia. An earlier diagnosis with appropriate method can improve the prognosis of PCP and the correct patient therapy management

Figure 1

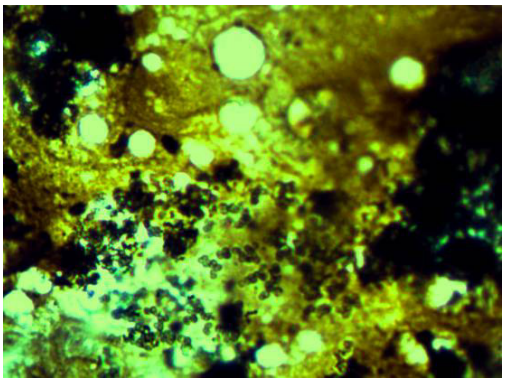

Figure 2

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