

Infiltration of anomalous lumbosacral articulations

Steroid and anesthetic injections in 10 back-pain patients

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In 10 patients with severe, chronic low back pain, we studied the effect of steroid and local anesthetic infiltration of anomalous lumbosacral articulations, formed between a transitional lumbosacral vertebra and the sacrum. There was immediate total relief of pain in 8 patients, and in 1 patient immediate partial relief that became total after approximately 7 days. Five patients subsequently

relapsed to their former pain level in periods ranging from 1 day to 12 weeks, 3 patients continued to report adequate partial pain relief after periods of 7 to 41 months, and 1 patient remained free from pain 2 years after infiltration. In some cases, infiltration of these articulations may be therapeutic, as well as diagnostic.

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A transitional vertebra at the lumbosacral junction can assume a variety of forms, classified in detail by Tini et al. (1977). Although relatively common, its clinical significance is disputed. It has been recently reported that where this anomaly results in an articulation between the enlarged lateral mass of the transitional vertebra and the true sacrum and/or ilium (anomalous lumbosacral or lumboiliac articulation) a diagnostic infiltration of local anesthetic may temporarily abolish back pain, and excision of the lateral mass may give lasting pain relief (Jönsson et al. 1989). However, this operation of transverse process resection is a major undertaking, with risk of damage to the ureter, as well as to the adjacent spinal nerves (Helfet and Gruebel Lee 1978).

We describe 10 patients with anomalous lumbosacral articulations in whom a combined infiltration with a local anesthetic and steroid was performed for diagnostic purposes and in an attempt to produce symptomatic relief.

Patients and methods

Our patients came from an orthopedic clinic specializing in problem back pain. All the patients had severe pain that had been uncontrolled by conservative means, including analgesics and

physiotherapy (Table 1). Documentation was prospective over a 3-year period, and infiltrations were performed in a standardized manner as described below. We regarded the following as an indication for infiltration: the presence of an anomalous lumbosacral articulation in a patient with low back pain localized in the area approximately overlying the anomaly, with or without referred pain, but without radicular pain or positive neurologic signs in the lower limb. Of the 4 patients with bilateral anomalous lumbosacral articulations, only 1 had a bilateral pain pattern, and this patient (Case 6) was infiltrated on two occasions: first, bilaterally and then only on the left side because of a unilateral recurrence of pain.

Patients were reviewed 30 minutes, 1 month, and 3 months after infiltration, and thereafter according to clinical needs. To assess changes in pain intensity, the patients were offered four options at each review: total relief of pain, worthwhile partial relief, no substantial change (including any expression of uncertainty), and worsening of pain.

Technique of infiltration

The patient lies prone on a radiolucent table. A C-arm image intensifier is used to verify needle placement. The skin entry point is determined by adjusting the obliquity of the C-arm until the anomalous

Table 1. Details of patients and response to infiltration

Case	Sex	Age	Length of history (years)	Duration of total relief	Duration of partial relief	Comments
1	F	42	6	2 weeks	—	Relapsed: -> fusion
2	F	30	2	> 27 months	7 days lost to follow-up at 27 months	
3	F	19	3	40 weeks	Continues	41-month follow-up
4	M	44	2	3 weeks	12 weeks	Relapsed
5	M	60	15	3 days	3 weeks	Relapsed: -> fusion
6a	F	24	5	3 days	13 weeks	
6b	F	24	5	2 days	4 weeks	Relapsed: -> fusion
7	F	30	7	1 day	5 weeks	Relapsed
8	F	43	5	1 day	Continues	17-month follow-up
9	F	25	2	—	Continues	7-month follow-up
10	M	42	1	—	—	No response: subsequent disc surgery at L4/5

a first infiltration, bilateral articulations, b second infiltration, unilateral.

joint is projected clear of the overlying iliac bone. The entry point is near the midline, and it can be on the side opposite to the targeted joint. A 22-gauge spinal needle is introduced in the line of the x-ray beam and is advanced down to bone; then, the needle is adjusted until its tip is seen to be centrally aligned over the target. With gentle pressure and rotation, the needle enters into the "cavity" of the joint. Because the anomalous lumbosacral articulation is deeply situated, a 5-inch needle may be required in obese hyperlordotic patients.

In eight of our infiltrations, we used a radiographic contrast medium (Urografin® 310, 0.5 mL) to delineate the joint, but we did not obtain a usable arthrogram. In 7 cases the contrast diffused irregularly laterally, but in Case 1 it tracked medially to produce an apparent arthrogram of the lumbosacral facet joint on the same side. In all the infiltrations, we used Depomedrone®, 0.5 mL (containing 20 mg methylprednisolone acetate), followed by lignocaine (lidocaine) 1 percent, 1.0 mL. Volumes were kept small to minimize possible spill-over effects on adjacent structures. The patients were asked to report the nature and site of any discomfort experienced during the needle's placement and infiltration.

Results

There were no complications. All the patients experienced the procedure as being painful. Case 3 reported a brief exacerbation of her usual pain during the evening of the day of infiltration and during part of the following day before regaining the

total relief she had reported immediately after infiltration.

Eight of the 10 patients were free from pain 30 minutes after infiltration, and they remained so for periods ranging from 1 day to more than 27 months. In 7 cases, this total pain relief was followed by worthwhile partial relief; 4 of these patients relapsed to their previous level of pain in periods ranging from 3 to 13 weeks, whereas the other 3 patients are still reporting worthwhile relief, on an average, 2 years postinfiltration. Case 2 reported only partial relief immediately after infiltration, but became free from pain during the first week, and remained so 2 years later, after which she was lost to follow-up. Case 6, who had had bilateral articulations infiltrated for bilateral referred pain, developed a unilateral recurrence after 3 days of total relief. This pain responded to a second (unilateral) infiltration, with a further period of 4 weeks of partial relief. Case 10 obtained no benefit from infiltration at any stage; further investigation revealed a prolapsed intervertebral disc at L4/5, i.e., the level above the transitional vertebra: it was successfully treated surgically.

Patients with sustained partial relief of pain used analgesics only occasionally or never at all. Three patients whose pain relapsed to its previous intensity had a trial with immobilization in a plaster jacket, which substantially relieved their pain. Then, they underwent a posterolateral spinal fusion: from L4 to the sacrum in 2 of the patients and from L5 to the sacrum in the third patient. The result in Case 5 was good 2.5 years after surgery, but disappointing in the other 2 cases, possibly because the symptomatic joint was merely bridged rather than excised.

Discussion

The rapid onset of pain relief in our patients, together with the relatively small volumes of infiltrate used and the precise control of needle placement, strongly suggests that the site of origin of their severe, chronic pain was the anomalous articulation, confirming the findings of Jönsson et al. (1989). In several of the 8 cases where x-ray contrast medium was used, the infiltrate diffused laterally, away from the spine, making it unlikely that the pain relief resulted from effects on other spinal structures.

Previous studies that compared populations with and without backache failed to show an increase in the prevalence of a transitional vertebra in patients with pain, and this was the case even when anomalous lumbosacral articulations were examined as a separate subgroup (Hult 1954, Horal 1969, Tini et al. 1977, Magora and Schwartz 1978). Because a transitional vertebra is known to exert a protective effect against degeneration of the presacral disc (MacGibbon and Farfan 1979), it is possible that a reduction in the prevalence of discogenic pain in these patients may have compensated for the presence of pain arising directly from their anomalous lumbosacral articulations, masking the importance of such joints.

The exact morphology of anomalous lumbosacral articulations is uncertain. The only report of a dissection of a fresh specimen was by Moore (1925), who described the articulation as "apparently of the same type as the sacroiliac joint," but we found no evidence of a true joint cavity in any of our arthrographic studies. The underlying pathology in symptomatic cases of anomalous lumbosacral articulation is also obscure: we have seen radiographic changes in anomalous lumbosacral articulations resembling arthrosis, with sclerosis of bone and marginal osteophyte formation. Injected steroid in this situation might act as an anti-inflammatory

agent, as a sclerosant, or even as a mechanical agent producing a micromanipulation of the joint by local pressure effects. If the "joint" is simply a fibrous ankylosis, it could perhaps be the site of a chronic connective tissue strain. This concept provides the most rational explanation of the benefit of local steroid injections.

The sustained benefit observed in 4 of 9 patients suggests that infiltration of these articulations is a worthwhile procedure in its own right, quite apart from any value as a diagnostic test. We suggest that this simple and safe treatment should be tried in symptomatic patients with anomalous lumbosacral articulations.

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