distinguishing normal capillaroscopic findings from (pathognomonic) abnormal (pathological) findings (scleroderma pattern), lies in the fact that this distinction allows the differentiation between a primary RP (not connected to any connective tissue disease [CTD]) from a secondary RP due to systemic sclerosis (SSc) and diseases of the scleroderma spectrum.

What is normal in primary RP?

A normal capillaroscopic pattern, by qualitative assessment, is characterized by a homogeneous distribution of hairpin shaped capillaries as a "comb-like structure", with a density of >7 capillaries per mm, with a normal dimension and absence of large hemorrhages. Yet, there exists a wide intra- and inter- individual variety in a normal population which will be discussed in this session.

What is pathognomonic abnormal in patients with RP due to SSc?

Patients with the RP who have an underlying clinically recognizable (= with skin involvement) SSc show a very characteristic combination of capillary abnormalities in the nailfold, which can easily be assessed through qualitative assessment (= pattern recognition). Maricq et al. described last century, with the widefield technique (magnification X12–14) the scleroderma pattern. This pathognomonic combination contains the following: a striking widening of all three segments of the capillary loop (arterial, venous and intermediate), loss of capillaries and disorganization of the nailfold capillary bed. Many branched "bushy" capillaries may also be observed.

In 2000, Cutolo et al. qualitatively assessed the nailfolds of an SSc cohort with patients fulfilling the American College of Rheumatology (ACR) criteria for SSc with the nailfold videocapillaroscopic (NVC) technique (magnification X200). According to the different proportions of the hallmark parameters of the scleroderma pattern (giants, capillary loss, hemorrhages and abnormal shapes: (neo) angiogenesis, Cutolo et al. defined three patterns "early", "active" and "late".

The central role of capillaroscopy in distinction between a primary and secondary RP due to SSc is reflected by the fact that capillaroscopy is one of the new ACR/EULAR criteria for classifying a patient as having SSc.

In this lecture the standard "FAST TRACK" recognition system of the EULAR Study Group on Microcirculation in Rheumatic Diseases to discern scleroderma patterns from non-scleroderma patterns will be taught to the attendees.

Suggested further reading:

- [1] Smith V, et al. *Rheumatology* (Oxford). 2016;55(5):883-90.
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SP0131

RELIABILITY IN THE LAST 10 YEARS: CAPILLAROSCOPIC CHARACTERISTICS VERSUS INSTRUMENTAL DETECTION

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Background: With nailfold capillaroscopy there are different aspects of reliability to consider, including reliability of qualitative image grading (e.g. 'early', 'active' and 'late') and also of semi-quantitative and quantitative measures including capillary density, apical width and presence of giant capillaries. The reliability of image acquisition (i.e. test-retest reliability) is especially important if nailfold capillaroscopic parameters are to be used in longitudinal studies (e.g. clinical trials) which involve acquiring repeat images over time. Lastly when assessing reliability, it is important to recognise that the nailfold capillaries cannot always be clearly seen, and cannot therefore be evaluated.

Objectives: To highlight the different aspects of reliability relating to nailfold capillaroscopy and how these have been addressed in studies over the last 10 years.

Methods: Review of recent studies.

Results:

1. Intra-observer reliability has been shown in several studies to be higher than inter-observer.
2. Assessment of 'evaluability' varies between observers and therefore also needs to be taken into account when assessing reliability.
3. Subject to evaluability, certain parameters demonstrate high intra- and inter-observer reliabilities. Reliability differs across different capillaroscopic parameters.

Conclusion: Recent studies examining reliability of capillaroscopy suggest that certain parameters, including image grade, capillary density and apex width have high intra- and inter-observer reliabilities (subject to nailfold image evaluability, which remains a major challenge). Standardised training is likely to improve reliability.

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SP0132

METHODS AND TOOLS FOR QUANTIZATION OF CAPILLAROSCOPIC MORPHOLOGICAL CHANGES

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Nailfold capillaroscopy is the one most used technique in both clinical and research settings by adult physicians and paediatric rheumatologists to assess patients with Raynaud's phenomenon as shown by an international survey on non-invasive techniques to assess the microcirculation performed under the aegis of members of the EULAR Study Group on Microcirculation in Rheumatic diseases [1].

Nailfold capillaroscopy is a simple non-invasive imaging technique mainly used to observe capillaries on the skin surface. After application of a drop of immersion oil, capillaries can be observed with a magnification lens because they run parallel to the epidermis at the nailbed area [2].

A number of different instruments can be used to perform the exam. They have different characteristics in terms of their cost, quality of images, magnifications, training period, portability, software for image analysis and storage.

Some of these instruments can be used both in clinical and research settings such as the stereomicroscope and the videocapillaroscope. The stereomicroscope allows the widefield visualization of the nailfold with low magnifications, the training is relatively short, but the examination is difficult to perform in patients with digital flexion contractures.

There appears to be consensus regarding the use of videocapillaroscopy that allows a detailed visualization of capillary morphology using higher magnifications (100-300x). Contact probe with polarized light microscopy permits easier observation of the skin surface, and the training period is briefer. Specific software are available for images analysis, storage, and complete medical reports (text + images) can be produced. By contrast, in a clinical setting, nailfold capillaries can generally be visualized using more simple, but also efficient tools such as a dermatoscope, USB microscope, ophthalmoscope or smartphone device. The quality of images can be quite good, although the lower magnification means that some details are unlikely to be seen, and they often lack the possibility of image storage and measurement. In particular, the dermatoscope with magnification of the order of x10 is a small, inexpensive and easily portable piece of equipment that has been suggested to be comparable to videocapillaroscopy in routine clinical practice. As the study of capillary morphology provides clinically relevant information in the management of patients with scleroderma-spectrum diseases, the development of specific software to standardize and automatize the analysis is ongoing [3-4].

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FRIDAY, 14 JUNE 2019

13:30:00 – 15:00:00

Ultrasound basic II

SP0133 HOW TO ASSESS US LESIONS FOR GOUT + DEMO

Sara Nysom. Center for Rheumatology and Spine Diseases, Rigshospitalet, Glostrup., Copenhagen Center for Arthritis Research (COPECARE), Glostrup, Denmark

Gout is the most common inflammatory joint disease in Western developed countries. Diagnosis and monitoring have historically been based upon clinical assessment combined with biochemical results (primarily p-urate) but over the last decade ultrasonography (US) has received increasing attention for these purposes. US has been shown able to detect monosodium urate deposits in both joints and tendons. In 2015 the Outcome Measures in Rheumatology (OMERACT) US Working Group developed definitions of structural lesions in gout. These include double contour sign (deposits of crystals on the surface of cartilage), tophus (larger hyper-echoic aggregation of crystals), aggregates (small hyper-echoic deposits) and erosion (1). The double contour sign has been included in the ACR/EULAR 2015 gout classification criteria as a way to visualize urate deposits in joints (2). Furthermore, US can visualize potential concomitant inflammatory aspects of gout since it can visualize both joint inflammation and tenosynovitis.

In this talk the diagnostic properties of US will be described and the potential risk of false positive results due to artefacts or misinterpreted lesions will be discussed. Furthermore, the potential role of US in monitoring of treatment response will be explored.

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SP0134 US FOR TROCHANTERIC PAIN SYNDROME – CLINICAL USE + DEMO

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Background: Greater trochanteric pain syndrome (GTPS) is a clinical diagnosis with the typical presentation of chronic intermittent lateral hip/thigh/buttock pain, aggravated with activity and when lying on the affected side. There is a lack of valid/specific diagnostic criteria for GTPS. GTPS can be attributed to a multitude of causes ranging from tendinopathy and/or rupture of the gluteal tendons and/or bursitis, to pathological alterations of the iliotibial band/fascia lata and other nearby anatomical structures located on the lateral part of the hip. To further complicate the diagnostic process, according to different studies, the prevalence of GTPS in adults with lower back pain has been found to be between 20-30%. Alterations of the lumbar biomechanics may interfere in the range of internal rotation of the hip and consequently produce a GTPS and vice versa. Changes in hip range of motion will trigger changes in the dynamics of lower extremities and the spine.

Generalized myofascial pain can also be a source of confusion when evaluating patients with GTPS.

Objectives: Understand the clinical anatomy of the lateral hip.

Interpret the US images of the lateral hip

Identify potential pain generators of the lateral hip.

Methods: The study of the static and dynamic sonoanatomy of the different components of the lateral region of the hip can contribute in a relevant way to clarify the diagnosis. In the eular guidelines of sonographic musculoskeletal (MSUS) exam published in 2017, the sonographic exam of the lateral hip has been developed in detail and will be discussed during this lecture.

The anatomy against what is often thought is not stagnant knowledge but evolves over the years providing new and useful data applicable in daily clinical practice. The anatomy, both static and dynamic, of the trochanteric region, is complex. For example, the subgluteus maximus bursa, which is frequently incriminated in the GTPS, is located in the posterior facet of the greater trochanter and is related to the iliotibial tract, the fascial contributions of the gluteus maximus and the tensor of the fascia lata muscle to the iliotibial tract and the origin of the vastus lateralis. In order to understand the multifunction and relationships of the different structures of this region means one has to have seen images of them and for that purpose, the human cadaveric dissection is the best tool. Thanks to the fact that the speaker is involved as a professor in the anatomy department at the University of Barcelona, Bellvitge campus, directed by prof M Miquel, the clinical anatomy part will be developed with real dissections made specifically for this lecture.

Results:

Conclusion: Knowledge of the clinical anatomy needed to understand the relationships between the different structures, the clinical history, and physical examination of GTPS patients and the therapeutic possibilities including ultrasound-guided injections are other steps that lead to an accurate diagnosis of GTPS

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SP0135 HOW TO DIFFERENTIATE MINIMAL DISEASE ACTIVITY IN RA + DEMO

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Ultrasound (US) is increasingly utilised as a point-of-care tool to diagnose early inflammatory joint disease, monitor treatment response and detect subclinical inflammation. This is feasible as US can detect joint, and tendon, inflammation before it becomes clinically apparent. Despite the increasing use of US in Rheumatology, the key research question yet to be addressed is defining 'the normal reference value at the joint level.'

Improvement in US technology over the last decade results in acquisition of higher resolution images. US can now detect subtle abnormality in joints of healthy individuals who are asymptomatic. Consequently, the imaging boundary between US changes of normal joints (i.e. *physiological changes*), and those of early arthritis joints (i.e. *early pathological changes*) has become unclear. In addition, a proportion of US-defined pathology observed in normal joints may be attributed to age-related changes.