CAPILLAROSCOPY IN SYSTEMIC SCLEROSIS RELATED PULMONARY ARTERIAL HYPERTENSION

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Background: Despite its importance in diagnosing SSC, the role of nail-fold videocapillaroscopy (NVC) in evaluating SSC-related PAH using standardized NVC definitions has not yet been the subject of a systematic literature review.

Objectives: To identify and critically appraise all currently available literature evaluating NVC in SSC-related PAH according to the standardized definitions of the EULAR Study Group on Microcirculation in Rheumatic Diseases (EULAR SG MC/CRD).

Methods: Original longitudinal or cross-sectional studies, documenting an association between NVC parameters and SSC-related PAH (confirmed on right heart catherization) were identified, by means of a systematic literature search in PubMed, EMBASE and Web of Science. All retrieved records were screened by two raters based on title, abstract and full-text level to finally include manuscripts eligible for quality appraisal and data extraction. NVC parameters were evaluated as proposed by the EULAR SG MC/CRD as follows: quantitative (capillary density, dimension, morphology and haemorrhages), semiquantitative and qualitative assessment (NVC pattern).

Results: The systematic search retrieved 316 records, of which a total of 234 unique titles were screened. Of those, 28 records eligible for full-text review. Finally, only 5 fulfilled the predetermined eligibility criteria.

Two high-quality longitudinal studies were identified [1,2]. Both baseline and progression of capillary loss were found to be associated with incident SSC-related PAH [1,2]. Both studies reported an association between baseline abnormal capillary morphology and incident SSC-related PAH [1,2]. No association with incident SSC-related PAH was found between capillary dimension nor presence of haemorrhages [1]. Concerning qualitative assessment, Avouac et al. reported worsening to a late NVC pattern over time to be more commonly associated with incident SSC-related PAH [1]. Finally, Sulli et al. found severe NVC patterns (i.e. active or late) to be more commonly associated with incident SSC-related PAH [2].

Three fair-quality cross-sectional studies were identified [3-5]. Capillary density has been unequivocally inversely associated with SSC-related PAH [3,4].

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Capillary dimorphism has been evaluated in 2 studies, with no unequivocal results [3,4]. Corrado et al. found abnormal morphology to be more commonly associated with SSc-PAH [4]. No association was found between presence of haemorrhages and SSc-PAH [4]. Ricieri et al. found that NVC score and avascular area grade were more commonly associated with SSc-PAH [5]. Concerning qualitative assessment, severe NVC patterns have been unequivocally found to be more commonly associated with SSc-PAH [4,5].

**Conclusion:** This is the first systematic literature review to investigate the role of NVC in SSc-PAH using standardized definitions as proposed by the EULAR SG MC/RD. Unequivocal associations with incident SSc-PAH were found in longitudinal studies between capillary density, abnormal morphology and NVC pattern. Unequivocal associations with SSc-PAH were found in cross-sectional studies between capillary density and severe NVC pattern.

**REFERENCES:**


**TUBERCULIN SKIN TEST FOR DETECTION OF TUBERCULOSIS IN SYSTEMIC SCLEROSIS**

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**Background:** The tuberculin skin test (TST) is a screening tool for detection of occult or remote tuberculosis infection. Although skin tightness is a classic manifestation in systemic sclerosis (SSc), there are no reports vis-à-vis any limitation of the TST in SSc patients nor a definition on the cut-off for a positive TST result for a diagnosis of tuberculosis.

**Objectives:** Our aim was to determine: (a) the indurated reaction size of the TST; (b) the cut-off size for the indurated TST; and, (c) the sensitivity and specificity of the test for the diagnosis of tuberculosis in SSc patients.

**Methods:** A cross-sectional study was conducted among Thai adult SSc patients, followed up at the Scleroderma Clinic, Khon Kaen University, Thailand between November 1, 2016 and November 30, 2017. The TST was performed using 0.1 ml purified protein derivatives (PPD) injected intradermally (Figure 1), and interpreted 72 hours after testing.

**Results:** A total of 168 SSc patients were enrolled (female to male ratio = 1.81). The median age and duration of disease was 57.2 and 6.4 years, respectively. The majority (71.8%) was the diffuse cutaneous SSc subset. Seventeen cases (10.1%) were defined as tuberculous infection. All of the patients had a history of BCG vaccination at birth. An indurated skin reaction size TST of 20 U/L had a high specificity for tuberculosis (99.3%; 95%CI 96.4-100) (Kappa 0.86; p=0.03). The modified Rodnan skin score (mRSS) had a significant negative correlation with the indurated skin reaction size (Rho -0.23; p=0.003). While other clinical parameters—such as BMI, SSc subset, serum albumin level, steroid or immunosuppressant use—were not correlated with the TST result (ρ=0.06, 0.14, 0.09, 0.23 and 0.89, respectively).

**Conclusion:** Indurated skin ≥ 20 mm indicated a high specificity for tuberculosis infection in SSc patients with history of BCG vaccination. The high mRSS resulted in a smaller skin reaction size when using the TST. The TST is thus less useful as a diagnostic tool for tuberculosis among SSc patients, especially among those with severe skin tightness.