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A Case of CMV Infection Presenting as Low Grade Fever in a Patient with Chronic Kidney Disease on Maintenance Haemodialysis

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Abstract: ***Cytomegalovirus belongs to Herpes Virus Family Herpesviridae, or human herpesvirus-5 (HHV-5). Manifests as asymptomatic to severe end-organ dysfunction in immunocompromised patients. It remains dormant after intial infection, reactivation occurs in immunosuppressed individuals where it is more aggressive, causing hepatitis which may lead to fulminant liver failure, retinitis characterized by a "pizza pie appearance" on ophthalmic exam, esophagitis, colitis, pneumonitis, polyradiculopathy, transverse myelitis or encephalitis. An elderly male with chronic kidney disease on haemodialysis presented with non resolving fever and cough of duration more than 2 weeks. He was on multiple antibiotic regime and had blood investigations done. CT Thorax followed by BAL for CMV PCR lead to the diagnosis. Histopathological identification of CMV inclusion bodies is the gold standard for diagnosis. But, Quantitative PCR assays are the preferred method for viral detection.***

Keywords: CMV pneumonitis, Ganicyclovir, HerpesViridae, Quantitative PCR for CMV

1. Introduction

CMV infection is highly prevalent. Clinical picture ranges from asymptomatic disease to mononucleosis-like syndrome. CMV infection can occur as a primary infection, reinfection, or reactivation. Transmission occurs via blood transfusions, breastfeeding, perinatally and sexual transmission. Reactivation occurs in immunocompromised and may be life-threatening. CMV Pneumonia doesn't have any pathognomonic radiological pattern; presentation may be minimal or no pulmonary infiltrates initially to diffuse interstitial infiltrates later. Definitive diagnosis is not required in immunocompetent host. The diagnosis is done using serologic testing, molecular biology and histological findings on lung biopsy.

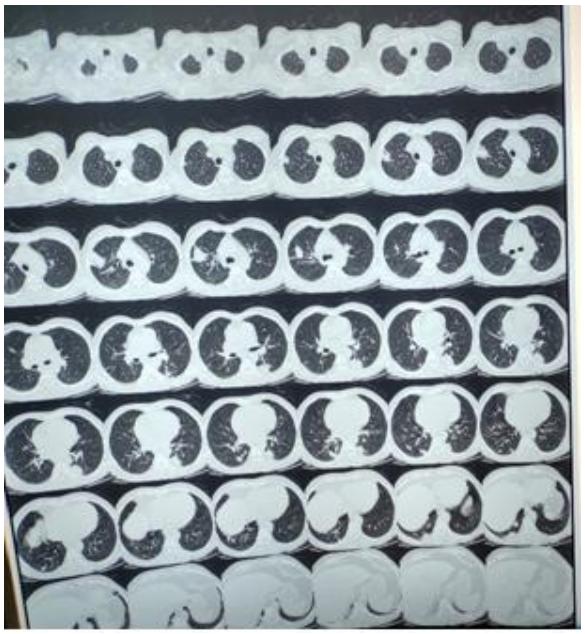
2. Case Study

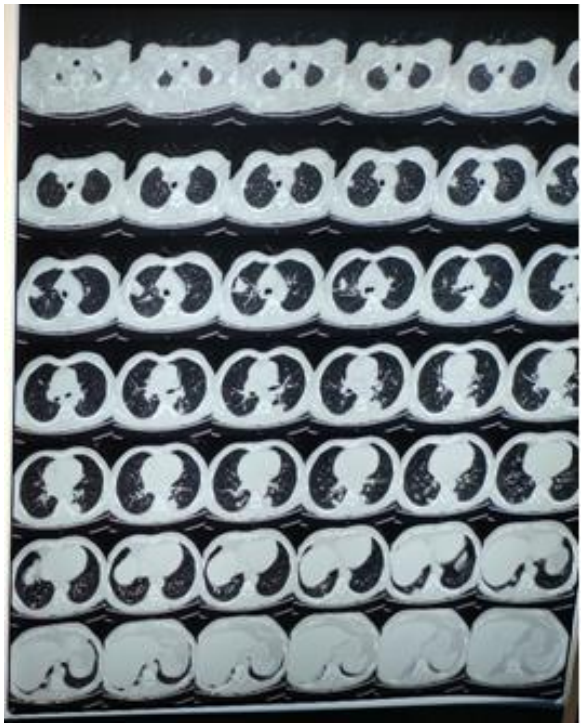
An elderly male visited OPD with complaints of Low grade fever for more than 2 weeks. He is a resident of Bangladesh. Patient is a known diabetic and hypertensive on medication. Patient is on Maintenance Haemodialysis for Chronic Kidney Disease. Blood investigations showed elevation of Infective markers CRP and TC.

He was started on empirical antibiotics. CXR showed Right Mid zone Opacity. Sputum, Blood and urine Cultures all came out to be sterile. Fever panel [Malaria, Widal and Dengue] came out to be negative. Symptoms persisted even after multiple course of antibiotics.

Patient visited our facility thereafter. CT thorax was advised. Showed Airbronchogram involving segments of RUL and RLL and LLL. PET CT showed Features consistent with Infective changes in RUL and RLL, with no features of malignancy.

CT Thorax Images:

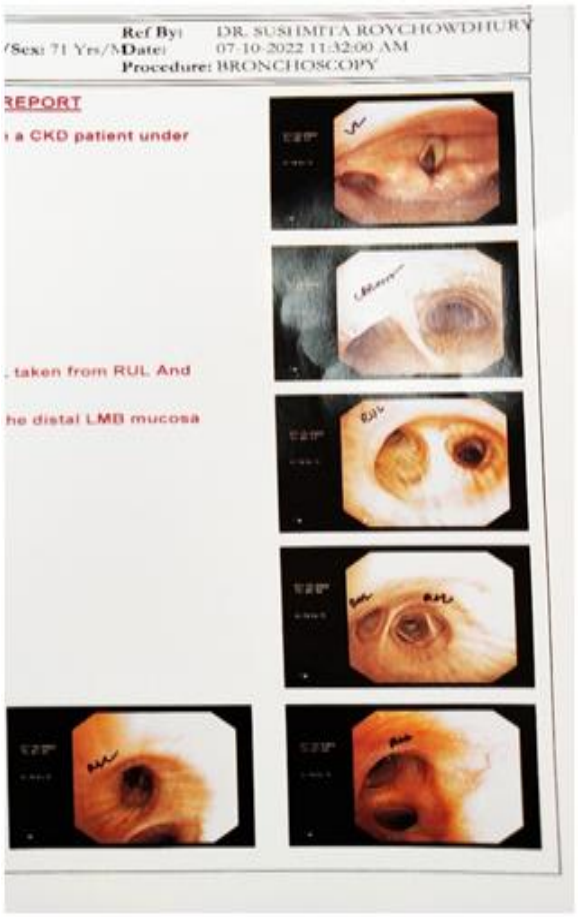




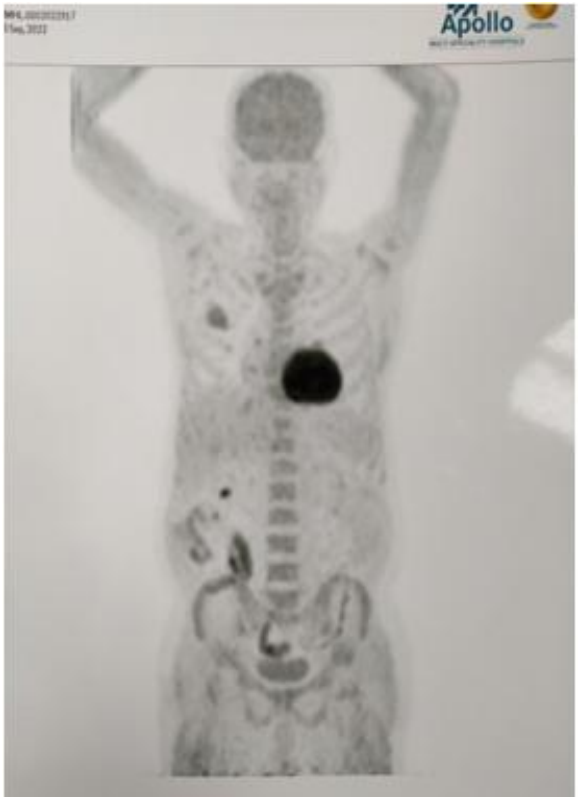
Patient was Posted for Bronchoscopy with Bronchoalveolar lavage.

Bronchoscopy showed normal tracheobronchial tree. Mucosa was easily bruisable over the segments of LLL. BAL was taken from RUL, RLL and RLL segments and sent for analysis.

Bronchoscopy Images:



PET CT Images:



BAL came negative for Gene Xpert, AFB Stain, Gram Stain, Fungal Stain And cultures. BAL Galactomannan was 1.5. BAL Malignant cell was negative. Samples were also sent for CMV RTPCR which came POSITIVE showing 1700copies/ml. Patient was started on GANICYCLOVIR 450 BD for 2 weeks and asked to monitor temperature, with an advice to review with CBC, Urea, Creatinine and LFT.

3. Conclusion

CMV is a double-stranded DNA virus of the herpesviridae. After primary infection, CMV often remains latent, but it can reactivate later. CMV is an important opportunistic pathogen immunosuppressed like HIV, solid organ transplant, and bone marrow transplant patients, and maypresent with specific organ diseases, such as hepatitis, pneumonitis, and colitis. CMV pneumonia presents with symptoms of lower respiratory tract infection-fever, cough, breathlessness and may progress torespiratory failure with hypoxemia. Radiologically may have diffuse interstitial infiltrates limited to a lobe on chest x-ray and CT Thorax. Diagnosis may be based on serological tests or pathological features. The serological diagnosis is based on elevated CMV IgM antibody titer, or on increasing titer of IgG antibodies. In immunocompetent host with primary CMV pneumonia, the blood CMV detection by PCR is usually negative, although it is diagnostic if positive. Inclusion bodies with the typical appearance of an owl's eye in lung biopsy are diagnostic. Viral loads of >500 IU/mL in BAL fluid is significant although in certain high-prevalence situations thresholds as low as 100 or 200 IU/mL may be associated with high positive predictive values for CMV pneumonia. Antiviral therapy should be considered in severe cases of CMV mononucleosis, CMV infection, and CMV disease in immunocompromised patients. Antiviral agents approved for the treatment of CMV are cidofovir, foscarnet, ganciclovir and Valganciclovir. Resistance to ganciclovir should be suspected in patients who fail to respond and have decline in lung function despite therapy.

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