

Multiple Sclerosis anti-CD20 (Ocrelizumab) therapy inducing hypogammaglobulinemia

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Introduction: Multiple sclerosis (MS) is a progressive autoimmune demyelination of the central nervous system. Therapies used in clinical practice encompass anti-CD20 agents such as Ocrelizumab and Rituximab that selectively target CD20+ B-cells to suppress the inflammation of the disease pathway. However, B-cell deficiency contributes to a heightened risk for infection. Anti-CD20 mAb drug-induced hypogammaglobulinemia puts patients at risk for various complications such as reactivation of latent infections, respiratory tract infections, and neutropenia.

Case Presentation: A 58-year old female with past medical history of MS and recurrent sinopulmonary infections, presented with persistent fatigue, fevers, and chest discomfort upon inhalation. Chest CT was notable for ground glass opacities in right upper lobe. Labs were ordered for viral respiratory panel, viral culture, fungal culture, and serum immunoglobulins. Bronchoalveolar lavage isolated mold and oral voriconazole was administered when isolate identified *Penicillium* sp. fungus. Patient is on Ocrelizumab, twice yearly infusions for the past 5-6 years. Diagnosis of pulmonary fibrosis secondary to bronchiolitis on 6/20/2023 and patient was referred to immunology for intravenous immunoglobulin injections or other therapy to support immune system.

Conclusion: Diagnosis of penicilliosis is through microscopy, histology, and culture of the fungus from bone marrow, skin lesions, and blood. Therapy is extrapolated from *Talaromyces marfenii* guidelines (formerly *Penicillium*). Preferred treatment is induction therapy with amphotericin B for 2 weeks followed by consolidation therapy with itraconazole for 10 weeks. There is no guidance on routine secondary prophylaxis.

Patient has anti-CD20 mAb drug-induced hypogammaglobulinemia contributing to her chronic lung disease bronchiectasis due to low IgA and IgM levels which is causing recurrent infections due to patient's immunosuppressed state, resulting in organized pneumonia. Frequent measurement of immunoglobulin levels, immunoglobulin transfusions, and immunologist check-ins are vital for immunocompromised individuals on these anti-CD20 therapies.