Case study

Intraarticular Steroid Injection as a Treatment of Bertolotti's Syndrome: A Report of Three Cases

Abstract

Bertolotti's syndrome (BS) is defined as association between the congenital malformation lumbosacral transitional vertebra (LSTV) and low back pain (LBP). There are several treatments have been proposed including steroid injections, resections of the LSTV, laminectomy, and lumbar spinal fusion. We present a report of three young patients age from 25 to 30 with chronic low back pain extending to the left buttock and just above the ipsilateral sacroiliac joint. Radiographic investigation revealed an anomalous enlargement of the left transverse process of the fifth lumbar vertebra forming a pseudoarthrosis with the infradjacent ala of the sacrum. They are managed successfully with fluoroscopically guided intraarticular steroid injection with local anaesthetic over the transverse process-ilium articulation and after a follow-up of 6 months. This case report describes a simple non-surgical management for treating symptomatic lumbosacral junction pseudoarticulation that warrants better mode of treatment.

Keywords: *Bertolotti's Syndrome, Intraarticular steroid injection, Pseudoarticulation*

Introduction

Bertolotti's syndrome (BS) was first described in 1917 by The syndrome was associated with axial low back pain (LBP) secondary to arthritic changes. The overall incidence of Bertolotti's syndrome has been reported to be between 4% to 8% in patients with low back pain[1]. Recently, a very high incidence of 30% has been reported[2]. To date, there has been no known effective non-surgical management options described[1]. The pain generator in the syndrome has also not been identified because such an anatomical variation produces or not low back pain and/or sciatica is a subject of great debate[2]. We present three case reports of patient with symptomatic BS managed successfully with fluoroscopically guided steroid injection of the transverse process-ilium articulation.

Case report

1) A 25 years old female was evaluated for chronic LBP associated with medial thigh cramping. She was treated with nonsteroidal antiinflammatory medications. The patient's pain was located in the low back, with radiation to the buttocks and anterolateral thighs. Provocative factors included forward flexion. The pain was not affected by prolonged sitting or standing. The quality of the pain was described as burning and sharp. The pain intensity on a Visual Analogue Scale (VAS) was 5/10. On physical examination the patient's bilateral lower extremities strength is full. Sensation was intact from L2 to S2. On palpation, there was focal tenderness along the base of the lumbosacral spine and near the posterior-superior iliac spine. Radiographs of the lumbar spine revealed an abnormal articulation between the L5

transverse process and the medial aspect of the ilium bilaterally, consistent with Bertolotti's syndrome (Figure 1).

Figure 1. Bilateral L5 transverse process articulation with medial aspect of the ilium

2) A 28 years old male presented for left LBP. He was on paracetamol for the last 3 weeks. His symptoms began years before presentation after performing certain movements mainly while bending forward on strenuous exercise. Physical examination demonstrated tenderness over the lumbar spine and the area of the left sacrum, VAS 6/10. Laseque sign was negative bilaterally. Reflexes, sensation and muscle power were normal on both lower limbs. The radiographs demonstrated a typical lumbosacral transitional vertebra (LSTV), with an extremely large left transverse process of the fifth lumbar vertebra, articulating with the ala of sacrum (Figure 2).

Figure 2. Large left transverse process of fifth lumbar vertebra

3) A 30 years old male presented right LBP of mechanical characteristics of long evolution. It increases with the trunk flexion and occasionally radiates to the right lower limb until the knee. Her Oswestry score was 40% indicating moderate disability. The rest of the exploration is normal. The simple X-ray of the spine shows an alteration in the LSTV with a sacral lumbarization and pronounced right transverse processes of L5 (Figure 3).

Figure 3. Right large lumbosacral transitional vertebra with sacral lumbarization

All three patient's clinical examination and radiographs were consistent with the articulation between the traverse process and ilium as a possible source of pain, we decided to inject local anaesthetic and corticosteroid into the transverse process—ilium articulation region. We used a 3-1/2 inch 22-gauge spinal needle inserted into the articulation between the transverse process and ilium guided by c-arm fluoroscopy, 0.5 mL of Iohexol 240 mg/ml contrast dye was injected once the needle tip was felt and slip into the joint with evidence of arthrogram and superior spread is seen (Figure 4). A solution containing 1 ml of ropivacaine 0.75% and 40 mg of triamcinolone acetate was injected on the affected side. During first month of follow-up in our clinic, the patient's VAS decreased from 6/10 to 3/10 and their Oswestry score decreased from 40% to 20%. All patients had no symptoms after 6 months of follow up.

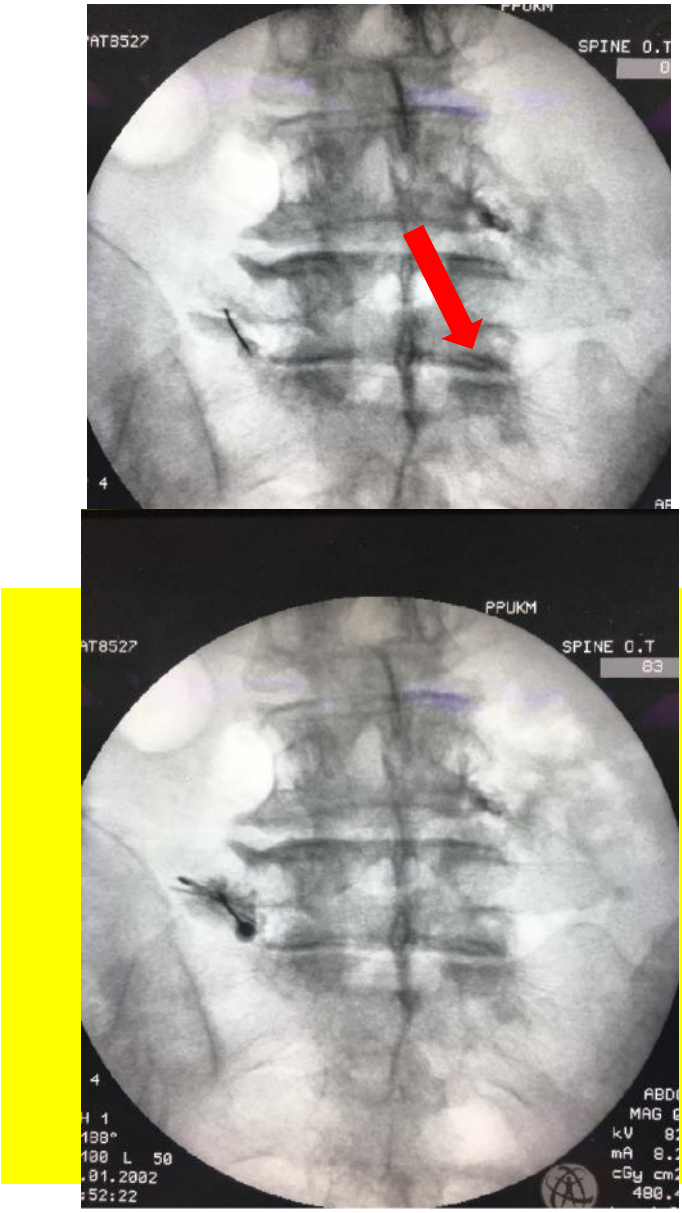

Figure 4. Showed spinal needle inserted and contrast dye injected into the articulation between the transverse process and ilium of right LSTV guided by image intensifier

Discussion

The aetiology of pain in symptomatic cases of Bertolotti's syndrome (BS) is unknown and the association of BS with low back pain (LBP) is unclear[1]. A possible aetiology for pain includes the articulation of the transverse process and ilium and resulting degenerative changes. Secondly, the fused transitional vertebrae may result in instability above the level of the fusion and third explanation may be because BS is not associated with back pain at all[1] while Wigh et al[8] and Castellvi et al[6] found that in patients with back pain and sciatica, the transitional vertebra had a prevalence of 21% and 30% respectively. Quinlan et al. reported a higher incidence of low back pain in the younger patient population with BS as all the cases we reported are young patients[7]. Elster et al. found that the incidence of degenerative disc disease and spinal stenosis was nearly nine times higher in the level adjacent to the to the

transitional vertebrae, suggesting that there may be abnormal biomechanical stress above the fusion[9].

Therapeutic options for symptomatic cases of Bertolotti's syndrome include conservative management and surgery[15]. To date, there is no agreement as to the best method of treatment for BS patients. However, we are discussing regarding intraarticular steroid injection as a treatment of choice for our patients as they refused any surgical intervention after failed conservative management such as pain relief medications and physiotherapy.

There are few literatures were reviewed regarding intraarticular steroid injection for BS. Marks et al. prospectively followed a cohort of ten patients with BS on X-ray[5]. Eight patients had immediate total relief of pain and one patient had total pain relief within the first week after steroid injection. Three patients reported adequate partial relief of pain after periods of six months and one patient remained pain free two years after the intervention. A study by Avimadje et al., twelve patients with LSTV reported same-side LBP or buttock-pain[10]. Seven of eight patients improved or had no symptoms after six months to two years after injection. Jain et al. prospectively reported twenty patients with BS and two patients were treated with steroid injections after a diagnostic block in the LSTV was preformed however none of the patients experienced pain relief at the end of the 6-month study period[11].

Some of the studies describing treatment with steroid injections[11,12] were case reports[3,12,13] or studies, where the patients refused surgery after selective nerve root block[12,14]. Unfortunately, there was no follow-up. Two cases have been reported on patients with LSTV articulation in the exit-zone of the root foramen causing impingement of the L5 nerve root[12,14]. Both received a selective nerve root block with steroid and local anaesthetics, which caused immediate pain relief. The patients had no radiculopathy for two months and a repeat nerve root block was performed[14]. The study does not mention any subsequent clinical outcome[4].

Conclusion

The association between an BS and LBP is still controversial despite a high prevalence and high incidence in younger age group[3]. The literature regarding the local administered steroid injection and surgical management is very sparse and very few studies have investigated the treatment of BS[4]. Our cases suggest that a simple steroid injection into the articulation between the transverse process and ilium may offer a simple initial diagnostic and therapeutic in the management of symptomatic BS. However further studies with larger sample sizes and longer follow-up periods are warranted for the clinical guidance in this type of treatment.

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