

**Category:** Présentation de cas clinique / Clinical case presentation

**Primary author:** Michael Catarino    **Institution:** McGill University, Montreal, QC, Canada

**Additional Authors:** Dr. Inés Colmegna - McGill University, Dr. Évelyne Vinet - McGill University

**Title:** Chimeric antigen receptor (CAR) T cell therapy in primary Sjögren syndrome associated non-Hodgkin lymphoma: a case report

**Objective(s):** Chimeric antigen receptor (CAR) T cells are a novel gene-engineered cellular immunotherapy where a synthetic T cell receptor is expressed to redirect the T cell to a desired target. CD19 CAR T cells deeply deplete B cells and are an approved therapy for B cell lymphoma. Autologous CAR T cell therapy in patients with relapsed or refractory diffuse large B cell lymphoma and concurrent autoimmune rheumatic diseases could be an effective treatment for both conditions. We aimed to report a case of primary Sjögren Syndrome (pSS) complicated by systemic features including cryoglobulinemia, and non-Hodgkin lymphoma treated with a CD19 CAR T cell product. We also provide a brief narrative review on the use of CAR T cell therapies in systemic autoimmune rheumatic diseases (SARDs).

**Method(s):**

**Result(s):** A 46 year-old woman was diagnosed with pSS in 2005 when she presented with sicca symptoms, swollen parotid glands, elevated rheumatoid factor (RF), low C3/C4, and lymphopenia. In addition, she had positive anti-nuclear antibody (ANA, speckled), SSA (high-titre) and SSB. Her disease course was complicated by esophageal achalasia, biopsy-proven leukocytoclastic vasculitis, bronchiectasis, HELLP syndrome, biopsy-proven immune-complex glomerulonephritis with cryoglobulinemia, and a bone marrow biopsy demonstrating a marginal zone lymphoma versus Waldenstrom macroglobulinemia that transformed into diffuse large B cell lymphoma refractory to six cycles of rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone (R-CHOP). Subsequently, she was treated with CD19 CAR T cells achieving remission of both the lymphoma and pSS, with negativization of ANA, SSA, SSB, and RF.

**Conclusion(s):** This case as well as recent published data show the potential of CAR T cell therapy for uncontrolled SARDs and/or their complications, such as lymphoma.