

Ultrasound in rheumatology. The Mexican experience.

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ABSTRACT

Over the last few years, a growing number of rheumatologists has taken great interest in ultrasonography for its well known advantages and wide spectrum of validated applications in daily rheumatological practice. Most rheumatologists actively performing ultrasonography have had a training experience mainly based on attendance in sonographic courses and/or in radiological or rheumatological units. At present, in Mexico ultrasonography has a still limited diffusion among rheumatologists even if it may play a key role as a first line imaging technique also because of the restricted availability for rheumatic patients for other imaging modalities. This report describes the Mexican experience in education and training on musculoskeletal ultrasound. In 2003, the Mexican School of Musculoskeletal Ultrasound of the Mexican College of Rheumatology (ECOMER) was founded with the intention of joining efforts to launch musculoskeletal ultrasound in Mexico. Essential requirements shared by all the members of ECOMER include: to own an ultrasound machine, to incorporate ultrasonography into clinical daily practice and to keep up-to-date in musculoskeletal ultrasound. The motto of ECOMER is "una clara imagen de la reumatología" which means "a clear picture of rheumatology". The statute of ECOMER can be read in its web site: www.ecomer.org.mx. This web site also provides a forum for case discussion, consultation and image review.

Over the last few years, a growing number of rheumatologists have taken great interest in ultrasonography (US) for its well known advantages and wide spectrum of validated applications in daily rheumatological practice (1-12). In spite of the recognised relevance of US in rheumatological practice, there is still a lack of a standard training programme. US training has been included in the core curriculum of the specialization course in Rheumatology in Italy, Germany and Belgium (5, 6). Most rheumatologists actively performing US have had a training experience mainly based on attendance in US courses and/or in radiological or

rheumatological units (13). In 1998, the first EULAR sonography course was organised in The Netherlands. At present, the EULAR sonography courses are open to a limited number of participants, last for 3 days and take place just before the EULAR Annual Meeting. In 2007, for the first time the EULAR sonography course, organised in Barcelona (Spain), consisted of three simultaneous courses, basic, intermediate and advanced and was attended by 108 participants (14). Due to the growing number of demands for education and training in US, several national courses are currently organised in Europe.

In Spain, a systematic training in US has been active since 1996 when the Ultrasound School of the Spanish Society of Rheumatology was funded and about 450 members of the Spanish Society of Rheumatology (approximately 50% of Spanish rheumatologists) have been trained in musculoskeletal US (15).

In Italy, a web-based project on distance learning has involved 90 Italian rheumatologists since 2005 as a support for standard residential US courses (16).

In the United Kingdom, the possibility that musculoskeletal US training becomes compulsory for rheumatologists as in some European countries is a matter of discussion (17, 18). Since 2000, under the aegis of the British Society of Rheumatology, musculoskeletal US courses have been organised for rheumatologists (19).

Mexico is a country with about 110 million inhabitants, 449 certified rheumatologists, and a rheumatologist/general population ratio of 0.4 rheumatologist per 100.000 people (the World Health Organization recommended ratio is one specialist per 100.000 people) (20-22). At present, in Mexico US has a still limited diffusion among rheumatologists even if it may play a key role as a first line imaging technique also because of the restricted availability for rheumatic patients for other imaging modalities. This report describes the Mexican experience in education and training on musculoskeletal US.

The beginning

In 2000, after having attended lectures and practical demonstrations on musculo-

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skeletal US during the national Rheumatology and Radiology congresses, two Mexican rheumatologists (CP and MCh) decided to invest in US. In 2001, due to the lack of a specific musculoskeletal US training program for rheumatologists in México, they independently went abroad to gain training in US.

One of them (CP) went to the Radiology Department of the "Henry Ford" Hospital in Detroit, Michigan – United States of America, for a hospital-based, intensive, three-month program consisting of classroom instruction, supervised scanning practice, reading sessions, journal club under the mentorship of Dr. José Antonio Bouffard, for 6 hours a day.

The second rheumatologist (MCh), attended a US course organized by the Spanish Society of Rheumatology Ultrasound School (ECOSER) and then followed a hospital-based, intensive, three-month program at the Rheumatology Departments of three different hospitals: "Severo Ochoa" Hospital, "La Paz" University Hospital and "Fundación Jimenez Diaz" in Madrid, Spain, and performed US examinations for a minimum of 4 hours a day under the direct supervision of experienced US rheumatologists, members of ECOSER and of the faculty of the EULAR Sonography Courses (Dr. Esperanza Naredo, Dr. Eugenio de Miguel and Dr. Juan Carlos Acebes).

The experiences were extremely positive for both of them and, in 2002, they decided to organize the first musculoskeletal US course during the Annual Congress of Mexican Society of Rheumatology held in Merida, Yucatán, to introduce US to Mexican rheumatologists.

The training

Since 2002, five basic courses and one intermediate course, as well as a number of symposiums and conferences have been organized and presented in Mexico.

In 2003, three Mexican rheumatologists (MCh, CM and CP) enthusiastic about US, founded the Mexican School of Musculoskeletal US of the Mexican College of Rheumatology (ECOMER), an organization formed with the intention of joining efforts to launch musculoskeletal

US in Mexico. All ECOMER members work in an academic setting and share enthusiasm in teaching musculoskeletal US. The motto of ECOMER is "una clara imagen de la reumatología" which means "a clear picture of rheumatology". The main aims of ECOMER are: to promote training of rheumatologist interested in US and to encourage research in the field of musculoskeletal US imaging.

To fulfil their aims they decided to standardize their approach to US by adopting the EULAR guidelines for musculoskeletal US in rheumatology as a reference to acquire US images (7).

The statute of ECOMER can be read on its web site: www.ecomer.org.mx. This web site also provides a forum for case discussion, consultation and image review.

The ECOMER members have incorporated US into their academic and private practices and they have different US systems which have been used also for education and training. Funds to purchase the US equipment were allocated by several governmental health institutions and private parties including: Instituto Nacional de Rehabilitación; Instituto Mexicano del Seguro Social, Mexico; Centenario Hospital Miguel Hidalgo, Aguascalientes, México; and drug company grants including Abbott Laboratories

In 2004, an intensive intermediate-advanced course was organized and for the first time this course was endorsed by a local University "Universidad Autónoma de Aguascalientes". After this course five new members joined ECOMER.

In 2006, a total of 150 rheumatologists,

approximately 30% of the active members of the Mexican College of Rheumatology, had attended at least one basic musculoskeletal US course.

Competency assessment

In the absence of an internationally recognized model to acquire basic competency in musculoskeletal US, the members of ECOMER decided to follow the experience described in a recent paper written by rheumatologists from Belfast, Northern Ireland. They asked Prof. Walter Grassi from Clinica Reumatologica of the Università Politecnica delle Marche in Ancona, Italy, to organize the same competency test carried out in Belfast in November 2004. In August 2007, an experienced US rheumatologist (with 10 years of experience) and member of the faculty of the EULAR Sonography Courses (EF) went to Mexico where 5 members of ECOMER underwent the same theoretical and practical tests described in the Belfast experience (23). All the participants passed the basic competency examination and the results are reported in Table I.

Future agenda

Table II lists the future agenda of the ECOMER members. In order to fulfil the first two items of the agenda, an itinerant introductory course called ECOTOUR is going to be carried out in 2008. The declared aim is to visit 7 different cities around the country: Tijuana - Baja California, Monterrey - Nuevo León, Puebla - Puebla, León - Guanajuato, Mexico City - México, Mérida

Table I. Results of the competency assessment carried out in August 2007.

Candidate	Multiple-choice questions: number of correct answers / number of questions (%)	Practical session with healthy subjects: number of satisfactory US images / total number of US images (%)	Practical session with patients: number of correct US findings / number of US findings to detect (%)	
01	29/30 (96.7%)	13/15 (86.6%)	Knee 13/14 (92.9%)	Hand 11/13 (84.6%)
02	25/30 (83.3%)	13/15 (86.6%)	Hip 4/4 (100%)	Hand 11/13 (84.6%)
03	27/30 (90%)	15/15 (100%)	Hand 12/13 (92.3%)	Hip 4/4 (100%)
04	27/30 (90%)	15/15 (100%)	Ankle 19/21 (90.5%)	Shoulder 16/19 (84.2%)
05	26/30 (86.7%)	15/15 (100%)	Shoulder 18/19 (94.7%)	Ankle 18/21 (85.7%)
Total	134/150 (89.3%)	71/75 (94.6%)	126/141 (89.4%)	

Table II. Future agenda.

Promote and support the US training in Mexico and in PANLAR countries
Organize US courses of different levels in Mexico
Develop PANLAR guidelines
Start new research projects including US as a research tool
To update the website: www.ecomer.org.mx

- Yucatán and Chihuahua - Chihuahua. The US course level will be introductory-basic, with two days of clinical sessions and hands-on workshops with healthy subjects.

The ECOTOUR has been designed to facilitate the attendance of the Mexican rheumatologists and to provide the participants with a thorough understanding of the role and limitations of US in rheumatologic clinical practice and to give them a practical knowledge of musculoskeletal US anatomy and pathology. The main aim of the hands-on workshops is to make participants use the US machines under the direct supervision of experienced sonographers. The faculty-participant ratio is one to five, and 45% of the course time is dedicated to hands-on workshops. Ninety-two Mexican rheumatologists is the registered number of participants that will attend the ECOTOUR. Attendance requests have been higher than the scheduled number of participants and relevant overbooking has occurred few weeks after the announcement of the course.

Discussion

As for all things, the most difficult part of a venture is to start. With regards to US, the main difficulties are related to the purchase of the US equipment and the steep learning curve (3-5). Nevertheless, the prices are lowering and the last generation US machines provide high quality imaging which makes training easier than in the past.

At the time of the first musculoskeletal US course organised in 2002, there were only two Mexican rheumatologists with some direct experience in US. At present, this number is at least of 150. Of the 13 Rheumatology Departments with a school for registrars, 6 own a US machine each of which is used by a trained rheumatologist.

Essential requirements shared by all the members of ECOMER include: to own

a US machine, to incorporate US into clinical daily practice (performing a minimum of 300 US examinations per year) and to keep up-to-date in musculoskeletal US (attending an international US course at least once a year).

The growing interest of Mexican rheumatologists for musculoskeletal US is also proved by several papers, reviews and chapters of textbooks published in the last few years (24-34).

Moreover, the rheumatologists, members of the ECOMER group, attended US courses as invited speakers and as organizers both in Mexico and abroad and have recently taken part in international research projects focused on US (35).

In conclusion, the result of the first 5 years of education and training in musculoskeletal US can be defined encouraging also considering general problems of the Mexican health system and the obstacles represented by the initial costs of the US equipment and the lack of a musculoskeletal US tradition.

Even if the best way to develop the widespread culture of musculoskeletal US is still far to be defined, the Mexican experience will continue actively in the next years, following three main directions: organization of basic US courses, enrolment of more teachers and organization of teach to the teachers sessions with the support of international faculty and distance learning experience in collaboration with Italian and Spanish rheumatologists.

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