Epidural needle fragment related low back pain. Case report

Lombalgia incapacitante causada por fragmento retido de agulha peridural. Relato de caso

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ABSTRACT

BACKGROUND AND OBJECTIVES: Facet syndrome has increasingly been recognized as one the most common causes of chronic low back pain, despite the significant diagnostic challenges imposed by its protean manifestations. Lumbar zygapophyseal degenerative changes are considered the main etiologic agent in cases of facet-associated lumbar pain, with iatrogenic causes rarely involved, particularly those related to retained foreign bodies following invasive medical or surgical procedures. Only three similar reported cases were found in the literature.
CASE REPORT: Female patient, 36 years old, presented significant chronic low back pain due to a Tuohy needle fragment retained in upper part of left L1-L2 facet joint and adjacent tract of the medial branch of the dorsal nerve corresponding to the suprajacent level, following epidural anesthesia performed for elective cesarean section. Failure of conservative treatment and pain intensity led to invasive treatment, with surgical removal of the needle fragment as a stand-alone procedure. Clinical response was favorable, and no additional procedures were necessary thus far. Possible difficulties in diagnosing facet syndrome and the surgical strategy for such an uncommon case are discussed.
CONCLUSION: In the case of a rare etiology of low back pain, a particularly accurate clinical and imaging correlation is important to achieve an adequate therapeutic plan. Such plan must encompass an optimal knowledge of spine anatomy and lumbar pain-related mechanisms. Foreign elements that could be responsible for mechanical injury or local inflammatory phenomena contributing to chronic pain should be considered for removal as part of the treatment strategy

Keywords: Chronic pain, Foreign bodies, Needles, Low back pain.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A síndrome facetária é reconhecidamente uma das causas mais comuns de dor lombar crônica, embora as suas manifestações bastante diversas coloquem importantes desafios diagnósticos. Atribui-se à doença degenerativa das zigapófises lombares a principal etiologia do quadro doloroso a elas associado, sendo as causas iatrogênicas relativamente raras, sobretudo as relacionadas com corpos estranhos retidos após procedimentos médicos. Existem unicamente três casos semelhantes reportados na literatura.
RELATO DO CASO: Paciente do sexo feminino, 36 anos, com dor lombar crônica importante relacionada com fragmento de agulha peridural quebrado e retido na região da articulação facetária L1-L2 e do ramo medial do ramo dorsal do nível suprajacente, durante o procedimento de anestesia pré-parto. A falha do tratamento conservador e a intensidade do quadro álgico fizeram com que se optasse por tratamento invasivo, nesse caso com remoção cirúrgica do fragmento retido, com boa resposta clínica e sem necessidade de procedimentos adicionais. Discutem-se as razões para possíveis dificuldades diagnósticas do quadro de síndrome facetário e a estratégia terapêutica num caso incomum.
CONCLUSÃO: Numa situação de etiologia rara de dor lombar crônica, uma adequada correlação clínico-imagiológica é da maior importância. O plano terapêutico deve envolver um ótimo conhecimento da anatomia da coluna e dos mecanismos que podem contribuir para a dor lombar. A remoção de elementos estranhos que possam ser responsáveis por lesão mecânica ou fenômenos inflamatórios locais, como este corpo estranho, deve ser uma opção a ter em conta no tratamento.

Descritores: Agulhas, Dor crônica, Dor lombar, Reação a corpo estranho.

INTRODUCTION

Low back pain (LBP) is one of the leading causes of disability worldwide and a major welfare and economic problem. It affects both men and women, regardless of ethnic groups, occurring most frequently in the aging population. There are many causes for LBP as it can result from age-related degenerative changes, trauma, infection, inflammation, or systemic disease. In many cases of LBP, a clear causative factor cannot be identified[1-4]. As

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for traumatic causes, complications related to spinal epidural injections are quite rare[5]. As for retained fragments of epidural needles causing LBP, only three other reported cases were found and no other case reporting facet syndrome[6-8].

CASE REPORT

Female patient, 36 years old, normal body mass index, with a 3 year history of progressive LBP occasionally radiating to the left buttock and upper part of the lower limb. Conservative treatment with drug and physical therapy failed to ameliorate her symptoms.

After a detailed medical history analysis, she referred it all started in the post-partum period, 3 years before, denying any previous episodes of LBP or spine related problems.

She had a prior history of right oophorectomy due to ovarian pregnancy, which led to a decision to perform elective cesarean section in the following successful pregnancy. According to available medical records, the procedures were uneventful, and an epidural anesthesia is registered at that time, although no complications or difficulties are noted. The patient herself was unaware of any such difficulties.

Approximately one month after the delivery, the LBP started, located in the upper left lumbar region, prompting the patient to seek medical attention in several different occasions, eliciting provisional suspicions of renal colic or nonspecific lumbago.

The pain was described at this point as of a dull but intense nature, with stab-like surges as she tried to extend her back from a somewhat less painful flexed position.

With no clear diagnosis for this previously nonexistent LBP, she was discharged from the emergency department on several occasions and put on acetaminophen, naproxen, and tramadol.

The third time she went to the ER because of troublesome pain, 2 years after the inception, a plain lumbar radiograph demonstrated the presence of a linear hiperdensity (suggestive of a metallic nature) over imposed on the left paramedian spinal region of L1 (Figures 1 and 2). A referral to Orthopedic consultation was then made, but the patient decided instead to look for a Neurosurgical appointment. Her main concern was the possibility that the pain could get worse with time and she already had delayed her plans for a further pregnancy because of that.

The patient presented LBP which she described as involving all of the axial lumbar region. She also complained of frequent episodes of pain radiating to her left buttock and sometimes to the upper part of her lower left limb, in an ill-defined distribution.

Pain was worse when initiating movement and when sitting or standing for longer periods, whilst improving on recumbency. She also spontaneously mentioned that, particularly during episodes of exacerbated pain, the upper left lumbar region was tender.

She was still on fixed non-steroidal anti-inflammatory (NSAID - naproxen) and on an as-needed basis dosage of tramadol, but still felt daily pain. A previous short course of physical therapy also did not prove to be effective. At this time, she graded her pain intensity in most days at 53/100 in the visual analogue scale (VAS)[9].

On physical examination, positive findings included intense pain elicited on left upper lumbar palpation and at extreme movements of the inferior limb, also to the left. There was a clear increase in pain with lumbar extension, but no absolute relief on lumbar anteflexion, whereas rotational manoeuvres did not impact significantly on the patient's perceived pain characteristics. Motor, sensory, and reflex functions were normal.

At this point, the clinical findings suggested an upper lumbar facet syndrome and while an association with the discovered foreign body could be envisaged, further imaging studies were performed, in order to better clarify the pain etiology.

The first exam, a lumbar x-Ray, already showed a metallic foreign body at the L1 region (Figures 1 and 2)

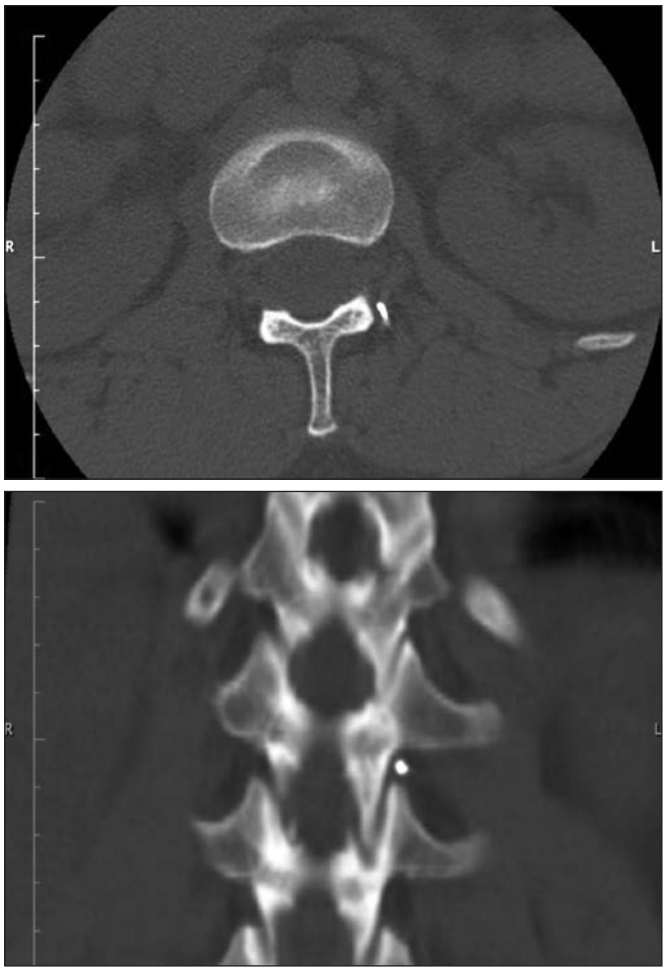
Further evaluation with Lumbar CT-Scan confirmed a metallic linear foreign body in close proximity to the top of the left L1-L2 facet joint and to the L1 pars interarticularis, possibly also impinging on the medial branch of D12 (Figures 3 and 4).

Since this was a young patient, facet syndrome symptoms were unlikely to derive from age-related degenerative spinal disease. The location of the metallic foreign body could explain the facet-related symptoms, either by mechanically impinging on the joint or its innervation or by the release of inflammatory substances elicited by its presence.

Nevertheless, the suggestion was for the patient to have the foreign body removed and afterwards safely undergo a lumbar spine MRI to better characterize her spinal disease.

The patient was then submitted to surgery: while under general anesthesia, she was put in prone position over a soft rectangular frame and a left paramedian approach to expose the L1-L2 facet joint. A monopolar cautery was used to open the subcutaneous tissues and posterior layer of the thoracolumbar fascia. Using fluoroscopic guidance, a muscle-splitting technique with blunt dissection between the *longissimus* and *multifidus* muscles was then performed and the facet joint exposed. A Tuohy needle fragment, measuring 0.8cm, surrounded by inflammatory tissue, was identified and removed. The inflammatory tissue

Figures 1 and 2. Lumbar spine x-ray, lateral and frontal views, showing the metallic object



Figures 3 and 4. Pre-operative lumbar CT-scan, axial and coronal bone view, showing the metallic object

encapsulating the fragment did not constitute a solid mass with obvious mechanical effect on its own and was interpreted as a foreign body reaction.

No attempts were made to cauterize the articular capsule or the joint innervation and only bipolar coagulation was employed in the deep surgical corridor.

After the procedure, the patient progressively recovered, with no symptoms of facet-related pain, and was able to return to her daily life activities. At the last follow-up, 18 months after surgery, she graded her residual LBP as a 22/100 in the VAS and had had another baby, with no pain recurrence during this pregnancy.

DISCUSSION

This case shows that a detailed medical history is essential in LBP evaluation, particularly because of the multiple factors that can contribute to the clinical manifestations.

For a medical or surgical intervention to be successful in treating spine disorders, correlating imaging findings with patient history, symptoms and physical findings is paramount.

Facet joint syndrome can present a vast array of pain patterns, from the most clear-cut manifestations of well localized pain and consentient physical findings to pseudoradicular symptoms that can obscure the etiological investigation[10,11]. There are also many instances where facet joint pain concurs with other degenerative spinal processes and muscle imbalances to the chronic lumbar pain process, adding further difficulties to the correct assessment of the relative contribution of each potential pain generator[11,12].

The delay in diagnosis that occurred could be attributed to some extent to a lack of knowledge that facet joint disorders can mimic other entities, particularly when there is a pattern of referred pain, which is not uncommon[11-13]. In fact, pain referred to unexpected areas such as the abdomen or pelvis has been described in the literature and this should be considered when evaluating lumbar pain[13].

Another obvious contributor for the initial diagnostic difficulties was the hitherto unknown presence of a retained foreign body since there was no record of difficulties or complications in the previous medical or surgical procedures.

In the present case, the combination of symptoms and of physical findings strongly suggested the presence of an upper lumbar facet syndrome. The patient could localize the pain to a specific paramedian lumbar zone, felt more pain in lumbar extension and some relief while flexed, symptoms that could be reproduced in the physical examination. The presence of a specific pain trigger in the facet joint was also heavily suggestive[11].

The fact that some of the maneuvers that can exaggerate pain in facet syndromes, like the torso rotation, were negative, could reflect both the specific etiology of this case, where there isn't a classic degenerative course but an offending foreign agent, and the location in the L1-L2 level, where the rotational forces acting in the facet joint are not as noticeable[14].

Diagnostic confirmation that a facet syndrome is present frequently entails a block, with some groups using intra-articular and others medial branch block (MBB) to such effect[15]. While MBB seems to be of some advantage in pain relief[16] and in predicting response to neurolysis[17], both are intended to confirm the facet joint as a pain generator and to serve as a therapeutic strategy, albeit usually of limited longevity. To extend the duration of the pain relief after a successful block (a word of caution regarding the high rate of false positives with a single block, with many groups requiring 2 consecutive positive blocks[11,15]), several minimally invasive neurolytic techniques have been used, namely radiofrequency ablation, cryoablation and chemical ablation (the latter less often).

The rationale approaching the treatment plan on the patient took into account the presumed role the foreign body could have and the fact that MRI (the *de facto* imaging modality to assess the most subtle facet joint changes) would not be available while the object was retained[18-20].

In fact, it could be argued that a diagnostic MBB could be an initial option as a confirmatory test[15]. But the retained foreign body would still be an issue, as well as the need to undergo neurolysis in a facet joint whose condition could not be accurately ascertained.

The decision was to offer the patient a stepwise approach, starting with the retained fragment removal and minimal anatomical disturbance of the facet structure or innervation. A second stage of MBB and possible neurolysis would thus be used in the eventuality of significant persistent pain following the first procedure. Fortunately, there was no need for further interventional treatment, as the patient fared well and sought no more medical treatment. Nonetheless, it's important to have a clear treatment strategy and to be able to offer treatment alternatives.

MRI performed after the surgical removal of the fragment showed normal aspects of the facet joint, strengthening the notion that the most important factor in the pain generation was in fact either the mechanical action of the fragment or the local inflammatory reaction elicited by its presence[4].

CONCLUSION

The surgical removal of the retained needle fragment was essential for the patient's recovery and, as such, it should be considered in these cases when there is clinical evidence of affecting the patient's quality of life. Besides being a quite rare cause for LBP, it should be considered especially if there is a history of spinal pain procedures. It's also suggested that in cases when the primary retrieval of a spinal retained foreign body is not contemplated, a long follow up is mandatory to identify unforeseen consequences.

AUTHORS 'CONTRIBUTIONS

Daniela de-Matos
Data Collection, Conceptualization, Writing - Original preparation, Writing - Review and Editing
Henrique Cabral
Writing - Proofreading and Editing
Ricardo Pereira
Writing - Review and Editing, Supervision, Validation

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