Clinical Image

Mycobacterium Avium Complex Infection of the Knee-Joint after Rituximab Treatment for Sclerodermatomyositis

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CLINICAL IMAGE

A 49-year-old Caucasian male with a long-standing history of sclerodermatomyositis presented with a slowly progressive right medial thigh swelling over the preceding six months. Traditional disease modifying anti-rheumatic drugs having failed, rituximab intravenous infusions (every six months) were instated 3 years ago along with variable dose of oral prednisone. Physical examination revealed a large (>10 cm) fluctuant mass on the medial distal right thigh associated with overlying erythema (Figure 1). Magnetic resonance imaging revealed a large multi-septated complex cyst primarily in the popliteal fossa between the medial head of the gastrocnemius and semimembranous tendon. Mycobacterium avium intracellularare (MAI) was cultured from synovial fluid aspirated from the knee joint. The mass was surgically resected and histopathological analysis revealed necrotizing granulomatous inflammation (Figure 2 a, b and c). Although special stains for acid fast bacilli were negative, nucleic acid testing of the tissue identified DNA sequences specific for MAI. Immunohistochemistry revealed that the majority of the inflammatory infiltrate consisted of histiocytes stained by CD68 with a significant number of T-lymphocytes stained by CD3. There was a total absence of B-lymphocytes on CD20 and CD79a staining (Figure 2 d).

Infection with ‘non tuberculosis mycobacteria’ (NTM) has been reported with the use of rituximab in inflammatory myopathies [1]. Mycobacterium tuberculosis has also been detected following rituximab therapy in a rheumatoid arthritis patient [2]. Although extensive work illustrating the importance of cellular immune mechanisms for protection against mycobacterial infection has largely relegated B-cell biology to an afterthought, it has been illustrated that B lymphocytes, through a variety of interactions with the cellular immune response, play previously underappreciated roles in shaping host defence against non-viral intracellular pathogens, including mycobacteria via impairing activation and clonal-expansion of T-lymphocytes [3]. Our case confirms the medical relevance of this observation previously noted only in the murine model. Interestingly two cases of adding rituximab to treat disseminated NTM infections have been reported in patients with anti-interferon gamma (IFN-γ) auto antibodies. Rituximab has shown to be effective in reducing autoantibody titers, improving IFN-γ signaling, and achieving clinical remission of NTM infections. These novel findings suggest that the benefits of CD20 depletion could...
accumulate over time, possibly due to the exhaustion of plasma blasts that would substitute autoantibody-producing plasma cells [4,5].

REFERENCES


Figure 2: (a) H&E sections of the lesion show a peripheral hypocellular rim consisting of fibroblasts and collagen (block arrow) while centrally the lesion consists of eosinophilic, friable and necrotic contents (arrow) surrounded by an inflammatory infiltrate in a palisading pattern (arrow heads); (b) 2X magnification demonstrating areas of necrosis (arrow) with palisading inflammatory infiltrate (arrow heads); (c) On higher magnification (20X) the inflammatory infiltrate consists predominantly of histiocytes, scattered reactive lymphocytes and focally multinucleated giant cells (arrows) were identified. The overall features are diagnostic of necrotizing granulomatous inflammation; (d) Immunohistochemical stains demonstrate that the majority of the inflammatory infiltrate consists of histiocytes stained by CD68; with scattered T-cell lymphocytes stained by CD3. No B-cell population is identified within the infiltrate; both immunohistochemical stains CD20 and CD79a were negative for B-cells throughout the entire lesion.