Reumatol Clin. 21 (2025) 501850

Sociedad Española de Reumatología - Colegio Mexicano de Reumatología

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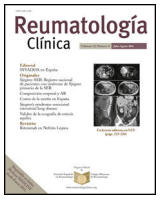

Original Article

Situational analysis of interventional rheumatology in Spain: Multicenter observational study

Marco Aurelio Ramírez Huaranga,[a,*] Juan Carlos Quevedo Abeledo,[b] Julio Sánchez Martin,[c] Álvaro García Martos,[d] Angel Estuardo Plasencia Ezaine,[e] David Castro Corredor,[a] Vanesa Hernández Hernández,[f] Yanira Pérez Vera,[b] Enrique Ornilla Laraundogoitia,[g] Rocío Arenal Lopez,[e] Félix Manuel Francisco Hernández,[b] Cristina Zamora Ramos,[h] Paz Collado Ramos,[h] Fernando Felipe Poma Vera,[i] Javier Seoane Romero,[j] Tamara Libertad Rodríguez Araya[k], on behalf of the INTERVSER Working Group

[a] *Servicio de Reumatología, Hospital General Universitario de Ciudad Real, Ciudad Real, Spain*
[b] *Servicio de Reumatología, Hospital Universitario de Gran Canaria Dr Negrín, Las Palmas de Gran Canaria, Las Palmas, Spain*
[c] *Servicio de Reumatología, Hospital Universitario Marqués de Valdecilla, Santander, Spain*
[d] *Servicio de Reumatología, Hospital Universitario del Tajo, Aranjuez, Madrid, Spain*
[e] *Unidad de Tratamiento del Dolor Crónico, Hospital General Universitario de Ciudad Real, Ciudad Real, Spain*
[f] *Sevicio de Reumatología, Hospital Universitario de Canarias, La Laguna, Santa Cruz de Tenerife, Spain*
[g] *Servicio de Reumatología, Clínica Universitaria de Navarra, Pamplona, Navarra, Spain*
[h] *Servicio de Reumatología, Hospital Universitario Severo Ochoa, Madrid, Spain*
[i] *Servicio de Reumatología, Hospital Universitario Vithas Madrid Arturo Soria, Madrid, Spain*
[j] *Servicio de Reumatología, Complejo Hospitalario Universitario de A Coruña, A Coruña, Spain*
[k] *Servicio de Reumatología, Hospital Clínic de Barcelona, Barcelona, Spain*

ARTICLE INFO

Article history:
Received 21 October 2024
Accepted 5 March 2025
Available online 21 April 2025

Keywords:
Interventional rheumatology
Ultrasound-guided procedures
Rheumatology skills
Clinical care characteristics

ABSTRACT

Introduction: Interventional procedures are highly useful and applicable in Rheumatology for degenerative and inflammatory diseases such a therapeutic alternative available for our patients.
Objective: To describe the current clinical characteristics of interventional procedures in Rheumatology departments in our country and to identify the training needs in this area.
Materials and methods: This is a multicenter, observational, descriptive, and cross-sectional study conducted through a survey sent to all heads of Rheumatology departments/sections across the national territory, registered with the Spanish Society of Rheumatology.
Results: A total of 38 appropriately completed and valid surveys were received for analysis (56% of those sent). 94.7% of the departments have one or more ultrasound machines, and 60.53% have a designated physical space specifically for performing procedures. 97.73% perform joint injections, 31.58% perform sacroiliac joint injections, 21.05% perform lumbar facet injections, 15.79% perform myofascial injections, 13.16% perform epidural injections, and only 5.26% have access to radiofrequency therapy. Other procedures described were synovial biopsy (15.79%), salivary gland biopsy (10.53%), and isotopic synoviorthesis (7.89%). In 89.47% of the departments, the procedures are part of the rheumatology activities services, and 73.68% have nursing/auxiliary nursing support. Finally, 81.6% agree that there is insufficient specific training in performing more complex procedures.
Conclusion: The 21st-century rheumatologist must also be trained in performing interventional procedures for the treatment of mechanical and/or inflammatory pain, with the aim of incorporating them into their daily clinical practice and continuing to expand the range of care we can offer our patients.

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* Corresponding author.
E-mail address: hurauma@hotmail.com (M.A. Ramírez Huaranga).

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Análisis situacional de la reumatología intervencionista en España: estudio observacional multicéntrico

Palabras clave:
Reumatología intervencionista
Procedimientos ecoguiados
Habilidades clínicas en reumatología
Características asistenciales

R E S U M E N

Introducción: Las técnicas intervencionistas son de gran utilidad y aplicabilidad en el campo de la Reumatología, tanto en la patología degenerativa como inflamatoria, ampliando las alternativas terapéuticas disponibles para nuestros pacientes.
Objetivo: Describir las características asistenciales actuales de las técnicas intervencionistas en los servicios de Reumatología de nuestro país y conocer las necesidades de formación en este área a nivel nacional.
Material y métodos: Estudio observacional, descriptivo y transversal multicéntrico, mediante encuesta remitida a todos los jefes de servicio/sección de Reumatología del territorio nacional registrados por la Sociedad Española de Reumatología.
Resultados: Se obtuvo un total de 38 encuestas adecuadamente completadas y válidas para su análisis (56% del total remitido). El 94.7% de los servicios cuentan con uno o varios ecógrafos y el 60.53% disponen de un espacio físico dedicado específicamente a la realización de procedimientos. El 97.73% realiza infiltraciones articulares, el 31.58% infiltraciones de articulación sacroilíaca, el 21.05% infiltraciones de facetas lumbar, el 15.79% infiltraciones miofasciales, el 13.16% infiltraciones epidurales y solo el 5.26% dispone de terapia por radiofrecuencia. Dentro de otros procedimientos destacan biopsia sinovial (15.79%), biopsia de glándula salival (10.53%) y la sinoviortesis isotópica (7.89%). En el 89.47%, la agenda de procedimientos forma parte de la cartera de servicios de reumatología y el 73.68% dispone de personal de enfermería/auxiliar de enfermería de apoyo. Finalmente, el 81.6% está de acuerdo que existe una escasa formación específica en la realización de procedimientos más complejos.
Conclusión: El reumatólogo del siglo XXI también debe formarse en la realización de procedimientos intervencionistas para el tratamiento del dolor mecánico y/o inflamatorio, con el fin de incorporarlos a su práctica clínica diaria y continuar ampliando la oferta asistencial que podemos brindar a nuestros pacientes.

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Introduction

The evolution in professional development and new technologies has led medical specialties to acquire new skills that complement comprehensive care and provide it with more decisive capability. Currently, in the field of rheumatology, this is a reality in the use of ultrasound, capillaroscopy, densitometry and biopsy sampling, among other techniques.[1–3] The performance of interventional techniques for the treatment of pain in rheumatology is a field that, in spite of advances in recent years, especially linked to the greater use of ultrasound, is currently mostly limited to joint and soft tissue infiltrations, these being the procedures that are most frequently performed in daily clinical practice.[4] However, there is another series of minimally invasive techniques, guided by ultrasound or fluoroscopy, and others applied only in pain units, which could be incorporated into the portfolio of services within our specialty. Nevertheless, progressive implementation is conditioned by the availability of appropriate resources (human, material and organisational), as well as training tools that enable an adequate learning curve. These complementary techniques could be of great usefulness and applicability in the field of rheumatology in both degenerative and inflammatory diseases, expanding the therapeutic alternatives available to our patients.

The concept of interventionism in rheumatology is understood as all procedures, the objective of which is to apply minimally invasive treatments for diagnostic and therapeutic purposes and to facilitate functional recovery in patients with musculoskeletal, mechanical and/or inflammatory diseases with acute or chronic pain, refractory to conventional treatment.[5]

Since the introduction of the use of intra-articular corticosteroids for the treatment of pain and inflammation, infiltrations have been an important part of the treatment arsenal in rheumatology.[6,7] However, other interventional procedures also make it possible to apply this and other types of treatment in deep and/or complex anatomical regions, as well as on neural axes or ganglia, and require more time and safety measures than can be provided in the clinic. In addition, they usually require radiological control (ultrasound or fluoroscopy), and an adequate environment and equipment for the performance of the technique and patient monitoring.[8] This would include axial procedures, such as infiltrating or blocking the medial branch of the facet joints, infiltration or denervation of the sacroiliac joint, selective root or dorsal root ganglion block, and epidural infiltration (transforaminal, interlaminar or caudal), all of which have an adequate level of evidence for pain relief and improvement of disability associated with chronic low back pain[9]; in addition to other procedures on peripheral structures, such as interdigital infiltration of botulinum toxin for severe Raynaud's phenomenon, femorocutaneous nerve block for meralgia paresthetica, suprascapular and circumflex nerve for painful shoulder or geniculate nerves for severe and refractory knee pain, among many other procedures.[10–13] In the case of both axial and peripheral nerve blocks, the denervation or neuromodulation of pain perception requires the use of specific tools such as radiofrequency, with its different modalities.[14]

The aim of our study was to describe the current care characteristics of interventional techniques in rheumatology departments in our country and to establish the training needs in this area at the national level.

Material and methods

This was an observational, descriptive and cross-sectional multicentre study, by means of a survey sent out to all heads of rheumatology departments/sections in Spain, registered by the Spanish Society of Rheumatology. There was a total of 64 centres, 59 (92.2%) with public funding and 5 private (7.8%). Departments that did not respond or provided surveys with less than 50% of the requested information were excluded.

The survey was designed by the research team and was divided into 3 blocks: data from the centre, interventional techniques and perceived needs (Appendix Banexo 1), to obtain information on the following variables:

□ Name of the health centre (nominal variable, open question).

- ☐ Funding of the centre (nominal variable, closed question: public, private).
- ☐ Current number of physicians + assistant physicians (discrete numerical variable, open question).
- ☐ Current number of rheumatology residents (discrete numerical variable, open question).
- ☐ Techniques that are performed in your centre by a member of your unit (nominal variable, closed question with multiple answers).
- ☐ Material resources available for the development of these techniques (nominal variable, closed question with multiple response).
- ☐ Schedule detailing the application of these techniques by your department (nominal variable, closed question with a single answer).
- ☐ The management and organisation of these techniques depend exclusively on their department (nominal variable, closed question with multiple answers).
- ☐ Approximate number of techniques performed monthly (nominal variable, closed question with a single answer).
- ☐ Limitations or difficulties that prevent the implementation of those techniques not yet available in your department (nominal variable, closed question with multiple response).
- ☐ Opinion: There is a lack of specific training resources in this type of techniques, within the specialty of rheumatology (nominal variable, closed question with a single answer).
- ☐ Opinion: I would consider it of interest to be able to incorporate these techniques into our portfolio of services (nominal variable, closed question with a single answer).

Each of the surveys was coded to ensure the security of anonymity. An Excel database was created to record the information. Once the variables were collected in the database, they were categorised as qualitative (dichotomous nominal, non-dichotomous nominal or ordinal) and quantitative (discrete or continuous). A descriptive analysis of the current situation of interventional rheumatology in Spain was presented. Given the nature of the study, no comparative statistical analysis was performed.

Results

After the design of the survey, the Spanish Society of Rheumatology sent a first email to the heads of unit/section of the different hospitals registered in the Society's database at the beginning of April 2024; a total of 64 centres. After the period of 2 months for completion and 2 reminder messages, a total of 38 surveys were finally completed and valid for analysis (56% of the total sent).

As regards the characteristics of the health care centres included in the study, most of them are publicly funded (94.7%) and are accredited for the training of residents (73.7%). The average number of physicians per department is 8.7 ± 3.6, with Galicia, Andalusia, Madrid, Catalonia and Navarre standing out, with 8.5 ± 4 to 11 ± 1.4 physicians per centre. Likewise, the average number of resident interns was 5.86 ± 2.12, from one to 3 residents per year depending on each centre. The geographical distribution of the participating centres is shown in Fig. 1.

With regard to the availability of material and organisational resources for the implementation of interventional techniques, most of the rheumatology departments included in the study have one or more ultrasound units (94.7%) and have a physical space specifically devoted to those procedures (60.53%). Access to other more specific resources, such as fluoroscopy equipment or radiofrequency generators, is much more limited (Fig. 2).

The details of the procedures consulted and performed in the rheumatology departments included in the study are shown in Table 1. Although the performance of joint and periarticular infiltrations is a universal resource, and other techniques such as joint lavage and tendinous calcifications were performed by a good number of the participating centres, other procedures more specifically linked to interventional pain treatment, such as peripheral or axial nerve blocks, have much more limited availability.

Fig. 1. Distribution of participating health centres.

Table 1
Interventional procedures performed by the different rheumatology departments nationwide.

Interventional procedures	n (%)
Joint infiltration: shoulder, knee, ankle, hip, carpus, hand, elbow, or foot	36 (97.73)
Joint lavage	16 (42.11)
Lavage-aspiration of tendinous calcifications	10 (26.32)
Myofascial infiltrations	6 (15.79)
Peripheral nerve blocks	2 (5.26)
More complex procedures	
Sacroiliac joint infiltration	12 (31.58)
Lumbar facet infiltration	8 (21.05)
Cervical facet infiltration	3 (7.89)
Epidural infiltration	5 (13.16)
Radiofrequency of the Medial Facet Branch	2 (5.26)
Block and radiofrequency of peripheral nerves (suprascapular, femorocutaneous, geniculate, occipital, among others)	2 (5.26)
Other procedures	
Synovial biopsy	6 (15.79)
Minor salivary gland biopsy	4 (10.53)
Biopsia muscular	2 (5.26)
Subcutaneous fat biopsy	2 (5.26)
Skin biopsy	2 (5.26)
Isotopic synoviorthesis	3 (7.89)

Table 2 describes the care characteristics of the schedule for the performance of procedures in rheumatology departments.

When the surveyed centres were asked about the limitations and perceived needs for the performance of these types of procedures, the lack of personnel with specific training was mostly highlighted as the main limiting factor (Fig. 3).

When asked specifically about the availability of training resources in this area, 81.6% of the departments included agree that there was little specific training in the performance of procedures that are more complex than traditional joint, periarticular and soft tissue infiltrations. For this reason, 86.8% considered it of great benefit to incorporate these procedures into the portfolio of rheumatology departments at the national level.

Discussion

The information obtained in our study shows that, although 97.73% of the population performed joint infiltrations in their clin-

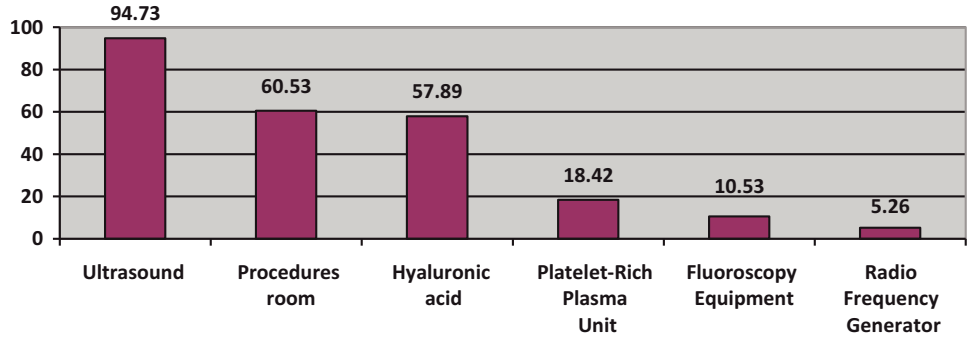

Fig. 2. Material resources for interventional procedures.

Table 2
Health care characteristics of the schedule for performance of procedures in rheumatology departments.

Healthcare characteristics	n (%)
Schedule listing the procedures which are scheduled and carried out	
Part of the rheumatology department's portfolio	34 (89.47)
Integrated within a multidisciplinary pain interventional unit	5 (13.16)
The rheumatologist who performs them is part of the pain unit	2 (5.26)
Characteristics of the schedule of procedures that make up the portfolio of rheumatology departments	
Undertaken on a specific schedule	21 (55.26)
A physical space specially designated for this purpose is available	14 (36.84)
Number of hours/month spent on procedures	
<10	4 (11.77)
10 a 30	10 (29.41)
>30	20 (58.82)
Carried out by more than one assistant of the unit	34 (100)
Always carried out by the same staff	9 (23.68)
Has support nurse/nursing assistant staff available	28 (73.68)

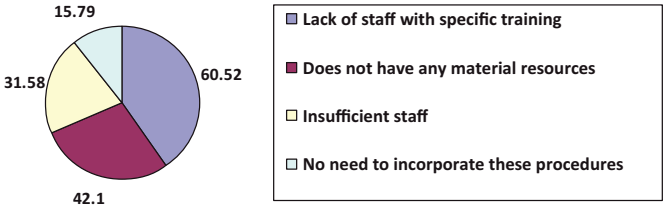

Fig. 3. Limitations to incorporating interventional procedures in rheumatology departments.

ical practice, about 30% or less performed procedures such as sacroiliac infiltration, lumbar facets, myofascial or salivary gland biopsy, among others. For this reason, 81.6% considered that there was little specific training in the performance of this type of procedure.

In the current scenario of constant growth in the different fields of modern rheumatology, with departments that each year incorporate teacher training units for rheumatology residents, we must start from the words of Dr. Olivé1 in his article published in 2007: "The challenge of the rheumatologist of the future is well outlined, I invite you to add ideas and techniques."

Although our study currently identifies multiple shortcomings and limitations for the short-term implementation of various interventional techniques (mainly material and training limitations), the incorporation of ultrasound into most rheumatology departments in this country constitutes a favourable scenario for the progressive adoption of many of these techniques. We have found that this resource is almost universally available, this being essential in most interventional procedures, as it enables image control that guarantees precise administration of treatments (such as steroids, anaesthetics or radiofrequency) on specific anatomical targets.

The use of ultrasound has evolved and become consolidated in this country over the last 2 decades, becoming a key tool not only for the diagnosis and monitoring of disease activity but also for the performance of interventional procedures.[15] However, less than half of the departments surveyed have a physical space specially designated for this type of procedure, which is a crucial aspect, considering the specific resources that are required and the importance of guaranteeing an adequate environment that provides safety to the patient during the procedure, as well as, in some cases, its correct subsequent monitoring.

In terms of available material resources, in addition to local anaesthetic and storage corticosteroids, a significant percentage of the departments have Visco supplementation treatments. However, fewer departments have access to equipment for obtaining platelet-rich plasma, part of the treatment arsenal of orthobiological products with regenerative potential. With regard to advanced procedures, more specifically related to interventionism, we have observed limited access to other common imaging control tools other than ultrasound. Only 11% of departments have access to an operating theatre with fluoroscopy for procedures. Although this resource is particularly useful for the development of axial interventional techniques, it is not essential for procedures such as caudal epidural block or the treatment of facet syndrome, where ultrasound is positioned as a viable and reliable alternative for certain groups of patients.[16,17]

The number of departments that have radio frequency generators is very small, reaching only 5.3%. This resource is very useful in the treatment of axial pain, and its efficacy in improving pain in the short and medium term has been confirmed in a recent meta-analysis that included 12 randomised clinical trials.[18] In an article published in 2006 on interventional techniques in rheumatic pain, Dr. Insausti-Valdivia[10] reflected the usefulness and benefits that we could provide to our patients with axial and peripheral pain with

different tools and therapies such as the use of a fluoroscope and a radiofrequency generator.

With respect to the types of procedures evaluated, our study revealed that almost 98% of the departments performed joint and periarticular infiltrations, which are the most common and well-known. However, less than one-third of the departments performed more complex interventional procedures, such as sacroiliac joint infiltration (32%), lumbar facet infiltration (21%), synovial biopsies (16%), epidural infiltrations (13%) and salivary gland biopsies (11%), among others.

There are few studies in the literature that offer comparable data in neighbouring countries. Although there is still ample room for improvement, the results observed in our study were consistent with those of other geographical regions. For example, a study conducted in 2017[19] among Brazilian rheumatologists observed that about 78% of rheumatologists performed joint and periarticular infiltrations, 38.2% performed viscosupplementation, 11.1% spinal infiltrations, 10.6% joint lavages, 6.44% salivary gland biopsies, 5.77% synovial biopsies, and 5.55% epidural infiltrations.

From the data observed, we highlight that 3 out of 4 departments included have the support of nursing staff or auxiliaries to perform therapeutic infiltrations, which is crucial when implementing more complex techniques. However, only in 55% of cases were these techniques practiced within a specific schedule, differentiated from the usual consultations. This represents an organisational challenge for many departments looking to integrate these procedures into their portfolio.

In the current situation in this country, and in a similar way to other medical areas, we observe that the main obstacle to the incorporation and expansion of interventional procedures in rheumatology departments is the limited availability of material and professional resources, but especially the lack of personnel with specific training in this area. More than 80% of the centres considered that there was a significant lack of training on more complex procedures than traditional joint, periarticular and soft tissue infiltrations. According to a study carried out in 2017, at least 6 months of training and practice in specialised centres is required to start performing more advanced procedure.[19]

One of the main limitations of our work is, without a doubt, the number of centres finally included in the study, with a response rate slightly above 50%. This entails a bias when analysing the results, especially due to the representativeness that certain groups of the population studied may have, where some may be overrepresented or underrepresented, affecting the generalisability of the findings. However, we consider that an adequate geographical representation of rheumatology departments has been obtained in a number fairly proportional to the number of hospitals and population of the respective autonomous communities. In addition, the questionnaire used covered most of the variables related to the usual practice of Spanish rheumatologists in terms of interventionism, providing data for the first time on the development of this area in rheumatology departments in Spain.

Conclusions

These results are a snapshot of the current state of interventional rheumatology in Spain, positioning joint infiltrations as the most frequently performed procedures (97.73%), while other more specialised procedures, such as sacroiliac joint infiltration (31.58%), lumbar facets (21.05%) and epidurals (13.16%), have a lower frequency of use. For this reason, 81.6% of rheumatologists perceive the need to strengthen training in this field.

We believe that the rheumatologist of the twenty-first century, with an increasingly extensive training in ultrasound, should also be trained in the performance of interventional procedures for the treatment of mechanical and/or inflammatory pain, in order to incorporate these into their daily clinical practice and continue to broaden the range of health care we can provide.

Funding

This research has not received any specific grants from public sector agencies, the commercial sector or non-profit entities.

Declaration of competing interest

The authors declare no conflicts of interest in conducting this study.

Acknowledgements

This study was the result of the work and commitment of the members of the INTERVSER Working Group and the valuable collaboration of the Spanish Society of Rheumatology.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.reumae.2025.501850.

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