



Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Vertebral destruction due to abdominal aortic aneurysm



J.F. Jiménez Viseu Pinheiro*, J.F. Blanco Blanco, D. Pescador Hernández, F.J. García García

Department of trauma and orthopedics surgery, Spine Unit, University Hospital of Salamanca, IBSAL, Spain

ARTICLE INFO

Article history:

Received 18 November 2014

Accepted 2 December 2014

Available online 10 December 2014

Palabras Clave:

Dolor lumbar

Lisis vertebral

Destrucción vertebral

Aneurisma aorta abdominal

Rotura crónica

Keywords:

Low back pain

Vertebral lysis

Abdominal aortic aneurysm

Chronic rupture

Vertebral fixation

ABSTRACT

INTRODUCTION: Low back pain is a common cause of medical consultation, and usually supposes a non-malignant prognostic.

PRESENTATION OF CASE: We report an atypical appearance of low back pain associated to shock and pulsatile abdominal mass that made us diagnose an abdominal aortic aneurysm as reason of vertebral lysis and pain.

DISCUSSION: Surgical repair of contained AAA should be directed to secondary re-rupture prevention, with an approximate survival near to 100% at selected patients for elective surgery. Consequently, orthopedic surgery for back spine stabilization has to be elective in those cases when vertebral destruction is above 30% and clinic is directly related to spine instability.

CONCLUSION: We should consider AAA as other cause of low back pain and routinely examine the abdomen and seek complementary imaging proves when risk factors for AAA are present.

© 2014 The Authors. Published by Elsevier Ltd. on behalf of Surgical Associates Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/3.0/>).

1. Introduction

Low back pain is a very frequent symptom at general orthopaedic consultation, and establishes a long term chronic illness between 2% and 7% of times [1]. Although, a great majority of the chronic low back pain is related to vertebral degenerative pathology, other possible reasons, even unusual, have to be considered like abdominal pathology (pancreatic for instance) and aortic abdominal aneurysms with chronic contained rupture or not [2]. Most of the times low back pain is the main symptom and first clinical approach for aortic abdominal aneurysms [1,2]. Sometimes the radiological study points the most likely etiological alternative, but the classical triad of abdominal (or back) pain, shock, and pulsatile abdominal mass might be the clinical picture for aortic abdominal aneurysms, that in some cases can compromise the vertebral integrity [3].

The aim of this work is to introduce a case report that emphasize the need to relate the low back pain with atypical clinics appearances of entities, as aortic abdominal aneurysms, capables to compromise the patients prognosis and treatment.

2. Presentation of case

An active 75-year-old woman, 45 pack/year smoker, hypercholesterolemic, with progressive low back pain since last six months that gradually causes troubles for proper walking, was being studied in another hospital due to symptoms of pneumonia over latent lung-tuberculosis, whose complementary imaging proves reveal an infrarenal aortic dilatation with destruction of anterior wall of vertebral bodies L2, L3 and L4 (Fig 1).

Patient had an aortic abdominal aneurysm (AAA), type IV of Crawford–Safi scale [4], with rupture sealed against anterior vertebral body walls. Computed tomographic angiography estimated a 5 × 4 × 9 cm aneurysmatic rupture, showing a total thrombosis and loss distinction with vertebral bodies of L2, L3 and L4; and revealing lysis up to 30% of the anterior walls of them, being L3 the most damaged one (Fig 2). Also, the CT angiography revealed healthy kidney arteries and distal revascularization due to collateral vessels. Magnetic resonance imaging (MRI) highlighted a spondylodiscitis in this level where histological and infectious studies were not decisive.

Vascular surgeons did not consider appropriated surgical approach nor open or endovascular because of presence of healthy kidney arteries and distal flow from collaterals. Orthopedics treatment consisted in instrumented lumbosacral arthrodesis with heterologous bone graft from L1 to S1 through posterolateral spine approach with pedicular screws (Fig 3). Postoperatively, the patient

* Corresponding author.

E-mail address: juanfer86@gmail.com (J.F. Jiménez Viseu Pinheiro).

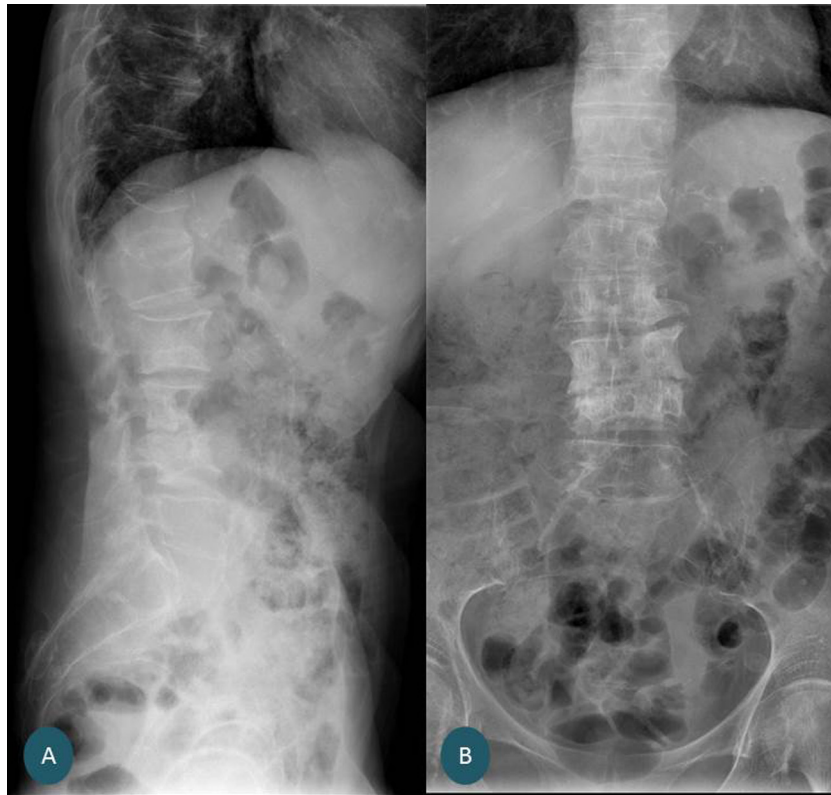


Fig. 1. Lateral (A), and posteroanterior (B) radiography approach where severe L3–L4 vertebral destruction was noticed.

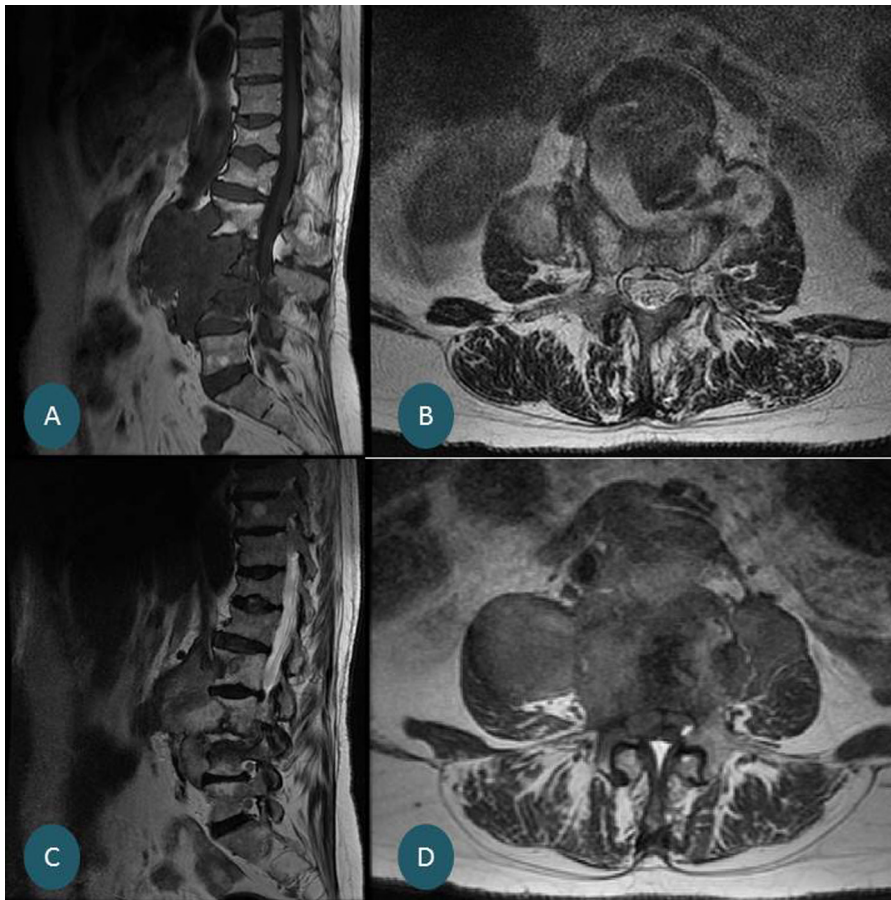


Fig. 2. (A) and (B) MRI in T2 showing AAA thrombosis and loss distinction with vertebral body of L3 (C) and (D) MRI in T1 of L3 vertebra with massive destruction.

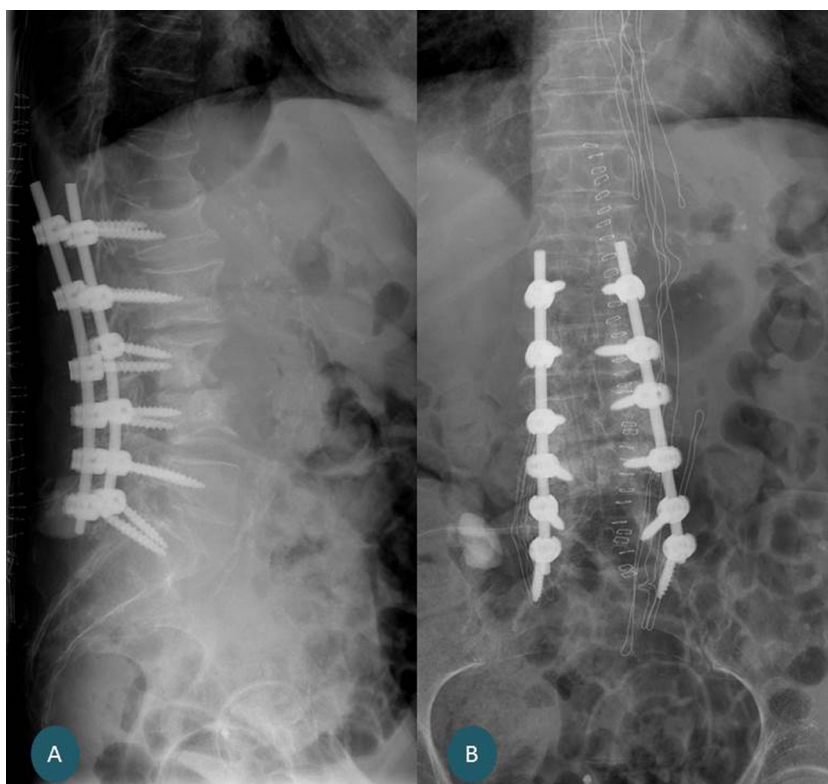


Fig. 3. Lateral (A), and posteroanterior view (B) after instrumented lumbosacral stabilization L1–S1 with pedicular screws.

experienced reversible cardiac insufficiency episode but was discharged home in good health 20 days after intervention.

At 12-months follow-up, the patient was out low back pain reaching a visual analogue scale of 2 (pre-surgical VAS of 8), now walking without aids help and has recovered whole of her daily activities.

3. Discussion

According to Sterpetti et al. [5], when aortic aneurysm is placed in abdominal segment, the associated vertebral erosion or lysis never is over 3%. Contained rupture of AAA is established on a progressive way by a haematoma expansion at the posterior aneurysm wall that triggers vertebral erosion. Specific mechanism for the vertebral lysis is not clear, due to exists several hypothesis implicating arterial pulse [6], aneurysm [7] or haematoma infection [8,9], inflammatory processes [10], or just an unspecific reason.

Since 1965, Szilagy et al. [11], described the contained rupture of AAA as a clinical pathology that can appear as unspecific abdominal or back pain for a variable lapse of time when neuropathy or paraplegia of lower extremities could be established. These atypical clinic ways are able to hide bone metastasis, primary bone tumors, rheumatoid arthritis, osteomalacia, infectious processes like vertebral tuberculosis (Pott disease), vertebral pyogenic spondylodiscitis or psoas abscess. Compressive or inflammatory neuroapraxia of ilioinguinal or iliohypogastric nerves explains the pain irradiation to inguinal, low abdominal, the testicle or anterior thigh areas when aortic aneurysm is placed abdominal.

Surgical repair of contained AAA should be directed to secondary re-rupture prevention, with an approximate survival near to 100% at selected patients for elective surgery [12]. Consequently, orthopedic surgery for back spine stabilization has to be elective in those cases when vertebral destruction is above 30% and clinic is directly related to spine instability.

4. Conclusion

Low back pain is a clinic entity very frequent at the general orthopaedic consultation, but not always is due to spine primary disease. We should consider AAA as other cause and routinely examine the abdomen at back pain consultations and seek complementary imaging proves when risk factors are present (smoker, male, age >65, pulsatile abdominal mass, etc.).

When main disease is solved (with or without treatment), the vertebral instability could be improved as usual with instrumented spine surgery.

Conflicts of interest

No conflicts of interest for any author.

Funding

No sources of funding were used.

Author contribution

Javier Garcia Garcia contributed as data collector and analysing bibliography. David Pescador Hernandez and Juan Francisco Blanco Blanco contributed analysing data and reviewing the article text.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

References

- [1] S. Dagenais, J. Caro, S. Haldeman, A systematic review of low back pain cost of illness studies in the United States and internationally, *Spine J.* 8 (1) (2008) 8–20.
- [2] M. González Gay, M. Alonso Pérez, E. Adeba Vallina, Erosión vertebral en aneurismas de aorta abdominal como causa de dolor lumbar crónico. Serie de 5 casos, *Rev. Esp. Cir. Ortop. Traumatol.* 56 (6) (2012) 478–481.
- [3] V. Arici, M. Rossi, A. Bozzani, A. Moia, A. Ordero, Massive vertebral destruction associated with chronic rupture of infrarenal aortic aneurysm. Case report and systematic review of the literature in the english language, *Spine* 26 (2012) E1665–E1671.
- [4] E.S. Crawford, J.L. Crawford, H.J. Safi, J.S. Coselli, K. Hess, B.S. Brooks, H.J. Norton, D.H. Glaeser, Thoracoabdominal aortic aneurysm: preoperative and intraoperative factors determining immediate and long-term results of operation in 605 patients, *J. Vasc. Surg.* 3 (1986) 389–404.
- [5] A.V. Sterpetti, E.A. Blair, R.D. Schultz, R.J. Feldhaus, S. Cisternino, P. Chasan, Sealed rupture of abdominal aortic aneurysms, *J. Vasc. Surg.* 11 (1990) 430–435.
- [6] P.F. Galessiere, A.R. Downs, H.M. Greenberg, Chronic, contained rupture of aortic aneurysms associated with vertebral erosion, *Can. J. Surg.* 37 (1994) 23–28.
- [7] T. Sakai, S. Katoh, K. Sairyo, K. Higashino, N. Hirohashi, N. Yasui, Extension of contained rupture of an abdominal aortic aneurysm into a lumbar intervertebral disc: case report, *J. Neurosurg. Spine* 7 (2007) 221–226.
- [8] T.A. Macedo, A.W. Stanson, G.S. Oderich, C.M. Johnson, J.M. Panneton, M.L. Tie, Infected aortic aneurysms: imaging findings, *Radiology* 231 (2004) 250–257.
- [9] R.H. Bhogal, M. Nayeemuddin, I. Akhtar, M. Grainger, R. Downing, Continued lumbar spinal erosion after repair of chronic contained rupture of a mycotic abdominal aortic aneurysm, *Surg. Infect.* 9 (2008) 475–480.
- [10] G. Roeyen, P.E. Van Schil, R.G. Vanmaele, et al., Abdominal aortic aneurysm with lumbar vertebral erosion in Behçet's disease: a case report and review of the literature, *Eur. J. Vasc. Endovasc. Surg.* 13 (1997) 242–246.
- [11] D.E. Szilagy, J.P. Elliot, R.F. Smith, Ruptured abdominal aneurysm simulating sepsis, *Arch. Surg.* 91 (1965) 263–275.
- [12] C.S. Jones, M.K. Reilly, M.C. Dalsing, J.L. Glover, Chronic contained rupture of abdominal aortic aneurysms, *Arch. Surg.* 121 (1986) 542–546.

Open Access

This article is published Open Access at [sciencedirect.com](https://www.scienceopen.com). It is distributed under the [IJSCR Supplemental terms and conditions](#), which permits unrestricted non commercial use, distribution, and reproduction in any medium, provided the original authors and source are credited.