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A case report of respiratory failure caused by Pneumocystis Jiroveciiin Carcinoma prostate patient with metastasis.

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Abstract

The whole world is facing pandemic of Coronavirus disease (Covid-19) has rapidly spread across the world.In present scenario early diagnosis of infections caused by atypical organisms is misdiagnosed or underdiagnosed. Here we present a case report of Pneumocystitisjiroveci pneumonia in Carcinoma prostate patient. The diagnosis was done on basis of clinical condition, radiological and microbiology findings. Definitive treatment of cotrimoxazole was started, however patient succumbed to death.

Introduction

Pneumocystisjirovecii is a fungus which causes serious infection as Pneumocystis pneumonia (PCP). Individuals with weakened immune system like HIV/AIDS, on corticosteroids, malignancy and solid organ transplant

are most susceptible to this infection (1). In high-risk individuals Pneumocystis jirovecii has affinity for lungs (2). It develops in Haematological malignancy and stem cell transplantation patients mainly (3). PCP infection is rare in solid cancer patients (4). Here we present a case of Carcinoma prostate with Grade group IV (WHO Classification 2016) presented in ICU with high grade fever and respiratory failure which was not responding to high end antibiotics. The diagnosis of PCP was done, and treatment was started accordingly, however patient succumbed to death.

Case Report

A 63 old male diagnosed with carcinoma prostate with bony metastasisGrade group IV(WHO Classification 2016) received Cisplatin 5 days back presented with fever and deranged liver function tests such as increased serum Aspartate Aminotransferase (334U/L), increased serum Alanine Transferase (116U/L), increased serum Alkaline Phosphatase (1102U/L),hyperbilirubinemia (direct bilirubin8.2mg/dl), hepatomegaly anddyspnoea with desaturation spo2(85%). Patient was admitted in ICU and put on non-invasive ventilator. Complete blood count showed low haemoglobin 6.7g/dL, decreased platelets $89x10^9$/L, increased total WBC count 38.92 $*10^9$/L, increased neutrophils (83.5%) and increased absolute lymphocytes ($4.5*10^9$/L). The first diagnosis was made of covid 19 on basis of patient condition. Lung High resolution Computed Tomography scan was done which showed mild to moderate pleural effusion. Covid-19 RTPCR was done which came out negative. Patient was started with on antibiotics piperacillin-tazobactam (80/10 mg per kg), azithromycin (30mg per kg) and teicoplanin (6mg per kg). In spite of preliminary antibiotics; desaturation sustained and patient was intubated. On follow up High resolution computed topography of thorax showed ground glass opacity in Figure 1. Therefore, higher end anti-biotics as meropenem, clindamycin and primaquine also added as patient was not responding to previous antibiotics.Covid- 19 RTPCR test was repeaed again as patient showed ground glass opacity in the lungs, which came out to be negative again.

Bronchial alveolar fluid (BAL) sample was collected and sent to microbiology laboratory for culture and microscopy. In view of suspicion of PCP Pneumonia, Giemsa stain of BAL sample was prepared which showed thin-walled oval, distorted round or cress centrictrophozoitesform suggestive of Pneumocystis jirovecii, also Gram stain showed few Gram-negative bacilli and budding yeast cells with pseudo hyphae.Aerobic culture of the specimen showed growth of Acinetobacter baumannii sensitive to amikacin, gentamicin, ciprofloxacin, cefeperazone-sulbactum, piperacillin-tazobactam, minocycline, tigecycline, and colistin and resistant to ceftazidime, cefepime, imipenem, meropenem.

Therefore,based on clinical, radiological and microbiological finding, final diagnosis of PCP pneumonia was made, and patient was started with tablet cotrimoxazole (15mg/kg). Because of poor socioeconomic condition patient got discharge against medical advice and further follow up was done on telephonic conversation only which revealed patient succumbed to death after 24 hrs discharge from hospital.

Discussion

Pneumocystis jiroveciiover the years belonged to genus of protozoa, but now on basis of ribosomal RNA classified as ascomycetous fungi (6). The major target populations for Pneumocystis pneumonia are children with primary immuno deficiency diseases and patients of

all ages receiving corticosteroids and immunosuppressive therapy in organ transplant patients and for the treatment of cancer(7).

Pneumonia caused by Pneumocystis jirovecii is lethal and causing mortality in immunocompromised patients. Mortality due to PCP is high in immunocompromised states (8). Symptoms in PCP are non-specific low-grade fever, progressive dyspnoea and non- productive cough. Diagnosis of Pneumocystis jiroveciipneumonia depends upon clinical evaluation, symptoms, risk factors, radiologic findings and microbiology reports.The organism can be seen in various respiratory specimens induced sputum, bronchial-alveolar-lavage, tracheal secretions and pleural fluid (9). Final diagnosis of Pneumocystis jiroveci ire quires detection and identification depends solely microscopically as it cannot be cultured (2). In high-risk individuals and suspicion patients treatment should be started (10). Trimethoprim-sulfamethoxazole is the treatment of choice with a dose of 15-20mg/kg/day in 2 divided doses for 21 days and use of corti costeroids helps in good prognosis of the patient (11)(2).

PCP prevalence is most common in HIV infected patients. In oncology patient's PCP has been reported in Hema to-oncology patient. Presence of PCP in solid tumour cancer patient is an uncommon finding. As the patient is immunocompromised and of rural background, so the chances of infection are more common to other diseases. In this pandemic scenario any patients with fever and respiratory illness first differential diagnosis is Covid-19. Hence, we should not neglect atypical causes of pneumonia in immunocompromised individuals.

Table 1: Comparison of our case report with different studies in and correlation of outcome in such patients.

Sn.	Study	Immunocompromised condition	Specimen used for diagnosis	Treatment	Duration of hospital Stay	Outcome
1.	Our Case Report	Carcinoma prostate	Bronchial alveolar fluid (BAL)	Cotrimoxazole	9 Days	Succumbed
2.	Mathew et al 1997 (12)	Breast Carcinoma	BAL	Cotrimoxazole	NA	Succumbed
3.	Shinohora et al 2013 (13)	Breast Carcinoma	BAL	Cotrimoxazole	NA	Survived
4.	Yoon et al 2010(14)	Stomach carcinoma	BAL	Cotrimoxazole	NA	Survived

Conclusion

In the present situation it is very crucial to identify right infectious agent in a set up like cancer hospital where patients are immunocompromised and susceptible to many atypical organisms. There is need to do the right investigations and make simultaneously differential diagnosis other than Covid-9 also. An early and prompt diagnosis will help in right diagnosi, start of early definitive treatment and therefore reducing mortality in such patients.

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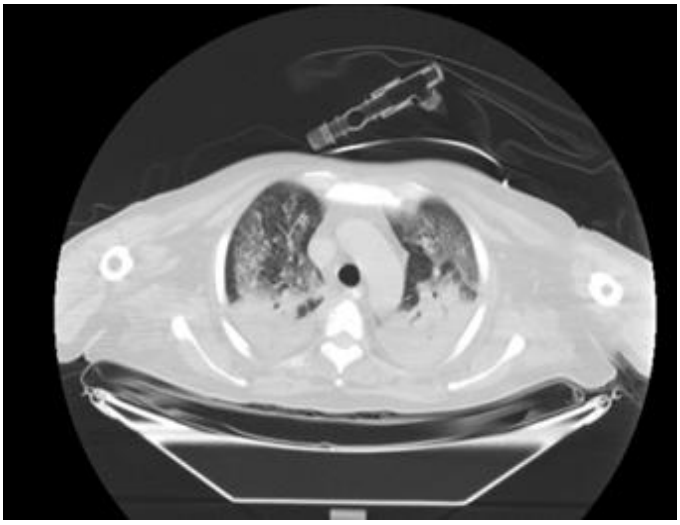
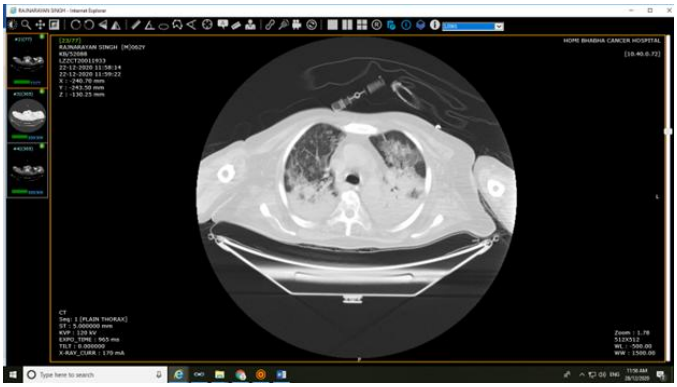


Figure 1: CT of lung showing Ground glass opacity.



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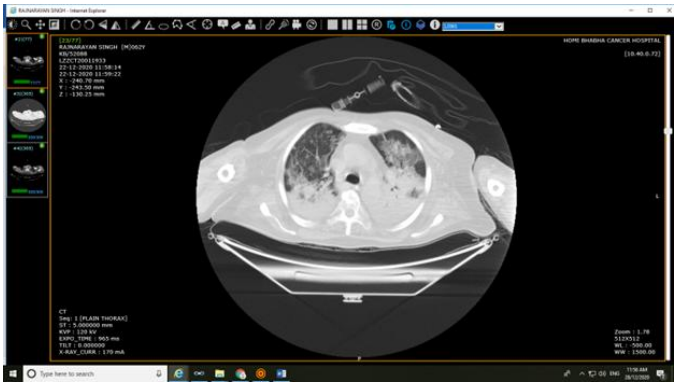

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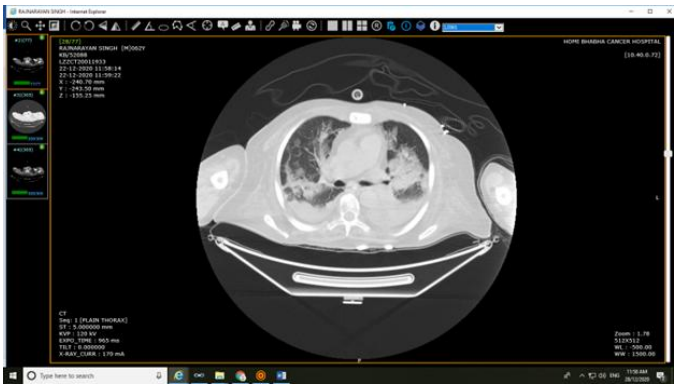

Figure 4: