

A Case Report on Rituximab-induced Interstitial Lung Disease

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ABSTRACT

Rituximab is a monoclonal antibody commonly used to treat various autoimmune diseases. However, its use has been associated with the development of interstitial lung disease (ILD), a severe and potentially fatal condition characterized by inflammation and fibrosis of the lungs. This case report describes the case of a patient who developed ILD following treatment with rituximab for Diffuse large B cell lymphoma. The patient presented with symptoms of shortness of breath, dry cough, and fever, and was diagnosed with ILD following a comprehensive evaluation. The patient was treated with corticosteroids and other immunosuppressive medications, with a favorable response. This report highlights the importance of recognizing and managing rituximab-induced ILD and underscores the need for close monitoring of patients receiving this drug.

Keywords: Interstitial lung disease, Diffuse large B cell lymphoma, Rituximab

INTRODUCTION

Rituximab, a known chimeric monoclonal antibody is indicated for the treatment of non-Hodgkin lymphoma. Rituximab binds to the CD 20 antigen of the b-lymphocyte whether being normal or malignant. In general, rituximab is used to treat autoimmune illnesses such as rheumatoid arthritis (RA), granulomatosis with polyangiitis, microscopic polyangiitis, and idiopathic thrombocytopenic purpura (ITP) [1]. Non-lymphoma Hodgkin's and chronic lymphocytic lymphoma are two lymphoproliferative illnesses that are treated with it.

The severity of the adverse event is parallel to the complement system that is activated by anti CD20 drug Rituximab, the common co-administering of corticosteroids may reduce the events and severity [2]. The common side effects include flu-like symptoms, infusion-related symptoms, and developed symptoms of hypersensitivity. The rare events associated with lungs generally include Bronchospasm (8% NHL), Injury of the lung, or pneumocystis pneumonia (18%, NHL) but in the presented case we have a rare event, i.e., interstitial lung disease [3].

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CASE DETAILS

A 73-year-old male patient was brought to the hospital with complaints of abdominal pain, dyspnoea on exertion, coughing, and generalized weakness for 15-20 days, and no history of weight loss. His medical history revealed Ischemic Heart Disease, Inferior Wall Myocardial Infarction with Complete Heart Block (CHB), DM, HTN, BPH since 12 year. The previous confirmed diagnosis of the patient suggested Diffuse large B cell lymphoma (DLBCL). Previous surgical history Percutaneous Transluminal coronary angioplasty + stenting of Left Circum Artery, Left Anterior Descending Artery & Right Coronary Artery lesion 12 years back. Upon general examination, blood pressure, and temperature were normal and oxygen saturation was 97%. Immunohistochemistry revealed positive Diffuse Large B-cell Lymphoma (DLBCL), Germinal Center B-cell (GCB) type, CD 20 and CD 10 were positive. CD3, TdT was found to be negative. The patient was scheduled to receive R-CVP (rituximab, cyclophosphamide, vincristine, prednisolone) chemotherapy regimen. The patient was pre-treated with cycle CVP (cyclophosphamide, vincristine, prednisolone). On day 22 of the CVP regimen, he underwent a rituximab infusion without any reactions to the infusion. After administration of the third cycle of R-CVP regimen, the patient reported breathlessness on exertion and severe coughing. The patient was referred to Pulmonologist and HRCT was performed to confirm the diagnosis, Ground glass opacities were seen. This confirmed the diagnosis of ILD induced by Rituximab. The patient was prescribed dextromethorphan (20mg) b.i.d and methylprednisolone 16 mg b.i.d. Slow dose tapering was advised later on for corticosteroids. Upon removal of the rituximab from the treatment regimen the symptoms improved.

DISCUSSION

This study further reviewed all the cases associated with adverse events of Rituximab. It is further aimed at increasing awareness of the rare adverse event of Rituximab. As a whole Rituximab molecule is well tolerated and safe medicine but some rare adverse events concerning various patient conditions should be accepted [4].

The pathogenesis by which Rituximab causes lung injury is unclear. Many cases have been reported that suggest that the reaction occurred as an anaphylactic shock, which may not be the case in every scenario [5]. In this scenario, it emerged after the third cycle of the administration. The hypothesized

mechanism behind this may involve the complementary systems invoked by Rituximab. Mainly the complement C3-3b is involved and its role is intrinsically linked to the number of b cells circulating in the blood [2].

The patient in the case was on methylprednisolone 16mg and dextromethorphan 20mg.

In similar incidents, the patients were treated with steroids, and patients getting worse over treatment proved to be the fatal outcome of Rituximab [6].

Since cytokines are activated by the complement system, which is already known, cytokines are thought to be responsible for further harm. In patients with multiple inflammatory disorders, this may lead to fatal outcomes. The major point of concern in patients is the cytokine storm that may be aggravated after the administration of several cycles of Rituximab. The cardiac markers also may be alleviated and therefore it may lead to severe outcomes [6].

In summary, Rituximab-induced Interstitial lung disease is a rare pulmonary toxicity that increases the chances of fatal outcomes. Also, such articles increase suspicion towards such rare adverse events. Increasing the morbidity and mortality rate from such events is of utmost importance.

CONCLUSION

R-CVP was metabolically effective against DLBCL in the patient but due to adverse events, the treatment needed to be stopped and further only CVP regimen had to be continued in the patient. The patient was stabilized with methylprednisolone 16mg and dextromethorphan 20mg but the case always differs in each and every patient.

As a whole patients admitted with history of any lung damage or disease should be screened properly for the extent of the disease before treating with Rituximab. ILD is a rare complication that arises from Rituximab albeit may result fatal with respect to age and severity of the reaction. Pretreatment X-rays should be performed in patients undergoing R-CVP treatment.

DECLARATION OF PATIENT CONSENT

The authors certify that they obtained the appropriate patient consent form. In the form, the patient(s) has/have granted his/her/their consent and other clinical information to be reported in the journal. The patient understands that their name and initials won't be published and due efforts will be made to hide their identity, but anonymity can't be guaranteed.

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CONFLICTS OF INTEREST

The authors state that they have no conflict of interest.

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