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Case Report

Thoracolumbar Paravertebral Intramuscular Myxoma Presenting With Mechanical Back Pain: A Case Report and Review of the Literature

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ABSTRACT

Background and Aim: Intramuscular myxomas are uncommon benign tumors that are rarely seen in the paraspinal musculature. They might present with neurological symptoms if situated near the spinal cord or may present with nonspecific symptoms such as back pain.

Case Presentation: The case of this study was a 46-year-old female presented with back pain that was exacerbated with movement. A thoracolumbar magnetic resonance imaging (MRI) revealed a T2 hyperintense 35×25×85 mm mass that extends craniocaudally within the right-sided paraspinal muscles with heterogeneous contrast enhancement on T1 sequence images. Using a paramedian incision, paraspinal muscles were dissected, and a rubbery mass was palpated within. The tumor was mobilized in all quadrants and removed with its pseudocapsule. The tumor internally had a gel-like substance with rubbery margins. The patient was discharged without complications.

Conclusion: To our knowledge, this is the 16th case of paraspinal intramuscular myxoma in the literature. Even though it is a rare entity, one must be vigilant for pathologies within the paraspinal muscles in patients with back pain.

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Highlights

- Intramuscular myxoma is a rare disease oftentimes presenting with palpable masses or pain.
- Intramuscular myxoma is a surgically treatable, benign neoplasm.
- Vigilance for any muscular masses that might explain the patients' back pain is important for not missing the diagnosis.

Plain Language Summary

Intramuscular myxomas are uncommon benign tumors that are not frequently encountered in the paraspinal muscles. Neurological symptoms may occur if the tumors are situated near the spinal cord, or they may just cause generalized back pain, which makes them difficult to diagnose. We recently managed a 46-year-old woman who presented with back pain that was aggravated by movement. A magnetic resonance imaging (MRI) scan revealed a mass in the muscles adjacent to her spine, which was excised surgically with no complications. This case is one of a handful of cases ever documented of such a tumor occurring in this particular site. Our review of the medical literature indicates this as the 16th reported case of a myxoma in the paraspinal muscles. Although they are not common, doctors are advised to think of these tumors as a possible cause of back pain to prevent a missed diagnosis. The successful surgical treatment of our patient is a testament that these tumors, though rare, can be effectively managed if diagnosed early. This case contributes to the scarce but expanding literature on myxomas in the paraspinal area. It highlights the importance of doctors conducting comprehensive physical examinations and considering all the possible causes of back pain including rare tumors such as myxomas. Our results also endorse surgery as the treatment of choice that can result in good outcomes for patients with this disease.

1. Background and Importance

Myxomas are mesenchymal tumors that are benign and are mainly found in cardiac tissues but are seldom ob-served in skeletal muscle tissues. Paraspinal intramuscular myxoma is even more of a rarity with limited studies that discuss clinical manifestations, diagnostic criteria, and treatment options [1–5]. Arising out of fibroblasts that are known to overproduce the mucinous extracellular matrix, these tumors are mostly of non-aggressive behavior but are a major diagnostic and therapeutic dilemma due to their anatomical location and the similari-ties in the presentation with other spindle cell neoplasms [6].

The rarity of paraspinal intramuscular myxomas and the critical anatomical relationship of the paraspinal region with the spinal structures only worsen the need for extensive research since the small number of documented cases does not allow for evidence-based clinical guidelines.

In this paper, we present an in-depth discussion of a case of intramuscular myxoma situated in the lumbar paraspinal musculature and a literature review of this rare entity.

2. Case Presentation

The case of this study was a 46-year-old female who presented with back pain exacerbating with movement over 3 months. A thoracolumbar magnetic resonance imaging (MRI) was performed (Figure 1), revealing a T2 hyperintense 35×25×85 mm mass that extends craniocaudally within the right-sided paraspinal muscles corresponding to the T11-L1 levels. There was heterogeneous contrast enhancement on T1 sequence images. Subsequent CT imaging revealed the lesion to be non-contrast enhancing and hypodense. Radiology suggested a myxoma or an abscess within the paraspinal musculature. Acute phase reactants were within normal levels, with CRP of 1 and WBC of 6.91. The mass within the paraspinal musculature can be visualized and palpated during the physical examination. The patient had no neurological symptoms.

The patient was operated under general anesthesia using a paramedian incision, paraspinal muscles were dissected and a rubbery mass was palpated within (Figure 2). The tumor was mobilized in all quadrants and removed with a 1 cm margin within the paraspinal muscles. The tumor had a gel-like internal substance. There was no complication intraoperatively and the wound was closed.

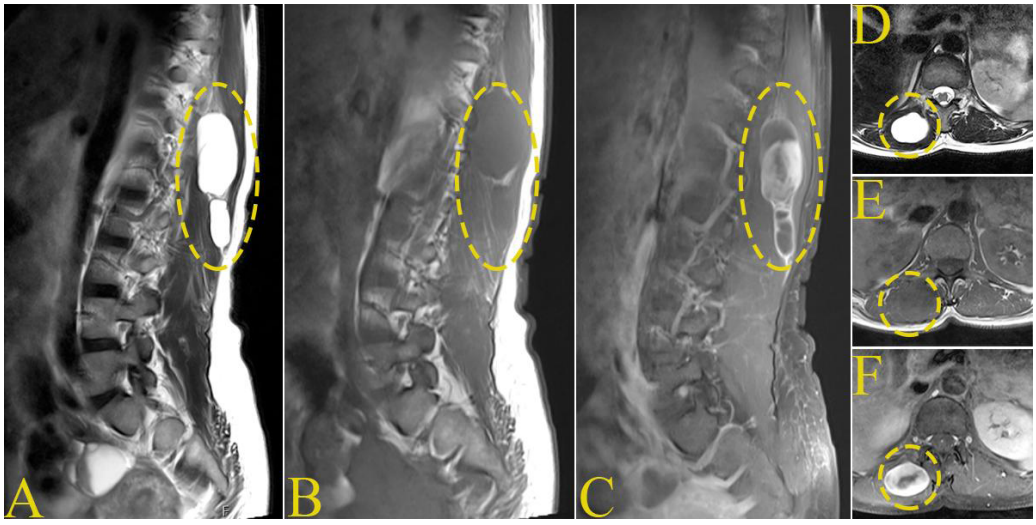

Figure 1. Preoperative MRI of the lumbar spine

A) T2 sagittal sequence, B) T1 sagittal sequence, C) T1 sagittal sequence with gadolinium contrast, D) T2 axial sequence, E) T1 axial sequence, and F) T1 axial sequence with gadolinium contrast

Note: Revealing a hyperintense and cystic mass that shows heterogeneous enhancement (marked with yellow dashed circles).

Histopathological examination revealed a tumor characterized by a loose arrangement of spindle-stellated cells on a distinct myxoid background. The tumor was surrounded by striated muscle tissue in large areas but was surrounded by a pseudocapsule in a focal area (Figure 3). No atypia or mitotic activity was observed in the cells (Figure 4). Immunohistological staining was focally positive for CD34 and smooth muscle actin but negative for desmin, S-100, MUC4, and SOX-10 protein. The tumor had a Ki67 of 1%.

The postoperative MRI scan revealed complete removal of the tumor and the patient was followed up for 2 days and discharged without complications.

3. Literature Review

Materials and Methods

A PubMed search was performed using "(intramuscular) AND (myxoma)" keywords in the PubMed-National Center for Biotechnology Information database. Two-hundred and sixty studies were found published before

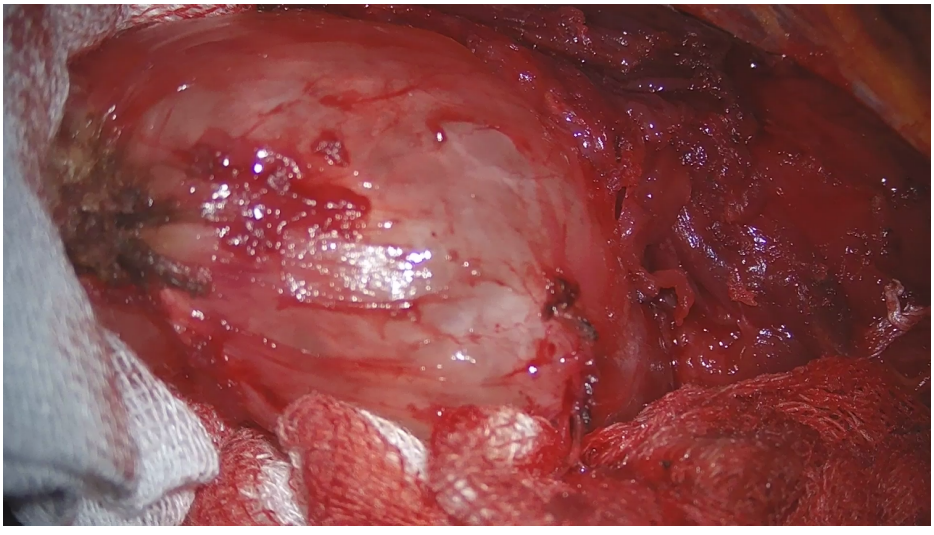

Figure 2. A rubbery mass filled with a gel-like substance

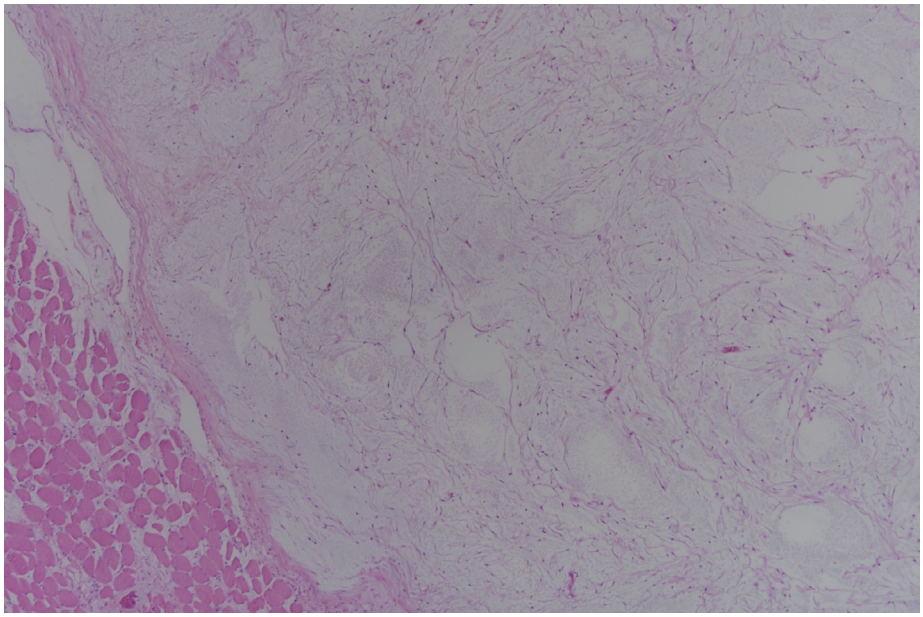

Figure 3. Tumor surrounded by striated muscle tissue in large areas but surrounded by a pseudocapsule in a focal area

October 2023. Out of these, 18 papers were relevant, 14 of which were in English and had an available full-text (Figure 5).

4. Results

A total of 14 studies are included in this review, comprising 16 cases, including this case report (Table 1). Median age was 63 (range 39-80), with female predominance (n=14, 87.5%). Most of the cases were located in the thoracolumbar area (n=10, 62.5%). Of the cases available, 78% had a palpable mass on presentation (n=11).

5. Discussion

Intramuscular myxomas are a rare paraspinal musculature pathology. As far as we know there have been 16 cases, including our present case.

This pathology most commonly presents as back pain, with radicular pain in cases of spinal canal involvement. Treatment paradigms are mainly centered on surgical resection for extramarginal resection with or without neurological function preservation as appropriate. The literature mirrors positive results with surgical treatment, in most cases with low rates of recurrence.

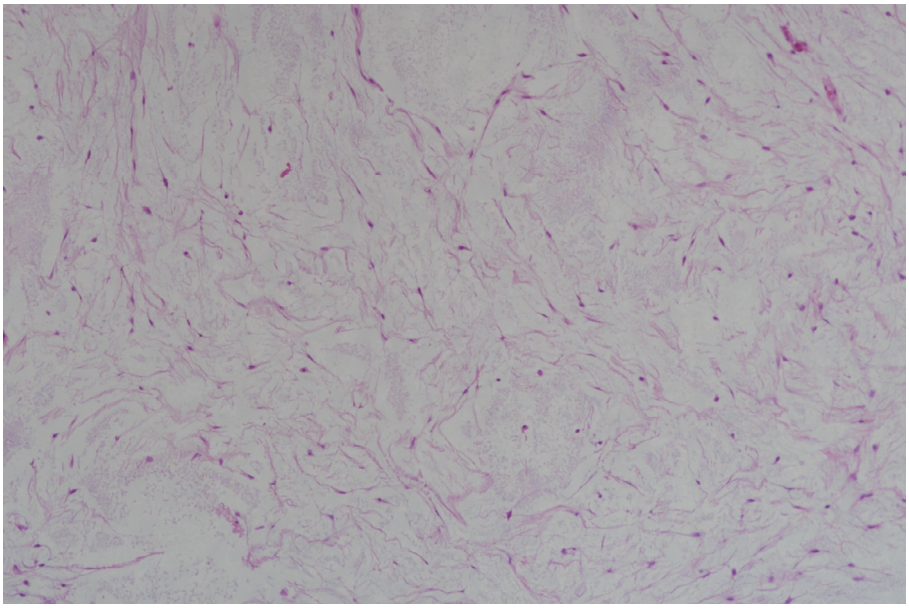

Figure 4. No atypia or mitotic activity was observed in the cells

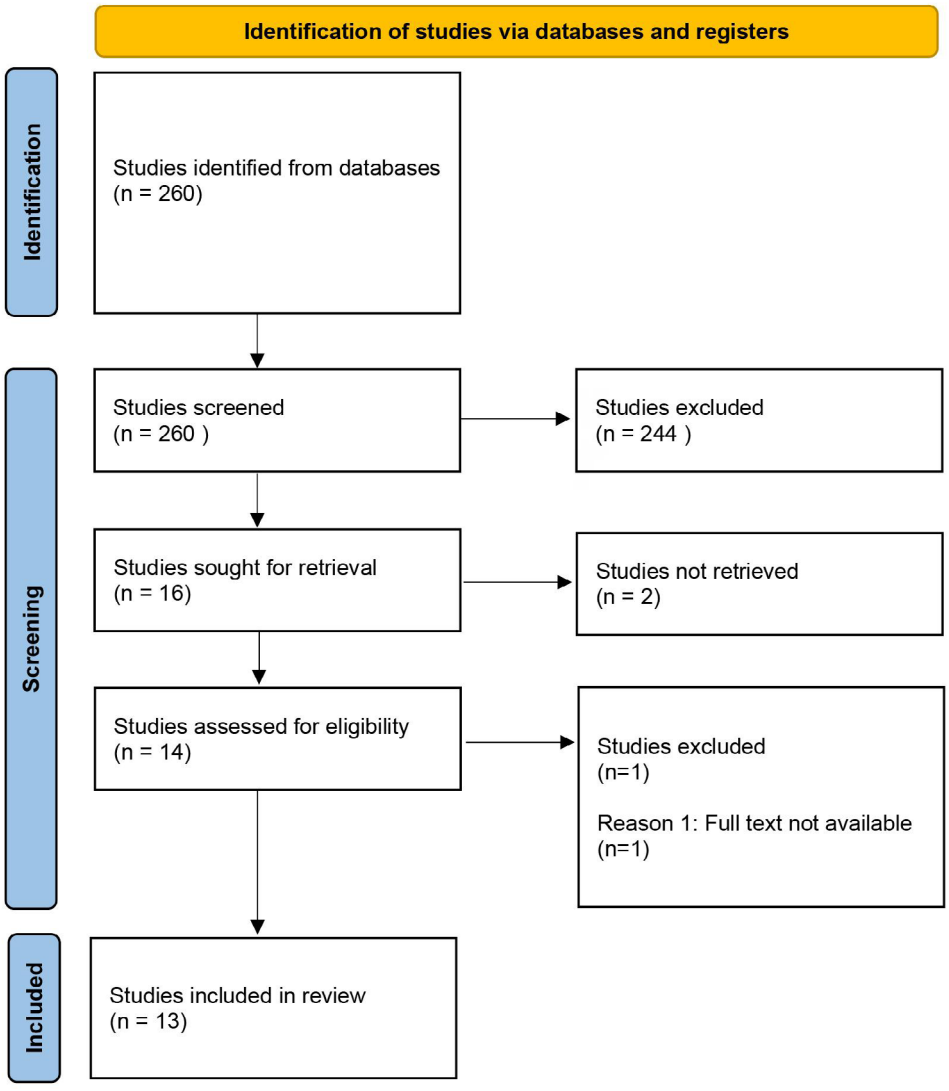

Figure 5. PRISMA flow of literature search

Back pain is a very common issue that has a 1-year incidence of any episode of low back pain ranging between 1.5% and 36% [18], which increases with age, up to the age of 60-65. In the literature, 78% (n=11) of the cases had a palpable mass on presentation, showing us how important it is to palpate the patient's back and physically examine for any masses or signs that might explain the pain and might provide an early diagnosis.

The histopathological diagnosis of myxoma is mainly identified by myxoid stroma containing loose, stellate, or spindle-shaped cells with ill-defined outlines and a minimal amount of eosinophilic cytoplasm. The characteristic myxoid stroma is rich in hyaluronic acid and other mucopolysaccharides, giving the tumor a loose or gelatinous texture. The vascular pattern in myxomas often reveals poorly developed capillary-like vessels with sparse and thin walls. The cells' nuclei are usually small, unremarkable, and lack significant pleomorphism or mitotic activity, a sign of a benign character. Immunohistochemical analysis is ancillary, vimentin is positive, and desmin and S100 protein are typically negative. The myxoid matrix is further enhanced by special staining procedures, especially Alcian blue which binds to mucopolysaccharides and helps distinguish the myxomas from other soft tissue tumors. The precise histological evaluation, combined with immunohistochemical staining, and probably molecular analyses, constitute the cornerstone for the definitive diagnosis of myxoma, differentiating it from other myxoid or spindle cell neoplasms in the differential diagnosis [19].

Table 1. Case reports found in the review

Case	Author	Date	Age (y)	Sex	Presentation	Location	Palpable Mass	Tumor Dimensions (cm)	Follow-up
1	Tahmouresie et al. [7]	1981	50	M	Back pain and gait disturbance	T11-12	1	7×12	6 weeks
2	Guppy et al. [8]	2001	80	F	Back and leg pain	L5-S1	1	7	3 months
3	Falavigna et al. [9]	2009	64	F	Occipital and neck pain	C2-4	1	15	N/A
4	Stinchcombe et al. [3]	2010	80	F	Back pain	L2-S1	0	4×4×3	N/A
5	Rashid et al. [10]	2011	70	F	Back pain	L2-S3	1	15	1 year
6	Ohla et al. [11]	2013	57	F	Pelvic pain	L5	0	3×3×3.5	42 months
7	Manoharan et al. [12]	2015	62	F	Neck and right arm pain	C4-5	1	2.7×1.6×3.8	1.5 year
8	Choi et al. [13]	2015	62	F	Back pain	L4-5	1	4×3.5×6.5	N/A
9	Rachidi et al. [4]	2015	45	M	Neck pain	C5	1	2.7×2.5×1.4	30 months
10	Tataryn et al. [14]	2015	57	F	Neck pain	C3-4	1	2	N/A
11	Kwon et al. [15]	2016	39	F	Back pain	L1	0	1.9×1.8	N/A
12	Al Awadhi et al. [16]	2021	76	F	Back pain	L4-S2	1	7	3 months
13	Patel et al. [2]	2022	77	F	Incidental finding	C4-5	N/A	N/A	3 months
14	Patel et al. [2]	2022	72	F	Shoulder and neck pain	C5-6	N/A	3×2.5×2	3 months
15	Hipólito-Reis et al. [17]	2023	64	F	Back pain	L3	1	7×5	N/A
16	Present case	2023	46	F	Back pain	T11-L1	1	3.5×2.5×8.5	2 months

N/A: Not available.

6. Conclusion

Myxomas in the paraspinal region are rare but important intramuscular tumors due to their propensity to mimic common back pain, requiring inclusion in the differential diagnoses. The total excision of the tumor, as was the case in this patient, led to symptom relief and a low risk of recurrence, highlighting surgery as the treatment of choice.

The accumulation of 16 documented cases, including this one, adds to the knowledge of paraspinal intramuscular myxomas with a female predominance and frequent thoracolumbar localization. These cases highlight the need for a detailed physical examination in diagnosing these commonly palpable tumors, which, though rare, should not be dismissed in patients with back pain. The cumulative evidence favors a surgical approach to management, emphasizing the need for knowledge and multi-disciplinary cooperation in diagnosing and treating this rare condition successfully.

Ethical Considerations

Compliance with ethical guidelines

This is a retrospective observational case study. The Ege University Research Ethics Committee has confirmed that no ethical approval is required. Consent to participate is not applicable as this is not an experimental study.

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Authors' contributions

Conceptualization and study design: Hüseyin Biçeroğlu, Mustafa Serdar Bölük, Taşkın Yurtseven; Data collection and drafting the article: Bilal Bahadır Akbulut and Mustafa Serdar Bölük; Data analysis and interpretation: Taner Akalın; Review, editing and final approval: All authors.

Conflict of interest

The authors declared no conflict of interest.

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