Case Report Doi: 10.18231/j.occ.2024.011

Risk factors for Cytomegalovirus infection in patients with malignant lymphomas who have not received hematopoietic stem cell transplantation

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How to cite the article: Mane A, Sharma A, Padhi G. Criteria for the risk of Cytomegalovirus infection in non-transplanted haematopoietic stem cell patients with malignant lymphomas. Onco Critical Care 2024 42-44

Keywords: Cytomegalovirus pneumonia, ICU, CMV

People with malignant lymphoma who did not undergo haematopoietic stem cell transplantation have recently been shown to have contracted the potentially fatal CMV infection, thanks to the extensive use of immunosuppressive medications like rituximab in treating this disease in older people.[1-3]

Cytomegalovirus infection can develop in patients undergoing haematopoietic stem cell transplantation if certain conditions are met. These conditions include receiving stem cells from a donor who is seropositive for the virus, being seropositive oneself, having chronic graftversus-host disease, using alemtuzumab or high-dose corticosteroids, or having prolonged neutropenia.[4,5,6] Cytomegalovirus infection rates ranged from 3.9% to 16% in a number of retrospective investigations that looked at groups that included people with malignant lymphoma and who had gotten a haematopoietic stem cell transplant.[6,7,8] Cytomegalovirus infection was found in 9.0% of malignant lymphoma patients who had chemoimmunotherapy but did not undergo haematopoietic stem cell transplantation, according to one research.[9]

Case Report 1

A forty seven years old female patient, a known case of follicular non- Hodgkins lymphoma (WHO received 6 cycles of Bendamustine and Rituximab based chemotherapy), presented with pain in abdomen and generalised weakness. She underwent colonoscopy that showed caecal ulcer which was positive for cytomegalovirus. She was neutropenic and received granulocyte colony stimulating growth factor. Treatment was started with Ganciclovir. Patient was admitted to ICU in view of desaturation and diplopia. She was supported initially with non-invasive ventilation but eventually she was intubated. Chest x-ray Showed bilateral infiltration which indicated possibility of Cytomegalovirus pneumonia. Fundoscopy examination showed mild disc oedema with chronic retinitis. During the course of treatment, she suffered from acute kidney injury and therefore, Ganciclovir was changed to Valganciclovir. But her renal function deteriorated further and renal replacement therapy was instituted. She also had cardiac arrest and resuscitated successfully within ten minutes. Her stay in ICU was also complicated by clostridium difficile infection and “difficult to wean”.

She was finally discharged from ICU in stable condition after tracheostomy.

Case Report 2

Seventy six years old male patient with history of hypertension and on multiple medications was diagnosed with peripheral T cell lymphoma. Pre – phase chemotherapy was started with injection cyclophosphamide, along with steroid for 3 days in ICU and subsequently discharged. Patient was re- admitted on same day with complaints of breathing difficulty. Later on, he was diagnosed with Cytomegalovirus pneumonia and Ganciclovir was started. He developed severe ARDS and his condition worsened further and expired within couple of days of ICU admission.

Discussion

In this case series, we described two patients who were treated for malignant lymphoma. In the first case report, the patient developed disseminated Cytomegalovirus infection after receiving chemotherapy with Bendamustin and Rituximab. In the second case, the patient developed Cytomegalovirus pneumonia after receiving pre- phase chemotherapy and steroids.

Researchers observed an increased risk of Cytomegalovirus reactivation in individuals treated with bendamustine-containing regimens for non-Hodgkin lymphoma after the third treatment session. The result was a dramatic decline in both the quantity of CD4+ T cells in circulation and anti CMV IgG levels.[10] Two investigations found that those with malignant lymphoma who used rituximab were more likely to have Cytomegalovirus.[11]

Furthermore, our findings suggest that steroid pretreatment and therapy regimens may significantly increase the incidence of CMV infection in malignant lymphoma patients.[4] Pretreatment with steroids is done in the hopes that it will have an anti-lymphoma and anti-inflammatory impact. It is possible that the host immune system, particularly T and B cell responses specific to CMV, may be suppressed by steroid pretreatment and certain chemotherapeutic regimens, leading to the reactivation of the virus. Because cytomegalovirus infections might emerge following steroid pretreatment, it is preferable to provide normal chemotherapy without steroids whenever feasible. Antiviral medication treatment should be initiated at the appropriate time, and CMV antigen levels should be closely monitored.

Source of Funding

None.

Conflict of Interest

None.

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