Case Report

An Atypical Location of a Projectile in Sacrum about a Case

Diouf AB*, Daffé M, Dembélé B, Sarr L, Sane AD, Coulibaly NF, Nguessi I and Diémé CB

Service Orthopédie Traumatologie Hopital Aristide Le Dantec, Dakar

Introduction

Since 1990, several investigators have reported an increase in the incidence of spinal cord injuries, with penetrating trauma being the leading cause of spinal cord injury in some urban trauma centers [1]. We report a case with an inlet at L4-L5 and a final migration at S1.

Observation:
Trader of 28 years, received January 21, 2016 for low back pain and desire to remove a projectile at the level of the spine. The loco-regional examination found a scar of the orifice in projection of the fourth and fifth lumbar vertebra. The radiological assessment carried out showed: on radiography the projectile at the sacral level; And to the computed tomography, an oval hyper dense formation of size 31x15x10 mm extended from the first sacral vertebra to the second sacral vertebra in relation to the evoked ball with a solution of continuity of the right blade facing it.

At the exploration, one noticed the ball buried in the sacral channel pushing back the nerve elements in posterior and with a prominence of a radicular section to the right, and a fracture of the blade to the right.

Discussion: Spinal lesions by firearm are increasingly common. Kuijen et al. [2] were able to identify four cases of bullets left in place with delayed neurological symptoms. However, these bullets remained localized in epidural as in our patient. The only discrepancy is that the symptomatology was early in our clinical case with a motor unilateral motor deficit secondary to an axonal lesion. The decision to leave or remove a fragment lodged in the spinal canal depends on several factors. Given its composition in copper and lead, the risk of further development of neurological complications was evident. He also had other neurological complications, not related to the toxicity of the different components of the projectile, but to its presence in the sacral canal. And this is all the more increased by the narrowness of this channel and by the rather large number of mesh roots found there.

Conclusion: In addition, imaging plays an important role in the initial management of patients with hema-dynamically stable bales regardless of the location of the projectile. CT is very useful to objectify the trajectory of the ball and to make a precise lesonal balance thus making it possible to provide valuable information for the management of this condition.
The radiological assessment carried out showed: on radiography
the projectile at the sacral level;

And to the computed tomography, an oval hyper dense formation
of size 31x15x10 mm extended from the first sacral vertebra to the
second sacral vertebra in relation to the evoked ball with a solution of
continuity of the right blade facing it (Figure 3).

The electromyography performed was in favor of an axonal motor
lesion of the sciatic nerves external popliteal and sciatic popliteal
internal, with anterior radicular involvement L5 - S1 more severe on
S1 and right.

In conclusion, the clinical and paraclinical evidence was in
agreement with the surgical option chosen, which was laminectomy
under scopic regression.

At the exploration, one noticed the ball buried in the sacral
channel pushing back the nerve elements in posterior and with a
prominence of a radicular section to the right, and a fracture of the
blade to the right. We removed the projectile (Figure 4).

The surgical follow-up was simple with a verticalization of
the patient overnight. On the first postoperative day, there was a
regression of the symptomatology with an autonomous walk with
discreet lameness, a disappearance of the sphincter disorders and the
return of the morning erection.

At the last 10-month follow-up, the patient was no longer
suffering from pain and walking was independent. The motor axonal
impairment persisted in EMG.

Discussion

Spinal lesions by firearm are increasingly common [1,3].

Several types of foreign bodies have been reported close to the
spine, including surgical compresses, Kirschner pins, bullets, bone
fragments [4,5].

Kuijen et al. [2] were able to identify four cases of bullets left in
place with delayed neurological symptoms. However, these bullets
remained localized in epidural as in our patient. The only discrepancy
is that the symptomatology was early in our clinical case with a
motor unilateral motor deficit secondary to an axonal lesion. One of
the assumptions was that the blade injury caused by the blade could
have caused a root lesion. And this was all the more reinforced by the
discovery to the peroperative exploration of a right radicular section.

The ballistic objects produce sound waves of pressure preceding
the projectile. The speed of these waves is 4,800 feet per second;
Inducing a pressure of 117 atmospheres. It has been shown that the
temporary cavity created by the pressure on a bone structure could
smash it, the bone fragments thus playing the role of secondary
missiles [6]. It is not necessary for these missiles to strike the spinal
cord to cause neurological damage. But most spinal cord injuries
occur when the bullet passes through it or when it is lodged in it [6].

The decision to leave or remove a fragment lodged in the spinal
canal depends on several factors. The absolute indications are
neurological deterioration, infection and lead toxicity. However, in
the absence of these absolute indications, the extraction of bullets
from the spine remains under discussion [7]. This was one of the
motivations behind our therapeutic decision because, in addition
to the right motor impairment, urinary losses as well as erectile dysfunction constituted a real social discomfort in our patient.

Recent studies have, however, advocated a more conservative approach [7]. Nathaniel L. and Tindel et al. [8] showed in an experimental study that the extraduralized fragments did not have a deleterious effect on the spinal cord, which apparently is protected by the meninges. On the other hand, intradural implantation may produce a more damaging result, resulting in a fibrous reaction in the mother-arachnoid layer. It was observed that copper destroyed axons and myelin causing a significant area of gliosis in the rest of the medullary tissue. Lead resulted in a similar but less severe local response.

Jeffery et al. reported the case of a Vietnamese refugee carrying an intradural bullet keeping a pony tail function preserved for 18 years [9]. Rajan et al. have reported the case of a bullet passing through the spinal column from the cervical region to the sacral region, demonstrating that migration of the fragment by itself is not a risk factor for neurological deterioration [10].

Avci et al. reported a delayed neurological symptomatology compared to the spontaneous migration of a bullet in the spinal lumbar spine: motor weakness only manifested a few days after the trauma [11].

The opinion of Kuijen et al. is that if a neurological deficit occurs, which is possible after several years of latency, surgery should be considered according to the severity and type of deficit presented [2]. Mann et al. reported the case of a 13-year-old girl injured by gunshot wounds with incomplete neurological lesions. The bullet was removed cold and without precipitation [12]. Ledger wood believes that the question of whether to withdraw the bullet must be based on the assessment of the risks involved in leaving it in place in relation to the risks involved in the attempt to withdraw it. Late isolated neurological symptoms can occur up to 15 years after the trauma [7,13-16].

In our case the foreign body was a bullet. Given its composition in copper and lead, the risk of further development of neurological complications was evident. He also had other neurological complications, not related to the toxicity of the different components of the projectile, but to its presence in the sacral canal. And this is all the more increased by the narrowness of this channel and by the rather large number of mesh roots found there.

Conclusion

Spinal trauma of ballistic origin in a zone of peace is not uncommon with the urbanization of African cities.

In addition, imaging plays an important role in the initial management of patients with hemodynamically stable bales regardless of the location of the projectile. CT is very useful to objectify the trajectory of the ball and to make a precise lesions balance thus making it possible to provide valuable information for the management of this condition.

References

1. Benzel EC, Hadden TA, Coleman JE. Civilian gunshot wounds to the spinal cord and cauda equina. Neurosurgery. 1987; 20: 281-285.
2. Kuijen JM, Herpers MJ, Beuls EA. Neurogenic claudication, a delayed complication of a retained bullet. Spine. 1997; 22: 910-914.
3. Farooq M, Shahir A, Dhar MR, Farooq B. Late neurogenic claudication in the case of an intradural ballistic metallic fragment Review of Rheumatism. 2007; 74: 286-288.
4. Farmer JC, Vaccaro AR, Balderston TA, Albert TJ, Cotler J. The changing nature of admissions to a spinal cord rise. J Spinal Disord. 1998; 11: 400-403.
5. Lindahl S, Witten J, Instam L. Computed Tomography of bone fragments in the spinal canal. An experimental study. Spine. 1983; 8: 181-186.
6. Amato JJ, Syracuse D, Seaver PR Jr., Rich N. Bone as a secondary missile, an experimental study in the bone by high velocity missiles. J Trauma. 1989; 29: 609-612.
7. Waters RL, Adkins RH. The effects of removal of bullet fragments retained in the spinal canal. A collaborative study by the national spinal cord injury systems. Spine. 1991; 16: 934-939.
8. Tindel NL, Marcillo AE, Tay BK, Bunge RP, Eismont FJ. The effects of surgically implanted bullet fragments on the spinal cord in a rabbit model. J Bone Joint Surg Am. 2001; 83: 884-890.
9. Jeffery JA, Borgstein R. Case report of a retained bullet in the lumbar spinal canal with preservation of cauda equina function. Injury. 1998; 29: 724-726.
10. Rajan DK, Alcntara AL, Michael DB. Where is the bullet? A migration in two acts. The Journal of Trauma, Injury, Infection and Critical care. 1997; 43: 716-718.
11. Avci SB, Aickgöz B, Gundogdu S. Delayed neurological symptoms from the spontaneous migration of a bullet in the lumbar-sacral spinal canal; Case report. Paraplegia. 1995; 33: 541-542.
12. Mann DC, Tall R, Brockley JS. Bullet within the spinal canal. Orthop Rev. 1989; 18: 453-457.
13. Ledgerwood AM. The wandering bullet. Surg Clin North Am. 1977; 57: 97-109.
14. Haffner DL, Hoffer MM, Weidbusch R. Etiology of children’s injuries at Rancho Los Amigos. Spine. 1993; 18: 679-684.
15. Louwes TM, Ward WH, Lee KH, Freedman BA. Combat-related intradural gunshot wound to the thoracic spine: significant improvement and neurologic recovery following bullet removal. Asian Spine J. 2015; 9: 127-132.
16. Tumilán LM, Pan J, Rodts GE, Mummamneni PV. The safety and efficacy of anterior cervical discectomy and fusion with poly-ether ether ketone spacer and recombinant human bone morphogenetic protein-2: A review of 200 patients. J Neurosurg Spine. 2008; 8: 529-535.

Citation: Diouf AB, Daffé M, Dembélé B, Sarr L, Sane AD, Coulibaly NF, et al. An Atypical Location of a Projectile in Sacrum about a Case. SM J Orthop. 2017; 3(4): 1061.