

# Musculoskeletal ultrasound and ESPER

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In the early 70's ultrasonography was already commonly used by several medical specialties. It wasn't the case for rheumatology. In fact, even the seminal publications concerning the use of musculoskeletal ultrasound (MSUS) that emerged then were led by radiologists and were limited to the assessment of large joints. In the 90's, with a new generation of high frequency probes and with the advent of Doppler ultrasound, there was a dramatic improvement in the method's resolution and in the evaluation of inflammatory activity, widening horizons, unsuspected until then. Consequently, a growing amount of publications on MSUS emerged, concerning multiple pathologies, both in joints and in soft tissues, in adults and in children, and in ultrasound guided procedures.

In 1994, at the rheumatology department of Hospital de Santa Maria, the first MSUS assessments were just starting. However, those examinations were still very conditioned by the available technology. Meanwhile, the accumulated experience allowed the elaboration of five courses on MSUS, between 2004 and 2008, organized by portuguese rheumatologists (Fernando Saraiva, Manuela Costa, Margarida Silva and Margarida Cruz), for further dissemination of the method among senior rheumatologists and residents, under the patronage of the Portuguese Society of Rheumatology (PSR).

In 2009 the musculoskeletal ultrasound school of the PSR (ESPER) was founded, after Margarida Oliveira's proposition to the PSR board, whose chairman at the time was Rui André Santos. ESPER creation was the result of the awareness of the importance of MSUS, sometimes referred to as the rheumatologist's stethoscope, on our daily clinical practice, both in its diagnostic and therapeutic dimensions, in monitoring treatment response, particularly in inflammatory rheumatic diseases and in biotechnological era, given the significant sensitivity to change evidenced by this method. Ultrasonography in rheumatology nowadays

goes far beyond the joint territory, affirming itself also in the diagnosis and follow up of patients with Sjögren's syndrome (salivary glands ultrasound), scleroderma (skin and lungs ultrasound) and vasculitis (vessels).

ESPER goals are education in MSUS, fomenting the practice and research in this field, and contribute to MSUS certification.

ESPER has promoted three internal courses to teach its teachers, inviting international recognized specialists - A. Iagnocco, C. Martinoli, E. de Miguel, I. Moller, C. Moragues, E. Naredo – and three inter and intraobserver actions. Aiming the education of residents and senior rheumatologists in MSUS, ESPER has performed four basic courses, two intermediate courses, two basic and two advanced workshops and three monothematic courses (hand/wrist, ankle/foot and shoulder), which were theoretical-practical courses, elaborated according to EULAR recommendations.

From the eleven teachers founders of ESPER, three left earlier – Pedro Gonçalves, Graça Sequeira, Margarida Cruz – and four ended their functions in last October – Guilherme de Figueiredo, Mónica Bogas, Paulo Monteiro and Sandra Falcão. Margarida Oliveira, ESPER coordinator from the beginning also ended those functions. We wish to express our appreciation for the dedication, competence and strength they all lent to this project. Besides the author, Margarida Oliveira, Margarida Silva and Ricardo Figueira, continue to be part of ESPER and we will have now five new teachers – Dina Medeiros, Filipa Teixeira, Inês Silva, João Dias and Miguel Sousa – whom we welcome.

MSUS is devoid of adverse events or contraindications and is a low cost, accessible and portable method. It is not invasive, it is easily repeated and it is well tolerated and accepted by patients. It has a short execution time, which facilitates a multi-regional evaluation, it has a high spatial resolution and it allows dynamic studies and real time examinations, as well as ultrasound guided procedures.

Ultrasound detects subclinical synovitis and entesitis, being most useful in early diagnosis and in moni-

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toring disease activity and outcome. In fact the available instruments to identify disease remission are inexact, since inflammation is frequently found by ultrasound in joints thought to be in clinical remission. Furthermore, Doppler signal is associated with an increased risk of structural lesion.

Ultrasonography is more sensitive than X-Ray in identifying osteophytes, erosions and crystals in cartilage and fibrocartilage, and ultrasound guided procedures are more accurate and better tolerated and accepted by patients, providing superior results than non-guided techniques.

In a time of emerging technology such as tridimensional ultrasonography, elastography and contrast enhanced ultrasound, in which a formal training in MSUS is provided within EULAR and ACR courses and where several national rheumatology societies already

include MSUS in the skills required for their residents, efforts are being made to respond to the main challenges that face the technique – suppress standardization gaps through the elaboration of pathological change definitions, validation of systems of quantification of main elementary lesions, distinction between normal activity and minimal pathological changes and validation of an appropriate number of joints or entesis to be scanned, according to the exam's purpose, diagnostic or follow-up.

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