ORIGINAL RESEARCH PAPER

General Medicine

BEYOND THE USUAL SUSPECTS :UNMASKING CMV PNEUMONITIS IN AN IMMUNOCOMPROMISED HOST

KEY WORDS:

Dr . Vaishnavi Reddy Ambarapu Post Graduate, General Medicine, Sri Ramachandra Medical College .

Dr. Sudagar Singh R B Professor, General Medicine, Sri Ramachandra Medical College .

Dr. Siva Prakash Associate Professor, General Medicine, Sri Ramachandra Medical College .

Dr. Vaishnavi. S Assistant Professor, General Medicine, Sri Ramachandra Medical College .

Dr. Vengatesan Kowshik Senior Resident, General Medicine, Sri Ramachandra Medical College .

INTRODUCTION

cytomegalovirus pneumonitis is a rare yet serious infection typically affecting immunocompromised individuals.It can be life threatening if not diagnosed and treated timely. The incidence of CMV pneumonitis varies based on the type and degree of immunosuppression.

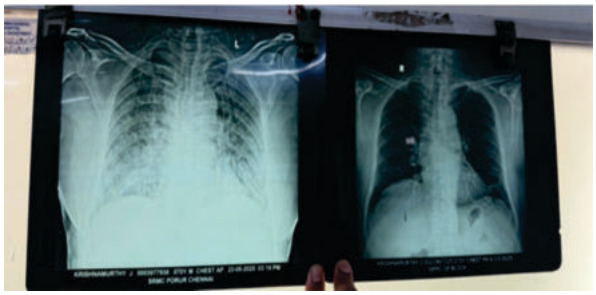
Case Report

A 70 yr old male patient had come to the emergency with complaints of fever and dyspnea for 2 days. Fever was high grade associated with chills, intermittent in nature not relived with medication. Patient also had complaints of difficulty in breathing increased with exertion. Patient had no complaints of cough, expectoration, dysuria, loose stools, vomitings, abdominal pain, sore throat, rash, bleeding manifestations, joint pains, chest pain, palpitations, orthopnea, pedal edema, abdominal distension, decreased urine output, recent travel history, outside food or water consumption. Patient is a known diabetic, hypertensive and patient has been on steroid and metothrexate therapy in view of probable giant cell arthritis for the past 5 months. On examination patient was febrile and had fine basal crackles on lung auscultation and in view of tachypnea and increased work of breathing patient was initiated on NIV support and shifted to ICU .

Baseline Investigations Done on Admission Showed :

Haemoglobin	10.7
Total counts	13830
Platelet	1.81
Bun	14
Creatinine	1.2
Sodium	133
Potassium	3
Chloride	94
Bicarbonate	23
Total bilirubin	0.120
Direct bilirubin	0.55
Indirect bilirubin	0.65
SGOT	17
SGPT	19
Total protein	5.5
Albumin	3.5
Globulin	2
ALP	66
GGT	41
Urine routine	Within normal limits
ECG	Sinus tachycardia
Chest X-ray	Bilateral diffuse non homogenous infiltrates
Viral markers	Non reactive
2d echo	Normal LV function 60%,no RWMA,grade 1diastolic dysfunction
USG abdomen	Minimal right pleural effusion

Patient was started on nebulisations, Iv steroids and after initial blood and urine cultures were sent iv antibiotics and oseltamavir were initiated empirically. Sputum samples for AFB, genexpert, fungal stain, gram stain and cultures were sent and were negative. Suspecting viral infection RT PCR for Covid 19 was sent and was negative. Patient was continued on iv antibiotics. Cultures turned out to show no growth. In view of persistent symptoms despite ongoing treatment and considering immunosuppressed state and bronchoscopy was planned. BAL samples were sent and was negative for acid fast bacilli, nocardia, actinomycosis, gram stain, cytology was negative for malignant cells and showed inflammatory process, galactomannan was negative, burkholderia PCR was negative, fungal, AFB cultures showed no growth. Methotrexate pneumonitis vs viral pneumonitis was considered, CMV DNA was sent and showed 6619 copies per mL. Patient was started on tab valagancyclovir 900 mg BD and was given for a total duration of 7 days.Patient gradually improved and was weaned of NIV and oxygen suppport and was later shifted to ward .On review following discharge repeat chest X-ray showed complete resolution.



DISCUSSION

Cytomegalovirus (CMV), classified as human herpesvirus 5 (HHV-5), is a DNA virus from the Herpesviridae family.

In individuals with a healthy immune system, CMV infection is often asymptomatic or may resemble mononucleosis. However, in immunocompromised patients, CMV can lead to serious illness and even death. While CMV infection indicates the presence of the virus in the bloodstream, CMV disease refers to infection accompanied by related clinical symptoms, which may present either as a general viral syndrome or as tissue-invasive disease (e.g., pneumonitis, retinitis, encephalitis, hepatitis, esophagitis, or colitis). Some patients may develop CMV syndrome, which is a non-specific illness marked by fever and low blood cell counts in the presence of viremia.

The lungs are the second most frequently affected organ by CMV after the kidneys. CMV pneumonitis typically presents with non-specific symptoms such as low-grade fever, dry cough, and breathlessness. Imaging findings are also variable and may include ground-glass opacities, patchy consolidations, small nodules, reticular opacities, thickened bronchovascular markings, tree-in-bud appearance, or minimal pleural effusion.

Diagnosis of tissue-invasive CMV is best confirmed via biopsy, where characteristic owl eye intranuclear inclusion bodies or viral DNA can be detected. While biopsy remains the gold standard, high CMV viral loads in bronchoalveolar lavage (BAL) fluid (exceeding 500,000 copies/mL) can also confirm CMV pneumonitis with 100% specificity. A combination of quantitative PCR in plasma and pulmonary samples (e.g., biopsy, bronchial wash, or BAL) is considered reliable for diagnosis.

The first-line treatment includes intravenous ganciclovir or its oral prodrug valganciclovir, which inhibit viral DNA polymerase and prevent DNA elongation. Alongside antiviral therapy, reducing the intensity of immunosuppression plays a crucial role in managing CMV disease.

CONCLUSION

cytomegalovirus pneumonitis, though rare, should be considered in the differential diagnosis of non-resolving pneumonia in immunocompromised patients. This case highlights the importance of early suspicion, comprehensive evaluation, and targeted viral diagnostics . Prompt initiation of antiviral therapy, such as valganciclovir, can lead to significant clinical improvement and full recovery, even in elderly and high-risk individuals. Timely recognition and management are crucial to reducing morbidity and preventing potential mortality in CMV-related pulmonary disease.