Figure 1. Treatment progression among individuals in FORWARD with IM. Baseline (at study entry) treatment category is shown on the left, and ultimate treatment category (during observation) is shown on the right. First line = glucocorticoid + methotrexate, azathioprine, or mycophenolate. Second line = calcineurin inhibitors or IVIG. Third line = rituximab or cyclophosphamide.

REFERENCES: NIL.

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POS1237 MICROVASCULAR DAMAGE IN AUTOIMMUNE CONNECTIVE TISSUE DISEASES: A CAPILLAROSCOPIC ANALYSIS FROM 20 YEARS OF EXPERIENCE IN A EULAR TRAINING AND RESEARCH REFERRAL CENTER FOR IMAGING

Keywords: Diagnostic Tests, Myositis, Systemic sclerosis

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Background: Nailfold videocapillaroscopy (NVC) safely allows the detection of microvascular damage which can vary in terms of extent and severity (validated NVC patterns) in patients with Raynaud’s phenomenon (RP) secondary to autoimmune connective tissue diseases (CTDs).

Objectives: The prevalence of the morphological capillary findings was retrospectively evaluated in a wide cohort of patients with RP secondary to a CTD at the time of the first single NVC analysis, independently from their current treatment, autoantibody profile and comorbidities.

Methods: One-thousand-one-hundred-eighty-one (1181) patients affected by CTDs (1065 females, mean age 54.1 ± 16.2, mean disease duration 4.5 years ± 3) were analysed from 2001 to 2021. The considered CTDs, diagnosed through the classification criteria available at the time of the enrollment, included: systemic sclerosis (SSc, 51%), undifferentiated connective tissue disease (UCTD, 28%), mixed connective tissue disease (MCTD, 6%), dermatomyositis (DM, 3%), systemic lupus erythematosus (SLE, 9%), Sjögren’s syndrome (SS, 3%) and primary antiphospholipid syndrome (aPS, 2%). The capillaroscopic parameters were classified according to the CAP Fast Track Algorithm and distinguished between scleroderma-pattern (specific NVC alterations) and non-scleroderma patterns (non-specific NVC alterations) [1]. The presence of specific NVC findings detectable with a progressive microangiopathy in SSc patients (“early”, “active”, “late” patterns) were searched also in all the CTDs (respectively, in 48%, 41% and 36% of cases). Moreover, giant capillaries and abnormal shapes were detected in 61% and 41% of MCTD patients. In all the CTDs (respectively, in 48%, 41% and 36% of cases). Moreover, giant capillaries and abnormal shapes were detected in 61% and 41% of MCTD patients. In APS, the most significant prevalence of microhaemorrhages (50%) was observed compared with other CTDs, to the exclusion of SSc and DM being detectable in 70% of cases. No significant damages were observed in SS and SLE patients (Figure 1).

Conclusion: This large sample size of CTDs patients, collected over 20 years of analysis, confirms the highest specificity and severity of the NVC microvascular damage respectively in SSc and DM patients, when compared to other CTDs. Those data will be used to implement easy algorithms to distinguish scleroderma patterns, from non-scleroderma and scleroderma-like patterns.


POS1238 FIRST EVIDENCE FOR EFFICACY OF CAR-T CELL TREATMENT IN REFRACTORY ANTISYNTHETASE SYNDROME

Keywords: Treat to target, Myositis, Remission

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Background: We previously reported that deep B cell depletion using a single infusion with autologous CD19 chimeric antigen receptor (CAR) T cells induced drug-free clinical remission in patients with severe systemic lupus erythematosus [1,2]. Whether other forms of severe autoimmune disease are sensitive to treatment with CD19 CAR-T cells has been unknown to date. Antisynthetase syndrome (ASS) is a autoimmune disease that affects muscles, joints, skin and lung. ASS can be very severe and life-threatening needing effective and fast treatment. This abstract presents the first evidence that severe ASS is highly sensitive to treatment autologous CD19 CAR-T cells.

Objectives: To test whether administration of CD19 CAR-T cells is tolerable and effective in patients with severe refractory Antisynthetase syndrome.

Methods: Autologous CD19 CAR-T cells were prepared from leuakapheresis specimen after enrichment of T cells and transfection with MB-CART19.1 compared with other CTDs (respectively in 73%, 99% and 70% of SSc patients e in 73%, 96% e 70% of DM patients, Figure 1). The non-specific abnormalities of capillary morphology, such as the ramifications (abnormal shapes as expression of microangiopathy) were significantly more frequent in SSc, MCTD and APS among all the CTDs (respectively, in 48%, 41% and 36% of cases). Moreover, giant capillaries and abnormal shapes were detected in 61% and 41% of MCTD patients. In APS, the most significant prevalence of microhaemorrhages (50%) was observed compared with other CTDs, to the exclusion of SSc and DM being detectable in 70% of cases. No significant damages were observed in SS and SLE patients (Figure 1).

Conclusion: This large sample size of CTDs patients, collected over 20 years of analysis, confirms the highest specificity and severity of the NVC microvascular damage respectively in SSc and DM patients, when compared to other CTDs. Those data will be used to implement easy algorithms to distinguish scleroderma patterns, from non-scleroderma and scleroderma-like patterns.


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Objectives: To test whether administration of CD19 CAR-T cells is tolerable and effective in patients with severe refractory Antisynthetase syndrome.

Methods: Autologous CD19 CAR-T cells were prepared from leuakapheresis specimen after enrichment of T cells and transfection with MB-CART19.1
lentiviral vector (Milleny) encoding for a 4-1BB based CAR targeting CD19. Cells were expanded for 12 days and 1 million CAR-T cells/kg body weight were administered as a single intravenous infusion after standard conditioning therapy with cyclophosphamide/fludarabine, as described previously [1,2]. All disease-related treatments were stopped before CAR-T cell administration. Patients were followed up in inpatient care for the first 10 days after CAR-T cell administration, thereafter weekly until the end of the first month, then monthly for three months and every three months later. Tolerability was assessed by monitoring for Cytokine-Release Syndrome (CRS) and Immune-related effector Cell Neurotoxicity Syndrome (ICANS). Efficacy was assessed by CK levels, good response according 2016 ACR/EULAR total improvement score (TIS), imaging of muscles and lungs and successful cessation of all immunosuppressive treatments including glucocorticoids.

**Results:** Two anti-Jo1 ASS patients (patient 1: 41 year old male, patients 2: 43 year old female) were treated with CD19 CAR-T cells. Both patients presented with active myositis with CK levels of 9305 U/l (normal value <190 U/l), and 3055 U/l, respectively. Patient 1 showed involvement of the muscles, skin and lungs, patient 2 showed involvement of muscles, skin, joints and lungs. Patient 1 did not respond to 5 different immunosuppressive treatments including cyclophosphamide and rituximab, patient 2 did not respond to 10 treatments including cyclophosphamide, rituximab and ocrelizumab. CAR-T cell treatment was well-tolerated. Only mild CRS (grade I discrete ataxia for a few days) two weeks after CAR-T treatment. In patient 1, CAR-T cells expanded to a maximum of 60 cells/μl on day 8, in patient 2 to 1524 cells/μl on day 8. Expansion of CAR-T cells paralleled with the complete depletion of circulating B cells. B cell aplasia lasted for 119 days in patient 1, while patient 2 is still in B cell aplasia (day 60). Both patients experienced normalization or significant reduction in CK levels (patient 1: CK+120 days: 70 U/l, patient 2: CK+60 days: 311 U/l), major clinical improvement according to the 2016 TIS and could stop all immunosuppressive therapy. Follow-up CT scans of the lungs and MRI of the thigh muscles done in patient 1 showed resolution of muscle and lung inflammation and abrogation of disease-associated autoimmunity.

**REFERENCES:**

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