INTRODUCTION

• Systemic Sclerosis (SSc) is a rare autoimmune disease which affects the connective tissue of the skin and internal organs.

• In the United States, anti-topo I antibody has been found in about 20% of patients with SSc.

• The presence of anti-topo I antibody is associated with an increased risk of developing diffuse cutaneous SSc (dcSSc), scleroderma renal crisis and scleroderma-related progressive interstitial lung disease (ILD).[1,2]

• The gold standard for anti-topo I antibody testing is immunodiffusion (ID).[3]

• Enzyme-linked immunosorbent assay (ELISA) and multi-bead technology are often used in current settings to save time and cost.

• There has been concern that using this methodology causes increased false positivity of the anti-topo I antibody.

• Others have postulated that the differences in epitope recognition, manner of antigen/epitope display on bead surface, and/or antibody avidity and affinity in solid-phase and liquid-phase assays may explain this discrepancy.[3]

• Contamination of antibodies or binding of anti-DNA/DNA complexes to topo-I may also account for this.[4]

METHODS

Step-wise antibody testing method

• We conducted a retrospective study of 129 patients at the University of Michigan whose extractable nuclear antigen-10 (ENA-10) autoantibody panel tested positive for anti-topo I antibody by multi-bead technology during a one-year period from August 2016 to August 2017.

• Anti-topo I antibody testing at UM is performed via the multi-bead method using the BioPlex 2200 system.

• All samples positive for the anti-topo I antibody by multi-bead testing were sent to the RDL Reference Laboratory for further testing by ELISA, and if positive, by ID.

• Anti-topo I ELISA testing was performed on the QUANTA Lite® Sc10 ELISA assay (Inova Diagnostics, San Diego, CA).

• Anti-topo I ID was performed by a proprietary procedure using an anti-topo I antigen from Inova Diagnostics.

• In an additional 24 patients who were positive for anti-topo I, we reviewed the multi-bead values in International Units (IU) and its relationship with the diagnosis.

RESULTS

Clinical Data

• Clinical data for all patients was reviewed by the first author and a rheumatologist (D.K.).

• We assessed if the patients were seen in a rheumatology clinic, if they fulfilled the 2013 ACR/EULAR classification criteria for SSc, and if a diagnosis of SSc or other connective tissue disease (CTD) was established.

• For those referred to rheumatology clinic, the charts were reviewed for signs, symptoms, and other autoantibodies suggestive of a CTD.

• We also documented evidence of internal organ involvement (interstitial lung disease, ILD), rheumatoid arthritis, systemic lupus erythematosus, and other connective tissue diseases (CTD).

OBJECTIVE

Assessment of anti-topo I antibody testing at the University of Michigan

• Our aim was to assess the performance of the multi-bead, ELISA, and ID testing methods for anti-topo I antibody within a single academic center.