A Case Reports of Intra-Articular Steroid Injection in the Treatment of Bertolotti's Syndrome

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Case Study

ABSTRACT

Bertolotti's Syndrome (BS) is defined as an association between low back pain (LBP) and the congenital malformation of the lumbosacral transitional vertebra (LSTV). There are several treatments have been proposed by literature including steroid injections, resections of the LSTV, laminectomy, and lumbar spinal fusion, however, there is no best treatment has been agreed. Researchers present three case reports diagnosed as BS in Malaysia age from 25 to 30 years with chronic low back pain extending to the gluteal region and just above the ipsilateral sacroiliac joint. Radiographic investigation of these three patients revealed an anomalous enlargement of the left, right and bilateral transverse process of the fifth lumbar (L5) vertebra forming a pseudoarthrosis with the infra adjacent ala of the sacrum. These cases were managed successfully with fluoroscopically guided intra-articular steroid injection with local anaesthetic over the transverse process with ilium articulation and asymptomatic for 6 months on follow up. This case report denoted that a simple non-surgical management for treating symptomatic lumbosacral junction pseudo-articulation that warrants a better mode of management.

Keywords: Bertolotti's syndrome; intraarticular steroid injection; pseudoarticulation.

1. 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 21% in patients with low back pain [1,16]. Recently, high incidence has been reported which increased to 30% [2,17]. The causes of LBP in BS are multifactorial [11]. The abnormal mechanical stress and muscles strain may lead to facet joint arthropathy. The enlarged fan-shaped transverse foramina may cause nerve root compression due to narrowing of the intervertebral foramina and leading to neurogenic claudication later. An increased prevalence of disc protrusion or extrusion in the disc above the transitional L5 vertebra also has been found in patients with BS. 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 [2,17]. Researchers present three case reports of a patient with symptomatic BS managed successfully with fluoroscopically guided steroid injection of the transverse process with ilium articulation.

2. CASE REPORT

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1) A 25 years old female was evaluated for chronic LBP associated with both 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 of her back. 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 scored 5/10. On physical examination the patient's bilateral lower extremities strength is full. The sensation was intact from L2 to S2. On palpation, there was focal tenderness along the base of the bilateral lumbosacral spine and around 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 (Fig. 1).

2) A 28 years old male presented for left LBP. He was on analgesics for the last 3 weeks. His symptoms began 2 years exaggerated by certain movements mainly while bending forward. Physical examination demonstrated tenderness over the lumbar spine and left sacrum, VAS scored 6/10. Laseque sign was negative on bilaterally. Otherwise, both lower limbs were normal. The radiographs showed a typical lumbosacral transitional vertebra (LSTV), with an extensive left transverse process of the fifth lumbar vertebra, articulating with the ala of the sacrum (Fig. 2).

3) A 30 years old male presented with right LBP 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 clinical examination is normal. The radiograph of the spine shows an alteration in the LSTV with a sacral lumbarisation and pronounced right transverse processes of L5 (Fig. 3).

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, the researcher decided to inject local anaesthetic and corticosteroid into the transverse process with ilium articulation region. Researcher used a 3-1/2 inch 22-gauge spinal needle inserted into the articulation between the transverse process and ilium guided by Philips 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 (Fig. 4). A solution containing 1 ml of ropivacaine 0.75% and 40 mg of triamcinolone acetate was injected on the affected side. During the first month of follow-up in the 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.

3. 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 [18]. 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

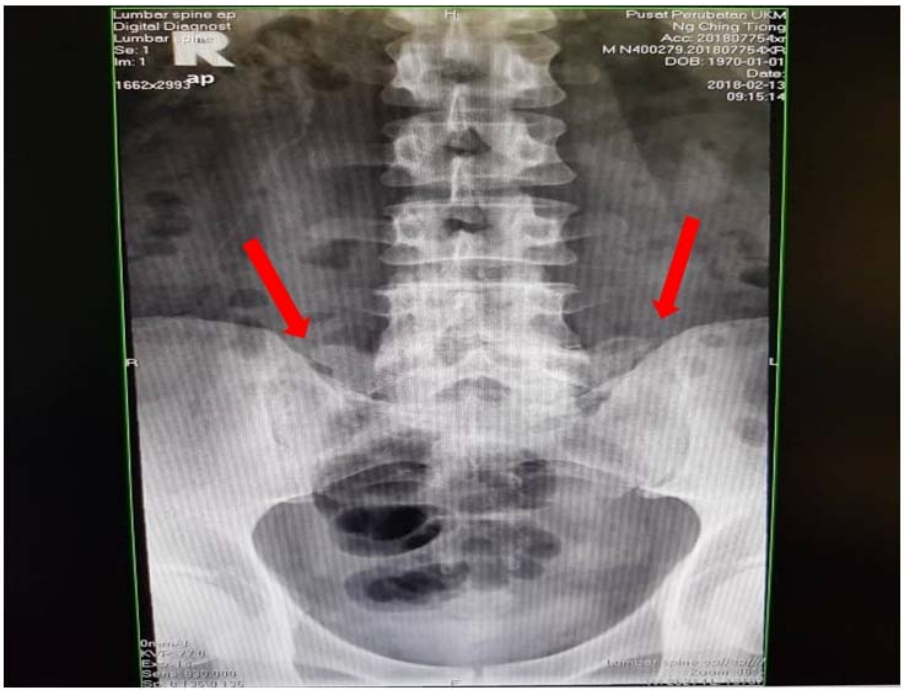

Fig. 1. Bilateral L5 transverse process articulation with medial aspect of the ilium

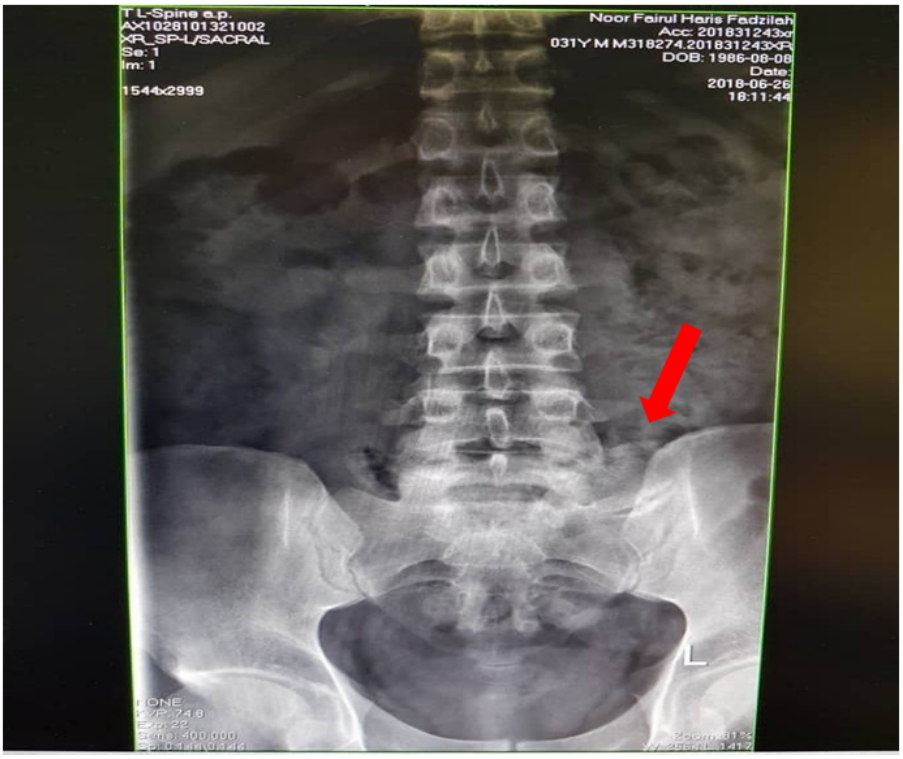

Fig. 2. Large left transverse process of fifth lumbar vertebra

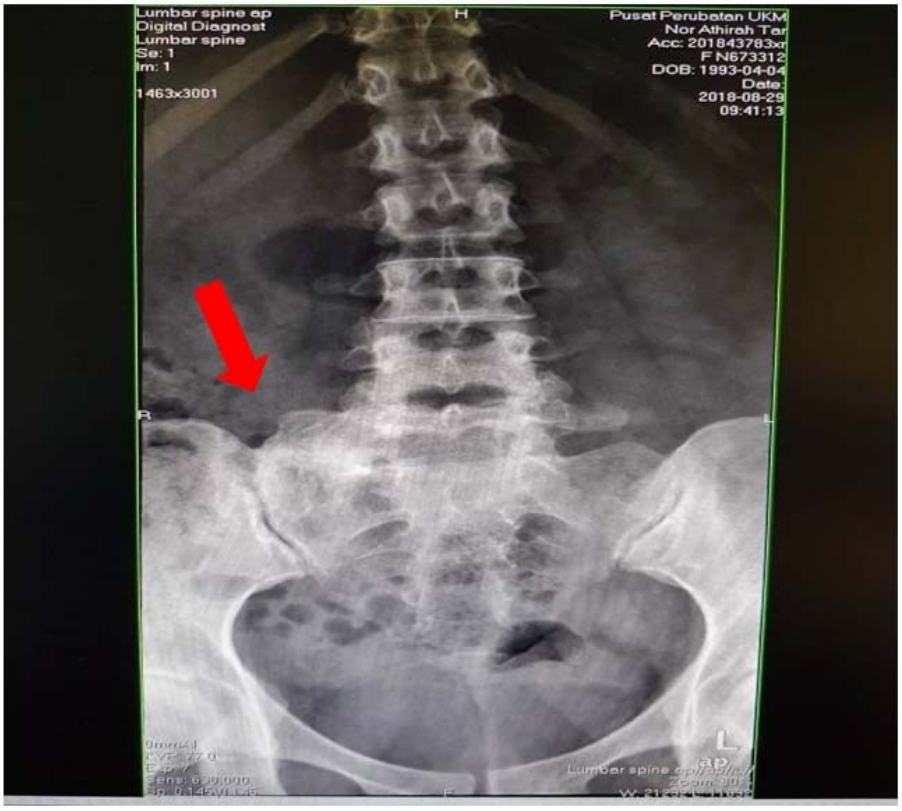

Fig. 3. Right large lumbosacral transitional vertebra with sacral lumbarisation

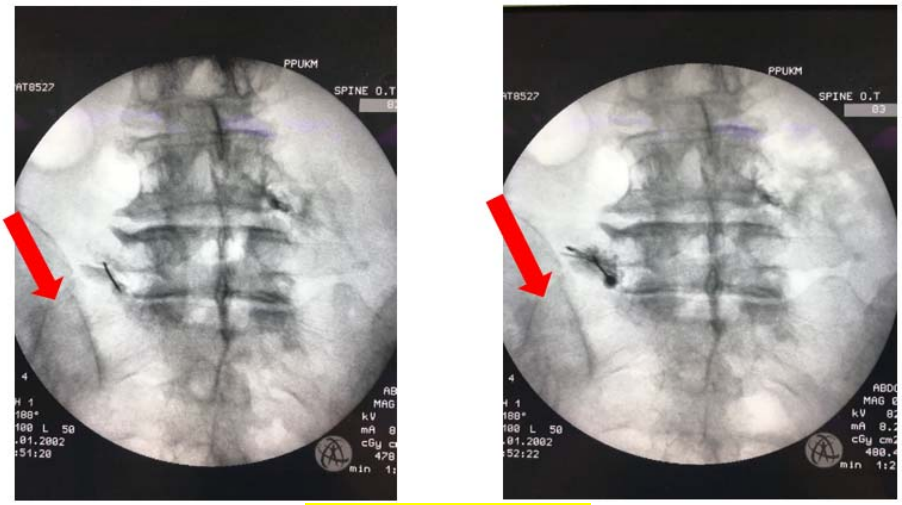

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Fig. 4. Showed spinal needle inserted and a contrast dye injected into the articulation between the transverse process and ilium of right LSTV guided by the image intensifier

with back pain and sciatica, the transitional vertebra had a prevalence of 21% and 30% respectively [6,8,17]. Quinlan et al. reported a higher incidence of low back pain in the younger patient population with BS as all the cases 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, researchers 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 kinds of literature reviewed regarding intraarticular steroid injection for BS. Marks et al. followed prospectively a cohort of ten patients with BS on X-ray [5,16]. Eight patients had immediate total relief of pain and one patient had total pain relief within the first week after steroid injection [16]. Three patients reported adequately partial relief of pain after periods of six months [16] and one patient remained pain for free two years after the intervention. A study by Avimadje et al., twelve patients with LSTV reported LBP or buttock-pain on same side [10,16]. Seven of eight patients improved or had no symptoms after six months to two years after injection [10,16]. Jain et al. prospectively reported twenty patients with BS and two patients were treated with steroid injections after a diagnostic block given however none of the patients experienced pain relief at the end of the 6-month study period [11,16].

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 [12,14,16]. Unfortunately, there was no follow-up. Two cases have been reported on patients with LSTV articulation with the existing root of foramen causing impingement of the L5 nerve root [12,14,16]. The patients received a nerve root block with steroid and local anaesthetics and pain relieved immediately [16]. They had no radiculopathy for two months and a repeat nerve root block was performed [14]. This study does not mention any subsequent clinical outcome after following up [4,16].

4. CONCLUSION

The association between a BS and LBP is still unclear despite a high prevalence [16] however high incidence in younger age group was reported [3]. The literature regarding the local administration of steroid injection and surgical management is scattered and very few studies have investigated the treatment of BS [4,16,17]. Present case studies 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 needed for this type of treatment.

CONSENT

As per international standard or university standard, the patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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