CAPILLAROSCOPY AND INTERSTITIAL LUNG DISEASE IN SYSTEMIC SCLEROSIS: A SYSTEMATIC REVIEW

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Background: At this very moment, no systematic review evaluating the role of nailfold videocapillaroscopy (NVC) with standardised definitions, in interstitial lung disease (ILD) has been published.

Objectives: To systematically identify and review all available literature evaluating the role of NVC in ILD in Ssc, according to the definitions of the EULAR study group on microcirculation in Rheumatic diseases. 1Department of Internal Medicine, Ghent University, 2Department of Rheumatology, Ghent University Hospital, Ghent, Belgium; 3Research Laboratory And Academic Division Of Clinical Rheumatology, Department Of Internal Medicine, Inns San Martino Aou, University Of Genoa, Genoa, Italy; 4Department of Cardiology, Ghent University Hospital, Ghent, Belgium

Methods: A systematic literature search was performed in Pubmed, EMBASE and Web of Science. All retrieved articles were screened on title, abstract and full-text level. Reference lists and google scholar were additionally searched. Original research papers that documented an association between NVC and ILD in SSc were included. Subsequently, NVC parameters were subdivided in quantitative (density, dimension, morphology and haemorrhages), semi-quantitative (NVC score) and qualitative assessment (presence, severity and worsening of scleroderma pattern). Presence of scleroderma pattern has been evaluated in 1 study and has been unequivocally associated with reduction of DLCO. Dimension, morphology and haemorrhages have all been evaluated in 1 study, with no unequivocal results. Morphology has been evaluated in 1 study and has been unequivocally associated with HC on HRCT. Haemorrhages have not been evaluated. NVC score has been evaluated in 2 studies and has been unequivocally associated with GGO on HRCT and total lung score. Presence of scleroderma pattern has been evaluated in 3 studies and has been unequivocally associated with reduction of DLCO and severe lung involvement. Severity of scleroderma pattern has been evaluated in 4 studies and has been unequivocally associated with reduction of DLCO and FVC, ILD on chest X-ray and lung involvement. Worsening of scleroderma pattern has been evaluated in 2 studies and has been unequivocally associated with future lung involvement.

Results: The systematic search identified 299 unique search results, of which 145 references were withdrawn after title screening. Abstract screening resulted in 39 references, only 16 were eligible for full-text review. Finally, 16 references were included in the final analysis after full-text screening (n=13) and bibliographic search (n=3) (see table 1).

Conclusions: This systematic literature review, on behalf of the EULAR study group on microcirculation in Rheumatic diseases, is the first to investigate unequivocal associations between ILD and capillaroscopic alterations in a standardised way. Unequivocal associations were found in cross-sectional studies between density, morphology, NVC score, presence and severity of scleroderma pattern and in longitudinal studies between density, presence and worsening of scleroderma pattern and ILD-defining parameters in SSc patients.

REFERENCES:

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MEAN NUMBER OF CAPILLARIES IS ASSOCIATED WITH DISEASE ACTIVITY AT 6 MONTHS FOLLOW-UP IN SYSTEMIC SCLEROSIS PATIENTS

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Background: Nailfold capillaroscopy (NFC) is essential in the evaluation and classification of systemic sclerosis (SSc). The mean number of capillaries is considered a promising tool for assessing vascular involvement in SSc, however there is no consensus yet over how many digits should be analysed and how.

Objectives: Investigation of the associations of the mean number of capillaries, measured by NFC with disease activity (EScSG activity score) and vascular involvement (digital ulcers (DUs) or history of DUs) in a single-centre cohort of patients with SSc.

Methods: 68 patients with SSc fulfilling the ACR/EULAR 2013 classification criteria were included. NFC and extensive assessment per the recommendations of EUSTAR were performed in all patients. 54 patients had a follow-up (FU) at 6 months.

Results: 2176 images were scored at baseline and 1728 at FU. The m_nr/pat at baseline ranged between 3.4–9.1, mean(SD) 5.6 (1.7) for rater 1, respectively 3.3–8.9, 5.2 (1.4) for rater 2. There was good to excellent correlation (Spearman’s rho) at baseline and FU of the m_nr/pat with m_nr/3rd dom, m_nr/4th non-dom and Cutoło patterns, and fair correlation of m_nr/3rd dom with m_nr/4th non-dom and Cutoło patterns. We found significant differences of all mean scores of capillaries between patients with and without history of DUs (Mann Whitney U test) (table 1). Using linear regression adjusted for age, gender and history of DUs, mean number of capillaries was associated with disease activity at FU (table 2).

Abstract FRI0428 – Table 1. Differences in mean number of capillaries in patients with and without history of DUs

<table>
<thead>
<tr>
<th>History of DUs</th>
<th>m_nr/pat rater 1</th>
<th>m_nr/3rd dom rater 1</th>
<th>m_nr/4th non-dom rater 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>No history of DUs min-max</td>
<td>3.4–6.5, 6.04 (1.4)</td>
<td>2.5–9.8, 9.49 (1.79)</td>
<td>2.0–9.0, 8.48 (1.5)</td>
</tr>
<tr>
<td>mean(SD)</td>
<td>3.4–9.1, 6.4 (1.8)</td>
<td>2.5–10.3, 36.2 (2.3)</td>
<td>2.5–11.5, 6.0 (2.1)</td>
</tr>
<tr>
<td>p&lt;0.05</td>
<td>0.02</td>
<td>0.03</td>
<td>0.02</td>
</tr>
</tbody>
</table>

*Mann Whitney U test
Abstract FRI0429 – Table 2. Associations between mean number of capillaries at baseline and disease activity (ESSG score 2003) at FU (linear regression)

<table>
<thead>
<tr>
<th>Predictors</th>
<th>B (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>m_nr/pat rater</td>
<td>-0.45 (-0.834, -0.07)</td>
<td>0.02</td>
</tr>
<tr>
<td>m_nr/3rd dom rater</td>
<td>-0.33 (-0.62, -0.03)</td>
<td>0.03</td>
</tr>
<tr>
<td>m_nr/4th non-dom rater</td>
<td>-0.27 (-0.57, 0.02)</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Conclusions: The mean number of capillaries had a good association with the history of DUs and predicted disease activity at 6 months follow-up. The m_nr/pat performed better in our analysis than the m_nr/3rd dom and m_nr/4th non-dom, however these could be used alternatively in clinical practice as they are less time consuming.

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FRIO430

DISTINCT CLINICAL AND IMMUNOLOGICAL PICTURE OF MCTD PATIENTS WITH SKIN INVOLVEMENT

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Background: Mixed connective tissue disease (MCTD) is characterised by the co-existence of systemic lupus erythematous (SLE), rheumatoid arthritis (RA), systemic sclerosis (SSc) and polymyositis/dermatomyositis (PM/DM) symptoms. The majority of patients have skin symptoms typical of at least one of the diseases making up the clinical picture MCTD. MCTD is characterised by an auto-reactive antibody response to RNP-antigen and formation of anti-U1RNP antibodies. Current knowledge on cytokine biology and their documented role in the pathogenesis of SLE, SSc and PM/DM suggests that also in MCTD some of them may affect clinical course, activity and/or degree of organ damage.

Objectives: To compare clinical and immunological characteristics of MCTD patients with/without skin involvement.

To identify clinical and immunological parameters increasing the risk for a specific (SLE- or SS-like) type of skin lesions and protecting against them.

Methods: 79 MCTD patients based Kasukawa’s MCTD diagnostic criteria were included. The patients were divided into groups based on the presence of skin lesions typical for a given MCTD component: SLE- or SS-like. Further, statistical analysis was performed by using independent t- test, Mann-Whitney test and logistic regression analysis.

Results: Skin lesions were found in the majority of the MCTD patients (81%). The SLE- or SSc- and DM-specific skin symptoms were found in 54%, 61% and 55% of the patients, respectively. The group of patients with skin symptoms typical of DM was small to distinguish it separately (4/7). The measures of disease activity (mean Al-10.6 vs 5.5; p<0.006) and MCTD-related damage (DI=4.1 vs 2.1; p=0.009) in patients with skin involvement were twice as high as in individuals with the intact skin. Furthermore, patients with skin involvement had higher mean serum concentrations of TNF-α (46.4 vs 2.3 pg/ml; p=0.013) and lower levels of IFN-γ (43.2 vs 120 8 pg/ml; p<0.001) than patients without any skin symptoms. The following clinical and immunological parameters were shown to be independently associated with specific types of skin involvement in MCTD patients on multivariate logistic regression analysis:

- SLE-like skin changes: increased ESR (OR=8.9, 4.47 and 2.6, respectively), higher AI scores and swelling of the hands,
- SSc-like skin changes: higher DI scores (OR=1.522), and presence of anti-Ro60 antibodies (OR=15.903)
- Independent protective factors for:
  - SLE-like MCTD: chronic progressive course of the disease (OR=0.248) and higher serum concentration of IFN-γ (OR=0.998)
  - SSc-like MCTD: acute onset of the disease (OR=0.155)

Conclusions: The course of MCTD in patients with skin involvement is more severe with specific panel of cytokine levels (increased TNF-α and decreased IFN-γ serum concentrations) is characteristic, as compared to patients with the intact skin.

Patients with SLE-like skin lesions MCTD is more often multiphasic, its clinical activity and levels of inflammatory markers are higher while serum concentration of IFN-γ is diminished. Patients with SSc-like skin lesions more often have chronic MCTD, associated with more severe organ damage and elevated serum levels of TNF-α.

Disclosure of Interest: None declared


FRIO431

 EFFECT OF ORAL NUTRITIONAL INTERVENTION ON NUTRITIONAL STATUS IN PATIENTS WITH SYSTEMIC SCLEROSIS

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Background: Patients with systemic sclerosis (SSc) are at risk of malnutrition, which ranges from 18% to 56% of cases.1,2 The high impact of nutritional status on clinical outcome has been shown for many diseases. The optimal nutritional treatment can lead to improvement or preservation of the current nutritional status and increases probability of long-term survival.3

Objectives: The aim of the study was to determine whether nutritional support has an impact on improvement of nutritional status in SSc patients.

Methods: The study included 61 patients with SSc and 49 healthy adults. Nutritional status was determined with subjective global assessment (SGA), body mass index (BMI), bioelectrical impedance analysis (BIA) and anthropometric measurements. Nutrition-related laboratory tests were measured. Appetite was assessed by simplified nutritional appetite questionnaire (SNAQ).

Results: Impaired nutritional status was confirmed in 16 patients with SSc (26.2%). Those patients had significantly lower SGA, BMI (p=0.0019), hand grip strength (p=0.0019), appetite (p=0.019) and BIA parameters such as lean tissue mass (p=0.013), intracellular water (p=0.0006), adipose tissue mass (p=0.04). In laboratory tests levels of haemoglobin, albumin and HDL cholesterol were significantly lower, while erythrocyte sedimentation rate (ESR) was higher (p<0.0025).

Thirteen patients had dietary intervention (high-energy, high-protein, oral, liquid nutritional supplements) for 12 weeks. SGA (p=0.017) and hand grip strength (p=0.006) improved after nutritional treatment. BMI, appetite, BIA parameters, lipid profile and ESR after 12 weeks remained stable.

Conclusions: Assessment of nutritional status in SSc patients should be performed regularly, because inclusion of oral nutritional intervention may improve SGA and hand grip strength.

REFERENCES:


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FRIO432

DYSGREGULATION OF LYMHOANGIOTENIC FACTORS IN SYSTEMIC SCLEROSIS PATIENTS WITH PULMONARY ARTERIAL HYPERTENSION

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Background: Pulmonary arterial hypertension (PAH) continues to be a major complication in systemic sclerosis (SSc); indicating an unmet need for rational therapeutic targets. Recently, we found that chemokine CCL21 was upregulated in SSc compared to healthy controls. CCL21 is a known regulator of VEGF-C. Moreover, it was recently shown that VEGFR3, the cognate receptor for VEGF-C, is down-regulated in pulmonary arterial endothelial cells from human idiopathic PAH subjects with BMPR2 gene defects. Based on these observations, we reasoned that the observed upregulation of CCL21 in SSC-PAH could be linked to VEGF-C and Ang-2 dysregulation.

Objectives: Assessment serum concentrations of CCL21, the VEGF family and Ang-2 in right heart catheterization (RHC) verified SSc-PAH patients and compare these to patients with borderline PAH, no PAH and to healthy controls.

Methods: Sera from the prospective Oslo University Hospital SSc cohort (n=372) and healthy controls (n=100) were analysed for VEGF-A, C-D, CCL21 and Ang-2 using Luminex kits from Millipore. Patients with an incident RHC (n=167) were included in the present study. PAH was defined as pre-capillary PH (mean