

Sacroiliac Joint Injections in Patients with Sacroiliitis: Which is the Right Way?

Birkan SONEL TUR

Department of Physical Medicine and Rehabilitation, Medical Faculty of Ankara University, Ankara, Turkey

In this issue of the Turkish Journal of Rheumatology, one of the articles is entitled “An Intraarticular Sacroiliac Steroid Injection Under the Guidance of Computed Tomography for Relieving Sacroiliac Joint Pain: A Clinical Outcome Study with Two Years of Follow-up”. In this, Şahin et al.^[1] compared steroid and local anesthetic injections for sacroiliac (SI) joint pain. Being inspired by this article and in an effort to complement the issue, I would like to discuss SI joint injections in patients with sacroiliitis in terms of both the drugs used and the employment of different imaging techniques during the injections.

The SI joints are located in the bony pelvis between the sacrum and the ilium, and they connect to the sacrum via the hip on both sides, and sacroiliitis is an inflammatory disorder of these joints. Besides the systemic approaches, local treatment of the SI joints by corticosteroid injection has resulted in considerable clinical improvement.^[2-4]

Sacroiliac joint injection is primarily used either to diagnose or treat pain symptoms associated with SI joint dysfunction or arthritis. Intraarticular corticosteroid injections have been reported to be significantly beneficial for pain in this joint.^[5] There is no consensus on the type of steroids that should be used, but long-acting corticosteroids are preferred. Steroids that include betamethasone sodium phosphate or acetate and methylprednisolone are usually injected into the SI joint to reduce inflammation and pain. In addition, it has been reported that intraarticular corticosteroid injections may provide long-term pain relief.^[6] One study noted that up to two-thirds of patients demonstrated significant improvement

lasting approximately nine months with a steroid injection.^[7]

Other than corticosteroids, tumor necrosis factor (TNF) alpha inhibitors have also been used intraarticularly in some rheumatological diseases.^[8,9] Cui et al.^[10] reported that for 16 ankylosing spondylitis (AS) patients who received intraarticular etanercept, SI joint region of interest values improved after eight weeks, but the frequency of synovitis, enthesitis, chondritis, subchondral bony plate destruction, and bone marrow inflammation decreased. Patients have also showed significant improvement in the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) scores; however, no significant difference in spondylitis and peripheral arthritis has been observed. The authors concluded that an intraarticular etanercept injection of the SI joint could improve joint function.

Still another intraarticular approach is a phenol injection. Phenol ablation for the SI joint has been reported for persistent sacroiliitis.^[11] Ward et al.^[11] first applied bupivacaine 0.5% and 80 mg of methylprednisolone acetate (Depo-Medrol®) to 10 patients. All of the patients then had repeat fluoroscopy-guided injections of the SI joints due to neurolysis using 6% phenol. Afterwards, 20% of the patients had more than a 70% improvement which lasted for 24 weeks. They also reported that they found a significant improvement in pain relief with prolonged duration by intraarticular phenol injections of the SI joints.

The intraarticular SI joint injection procedure is generally safe; however, there are some risks and side effects. The most common side effect is pain at

the injection site, and the uncommon risks tend to be relatively minor and include allergic reaction to a medication, bruising, infection at the injection site, deeper tissues, or in the joint. Also, a worsening of symptoms has been noted. Other risks are related to the steroids or other drugs. In a study with fluoroscopically-guided patients, it was reported that the most common immediate adverse event was vasovagal reaction, and the most common delayed adverse event was soreness in the injection site.^[12]

The SI joint injection can be done blindly. However, because the joint is narrow and access is difficult,^[13] this type of injection has been accepted as unreliable. Rosenberg et al.^[14] showed that only 22% of SI joint injections without image guidance were in the right place intraarticularly. Another study showed similar results in that the intraarticular injection without fluoroscopy was successful in only 12 attempts.^[15] As a result, imaging-guided diagnostic or therapeutic injections are gaining popularity to help determine the precise structures.^[16]

Procedures guided by computed tomography (CT) and conventional fluoroscopy have been well documented,^[17] and these techniques provide advantages related to more precise localization of the joint. Injection of corticosteroids into the SI joints with fluoroscopic control or with CT guidance has proven its efficacy in patients with sacroiliitis.^[16-19]

However, both conventional fluoroscopy and CT are time-consuming and expensive. In addition, it should be noted that these methods also expose patients to enhanced ionizing radiation, which is especially problematic for young males with sacroiliitis.^[13] These disadvantages have prompted researchers to investigate the possible use of other imaging methods such as magnetic resonance imaging (MRI) and ultrasonography (US) to guide the needle, and these efforts have also been recently documented.^[13,20-23]

The MRI-guided joint injection procedure has two advantages. The joint structures and abnormalities are seen more precisely, and patients are not exposed to the ionizing radiation. Despite these advantages, disadvantages also exist. The treatment times are long. Pereira et al.^[13] reported that the time required for the procedure was approximately 60 minutes for a bilateral and 40 minutes for a unilateral injection. In addition, other disadvantages of MRI-guided joint injections are their expense and their dependence on radiology clinics for the procedure.

I believe that US-guided injections could be another valuable option, and lately, rheumatologists have been showing interest in this procedure. Ultrasonography, with the added attraction of being a bed-side device, has become one of the most important tools for physicians. Another advantage is that it has no radiation exposure, which is vital for younger patients and women who are pregnant.^[21] However, the major disadvantage of this technique is that it is very user-dependent, with accurate results depending on the user's experience. In particular, US-guided injections of deep structures require more experience than injections to superficial structures.^[22] If a doctor has sufficient experience, this technique is safe, quick, and reproducible.^[20] Pekkafulı et al.^[20] reported that the mean sonographically-guided procedure time was nine minutes (range, 4-18 minutes). They also suggested that with experience, the procedure time will gradually decrease. In another interesting study concerning US-guided injections, the authors showed that only 40% actually reached the synovial space when confirmed by MRI.^[23] Another intriguing result of this study was that there was no significant difference in clinical improvement whether the steroid was delivered into the SI synovial space or only into the posterior periarticular area of the SI joint. Fluoroscopic guidance is another available technique, but sufficient data is not available at this time to determine its efficacy.

Therefore, with these findings at hand, there certainly is a need for further studies designed to evaluate the feasibility and effectiveness of these imaging guidance techniques, especially for MRI and US, regarding therapeutic intraarticular SI joint injections. Long-term clinical outcome studies are also required.

Declaration of conflicting interests

The author declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The author received no financial support for the research and/or authorship of this article.

REFERENCES

1. Şahin O, Harman A, Akgün RC, Tuncay İC. An intraarticular sacroiliac steroid injection under the guidance of computed tomography for relieving sacroiliac joint pain: A clinical outcome study with two years of follow-up. *Turk J Rheumatol* 2012;27:165-73.

2. Zochling J, van der Heijde D, Burgos-Vargas R, Collantes E, Davis JC Jr, Dijkmans B, et al. ASAS/EULAR recommendations for the management of ankylosing spondylitis. *Ann Rheum Dis* 2006;65:442-52.
3. Braun J, van den Berg R, Baraliakos X, Boehm H, Burgos-Vargas R, Collantes-Estevez E, et al. 2010 update of the ASAS/EULAR recommendations for the management of ankylosing spondylitis. *Ann Rheum Dis* 2011;70:896-904.
4. Maugars Y, Mathis C, Berthelot JM, Charlier C, Prost A. Assessment of the efficacy of sacroiliac corticosteroid injections in spondylarthropathies: a double-blind study. *Br J Rheumatol* 1996;35:767-70.
5. Slipman CW, Lipetz JS, Plataras CT, Jackson HB, Vresilovic EJ, Lenrow DA, et al. Fluoroscopically guided therapeutic sacroiliac joint injections for sacroiliac joint syndrome. *Am J Phys Med Rehabil* 2001;80:425-32.
6. Maugars Y, Mathis C, Vilon P, Prost A. Corticosteroid injection of the sacroiliac joint in patients with seronegative spondylarthropathy. *Arthritis Rheum* 1992;35:564-8.
7. Hawkins J, Schofferman J. Serial therapeutic sacroiliac joint injections: a practice audit. *Pain Med* 2009;10:850-3.
8. Nikas SN, Temekonidis TI, Zikou AK, Argyropoulou MI, Efremidis S, Drosos AA. Treatment of resistant rheumatoid arthritis by intra-articular infliximab injections: a pilot study. *Ann Rheum Dis* 2004;63:102-3.
9. Alstergren P, Larsson PT, Kopp S. Successful treatment with multiple intra-articular injections of infliximab in a patient with psoriatic arthritis. *Scand J Rheumatol* 2008;37:155-7.
10. Cui Y, Xiao Z, Shuxia W, Zhenjun Z, Hengguo Z, Liangyi F, et al. Computed tomography guided intra-articular injection of etanercept in the sacroiliac joint is an effective mode of treatment of ankylosing spondylitis. *Scand J Rheumatol* 2010;39:229-32.
11. Ward S, Jenson M, Royal MA, Movva V, Bhakta B, Gunyca I. Fluoroscopy-guided sacroiliac joint injections with phenol ablation for persistent sacroiliitis: a case series. *Pain Pract* 2002;2:332-5.
12. Plataras CT, Joshi AB, Garvan C, Chimes GP, Smeal W, Rittenberg J, et al. Adverse events associated with fluoroscopically guided sacroiliac joint injections. *PM R* 2012;4:473-8.
13. Pereira PL, Günaydin I, Trübenbach J, Dammann F, Remy CT, Kötter I, et al. Interventional MR imaging for injection of sacroiliac joints in patients with sacroiliitis. *AJR Am J Roentgenol* 2000;175:265-6.
14. Rosenberg JM, Quint TJ, de Rosayro AM. Computerized tomographic localization of clinically-guided sacroiliac joint injections. *Clin J Pain* 2000;16:18-21.
15. Hansen HC. Is fluoroscopy necessary for sacroiliac joint injections? *Pain Physician* 2003;6:155-8.
16. Kaplan PA, Dussault RG. Image-Guided Selective Nerve Blocks in the Spine. *Semin Musculoskelet Radiol* 1997;1:231-240.
17. Dussault RG, Kaplan PA, Anderson MW. Fluoroscopy-guided sacroiliac joint injections. *Radiology* 2000;214:273-7.
18. Bollow M, Braun J, Taupitz M, Häberle J, Reibhauer BH, Paris S, et al. CT-guided intraarticular corticosteroid injection into the sacroiliac joints in patients with spondyloarthropathy: indication and follow-up with contrast-enhanced MRI. *J Comput Assist Tomogr* 1996;20:512-21.
19. Braun J, Bollow M, Seyrekbasan F, Häberle HJ, Eggens U, Mertz A, et al. Computed tomography guided corticosteroid injection of the sacroiliac joint in patients with spondyloarthropathy with sacroiliitis: clinical outcome and followup by dynamic magnetic resonance imaging. *J Rheumatol* 1996;23:659-64.
20. Pekkafulı MZ, Kıralp MZ, Başekim CÇ, Şilit E, Mutlu H, Öztürk E, et al. Sacroiliac joint injections performed with sonographic guidance. *J Ultrasound Med* 2003;22:553-9.
21. Harmon D, O'Sullivan M. Ultrasound-guided sacroiliac joint injection technique. *Pain Physician* 2008;11:543-7.
22. Iagnocco A, Naredo E. Ultrasound-guided corticosteroid injection in rheumatology: accuracy or efficacy? *Rheumatology (Oxford)* 2010;49:1427-8.
23. Hartung W, Ross CJ, Straub R, Feuerbach S, Schölmerich J, Fleck M, et al. Ultrasound-guided sacroiliac joint injection in patients with established sacroiliitis: precise IA injection verified by MRI scanning does not predict clinical outcome. *Rheumatology (Oxford)* 2010;49:1479-82.