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Unveiling the Uncommon: Intradural Extramedullary Cord Lipoma Inducing Chest Wall Pain in a Middle-Aged Female Patient-A Case Report

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Background: Intradural extramedullary lipomas are rare spinal cord tumors that remain asymptomatic until compression of the spinal cord results in neurological symptoms. Anterior chest wall pain as the initial presentation is uncommon and can contribute to the delayed diagnosis, as it prompts clinicians to rule out other pathologies.

Case Report: The patient is a 44-year-old woman who presented with chronic anterior chest wall pain, instability, imbalance, and upper motor neuron signs. Imaging was obtained, and magnetic resonance revealed an intradural extramedullary mass composed of adipose tissue from T2 to T5, indicative of a spinal lipoma. Subsequently, the patient underwent complete excision and laminoplasty successfully, immediately improving all symptoms.

Conclusions: Diagnosing intradural extramedullary lipomas is intricate and often incidental, with varied presentations depending on tumor localization and size. While uncommon, it is crucial to maintain a heightened level of suspicion when evaluating persistent, unexplained pain resistant to conservative treatments and accompanied by neurological symptoms.

Key words: Chest wall pain, spinal cord lipomas, case report

BACKGROUND

Chest pain is a common symptom that many benign and severe conditions can cause. In the United States, chest pain is one of the most frequent reasons for emergency department (ED) visits, with an estimated 7.6 million visits annually, making chest pain the second most common complaint in the ED (1). The presentation of acute chest pain demands a scrupulous examination to systematically exclude underlying serious etiologies before searching for rare conditions. Such etiologies should include cardiovascular, respiratory, and gastrointestinal pathologies, as well as psychiatric disorders. After ruling out serious pathologies, the investigation of chest pain should focus on uncommon potential causes, including neoplasms. However, even without typical symptoms like unexplained weight loss or persistent fatigue, serious consideration of malignancy is warranted when the chest pain persists despite initial conservative measures or is accompanied by a progressive decline in neurologic function.

Spinal cord lipomas, or fat cell tumors originating outside the spinal cord, are rare benign tumors rep-

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resenting approximately 1% to 2% of all spinal cord tumors (2-4). These slow-growing tumors are frequently misdiagnosed due to their rare appearance and the late presentation of compressive symptoms, such as weakness, numbness, heightened deep tendon reflexes, clonus, and imbalance, all indicative of neurologic deterioration (4-8). Additional severe and late presentation symptoms include pain, bladder and bowel dysfunction, alterations in gait, and paralysis (2,4).

The presentation of a spinal cord lipoma mainly depends on its location and subsequent growth. Magnetic resonance imaging (MRI) scans, superior to computed tomography scans, are utilized to localize the intradural tumors and determine their likely pathology (4). The definitive management of intradural lipomas is controversial, as some physicians advocate for subtotal excision while others propose complete excision (2,4). Before symptom progression, early subtotal excision is suggested, focusing on decompressing the spinal cord, restoring the cerebrospinal fluid circulation, and expanding the subarachnoid space. Complete resection may not always be feasible due to severe adhesions to the spinal cord or surrounding tissue (not commonly visualized on the MRI) and increased risk of postoperative morbidity (4,6,9-11). However, currently, the most widely used techniques include bony decompression of the affected spinal levels (e.g., laminectomy), tumor debulking with partial resection (e.g., ultrasonic aspiration or CO_2 laser to vaporize the tissue), and duraplasty (1,3,5,8).

Here, we present a case of a 44-year-old woman with chronic anterior chest wall pain secondary to an intradural extramedullary thoracic cord lipoma.

CASE DESCRIPTION

Our patient is a 44-year-old female bus driver who presented with anterior chest wall pain. The patient's pain had initially started as a right periscapular pain that radiated to the anterior chest wall below the breast. Acute coronary syndrome and gastrointestinal pathologies were ruled out previously in the ED, and the patient was being treated with nonsteroidal anti-inflammatory drugs (NSAIDs) for probable costochondritis without relief. Nevertheless, as time passed, the patient's pain escalated, leading to the emergence of instability and gait abnormalities. These issues hindered her ability to work, prompting her decision to seek medical attention at our clinic.

The patient's primary complaint was her inadequately controlled daily sharp pain, which was exacerbated by coughing and straining. Upon examination, a cervicothoracic hump, without overlying skin discoloration, was noted, which was not tender to touch. There was tenderness on palpation of the right cervical, paraspinal, trapezius, latissimus dorsi, rhomboids, as well as anterior ribs beneath the breastbone. Spinal flexion, extension, and lateral bending did not increase pain. Neurologic examination revealed intact cranial nerves. Bilateral upper extremities had normal tone and temperature. The right upper extremity presented slight muscle weakness (4/5), brisk reflexes, positive Hoffman, and poor perception of heat and cold. The lower extremities showed slight weakness (4/5, right > left), deep tendon reflexes were elevated (3/4), and Romberg was positive. The rest of the examination was normal.

Frontal and lateral chest x-rays yielded unremarkable results, and an MRI without contrast was conducted, revealing an intradural extramedullary encapsulated lesion extending rostrally from the T2-T5 level (Fig. 1).

Subsequently, the patient was referred to the Orthopedic and Neurosurgery Departments and underwent a T2-T5 laminectomy procedure 3 months later, during which a thorough resection of the intraspinal lesion was achieved. Pathological analysis of the excised mass revealed the presence of a yellow fibro-adipose tissue, measuring 4.0 cm x 1.8 cm x 0.4 cm, consistent with the characteristics of a lipoma. A postoperative MRI scan (Fig. 2) provided visual confirmation of the comprehensive lipoma removal, accompanied by anticipated signs of postoperative inflammation.

The patient underwent a thorough evaluation following the surgical intervention, revealing notable strength and reflex responsiveness advances. Across all extremities, a full strength (5/5) was observed, accompanied by normal reflexes (2+). Significant improvement was also noted in balance and ambulation (negative Romberg). The patient experienced no periscapular pain and minimal anterior chest wall pain (visual analog scale score 3/10). Subsequently, the patient was discharged 2 weeks later and was seen on a follow-up appointment by the Neurosurgery Department with no apparent complaints.

DISCUSSION

Intradural extramedullary lipomas are rare congenital and histologically benign tumors of the spinal cord that account for about 1% of all spinal neoplasms (12,13). These tumors are most often associated with spinal dysraphism and present in adult patients with no gender

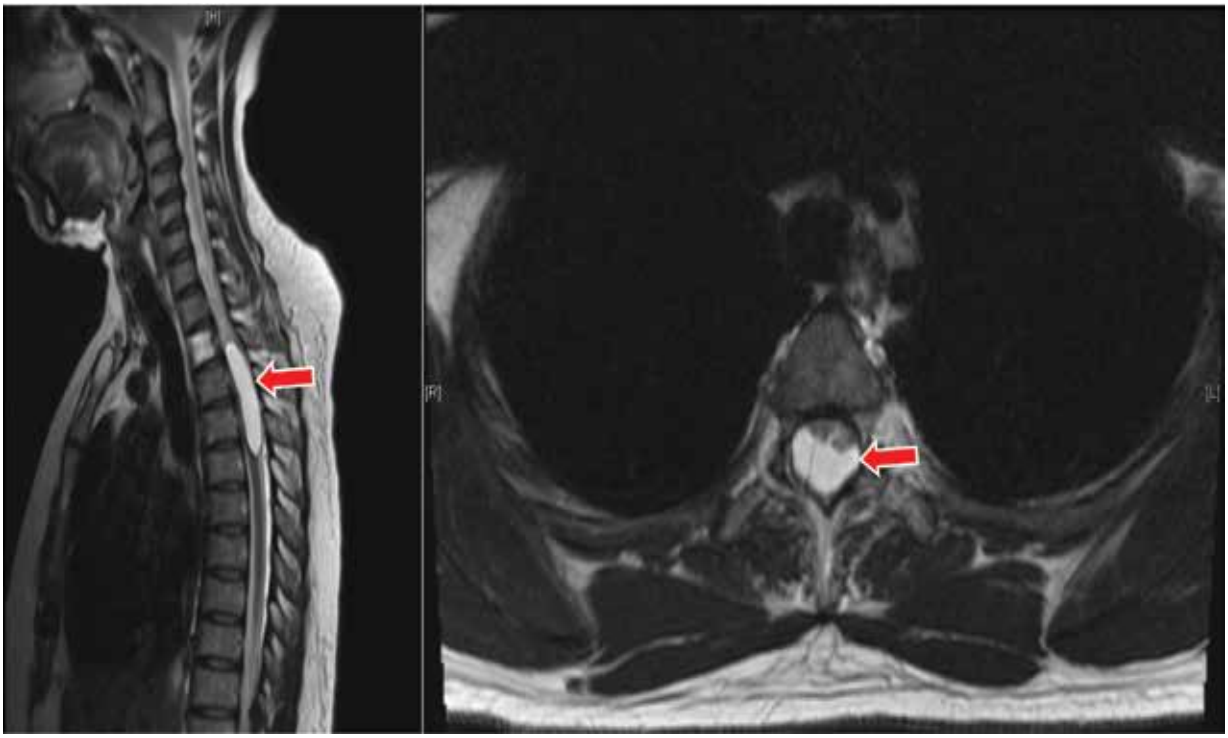

Fig. 1. Intradural extramedullary encapsulated lesion extending rostrally from the T2-T5 level. Left. Sagittal T2-weighted MRI showing a large hyperintense intradural mass (red arrow) rising from T2-T5. Right. Coronal T2-weighted MRI showing an intradural extramedullary hyperintense mass (red arrow) at the level of T2.

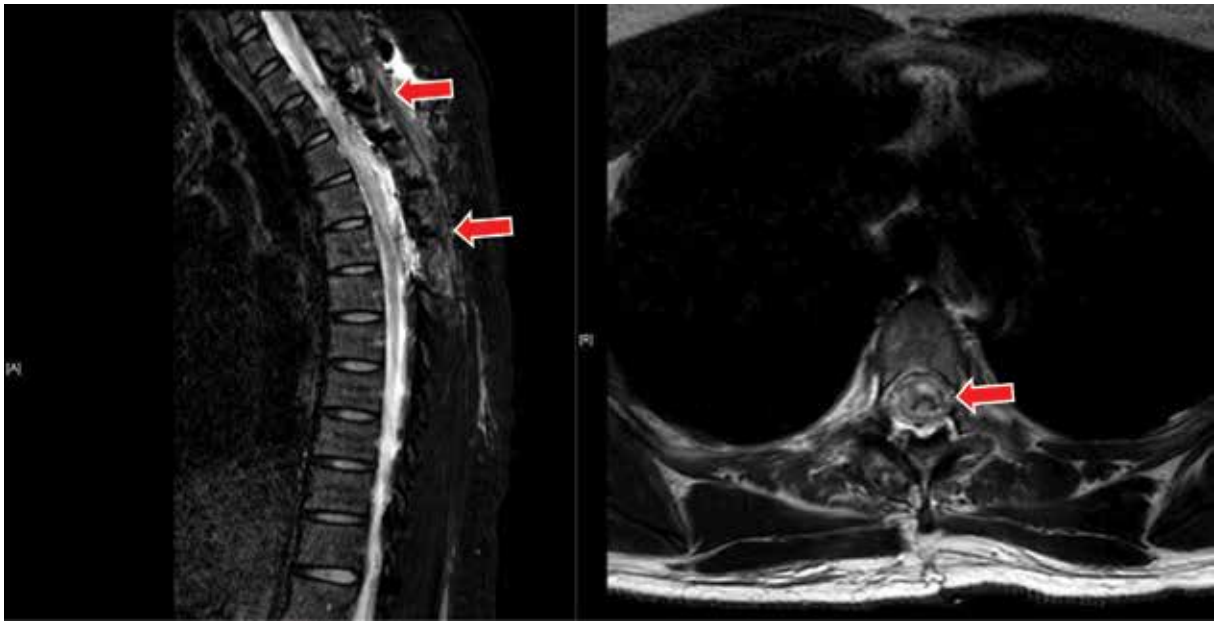

Fig. 2. Left. Sagittal T2-weighted MRI showing T2-T5 laminoplasty with signal hyperintensity along the cortical margins (red arrow) corresponding to the inflammation around the resection site. Right. Coronal T2-weighted MRI of the laminectomy and removal of the spinal lipoma at the level of T3 (red arrow).

predominance. Spinal lipomas may appear in any part of the spine but occur most commonly in the thoracic spine (60%), followed by the cervical spine (40%), and lumbar spine (22%) (6). In the existing literature (2,5,12), thoracic intradural extramedullary lipomas have been documented, showcasing considerable variability in their presentation. This variation predominantly stems from the diverse time points at which the tumor size exerts pressure on the medullary cord, thereby generating symptoms.

In our case, the only presenting symptom was sporadic episodes of periscapular pain that radiated to the anterior chest wall. However, with time, the pain became constantly sharp and began to worsen when intrathoracic pressure raised (while coughing or straining). Nonetheless, the patient's management was initially oriented toward ruling cardiovascular (e.g., acute coronary syndrome) and gastrointestinal (e.g., gastroesophageal reflux disease) pathologies. When serious pathologies were ruled out, the patient was immediately diagnosed with probable costochondritis and started on conservative therapy with NSAIDs. It wasn't until the patient began to experience loss of balance and problems with ambulation that the patient underwent a second thorough physical examination, showing signs of upper motor neuron lesions and dorsal column lesions, which prompted imaging.

MRI is the preferred method to detect the intradural tumor's location and possible origin. Spinal lipomas appear hyperintense on T1-weighted imaging, but the T2-weighted image characteristics may vary as images may appear hypointense, isointense, or hyperintense compared to the surrounding spinal cord. Still, they will always appear hyperintense compared to skeletal muscle and abdominal organs (2,4).

Surgical planning can occur once the spinal neoplasm has been correctly diagnosed and localized. Controversy exists between surgeons about which type of surgery to perform and whether they should approach a complete or partial resection. However, no randomized clinical trials support either surgical approach (11). Thus, the general recommendation is to try to completely remove the tumor presenting neurologic symptoms, as this indicates compression of the spinal cord that could only worsen as the size of the tumor increases. In our patient, progressive neurological symptoms were present; therefore, resection and laminectomy were indicated to decompress the spinal cord, restoring the cerebrospinal fluid circulation and expanding the subarachnoid space. However, complete resection may not always be feasible due to severe adhesions to the spinal cord or surrounding tissue (not commonly visualized on the MRI) and increased risk of postoperative morbidity (4,6,9-11).

The patient, in our case, underwent successful resection of the entire tumor, and as days passed, her entire symptomatology improved. However, recurrence has been documented and is attributed to insufficient excision. The challenge is that these tumors often lack clear-cut margins, making it difficult to perform an exact excision without damaging the surrounding spinal cord. Surgeons generally prioritize preserving neurological function, even if this means incomplete resection at the time of surgery (10). Therefore, neurological symptoms may persist even after surgery. Overall, the prognosis for these patients depends on the extent of the lesion and neurological dysfunction at which the patient presents with early diagnosis and treatment, providing a better outcome. Symptomatic patients show approximately 40% motor improvement after surgery (4). However, patients with severe neurological symptoms at diagnosis have an inferior prognosis with no or minimal improvement after surgical resection.

CONCLUSIONS

The diagnosis of an intradural extramedullary lipoma is complex and commonly incidental. Presentation varies widely and depends on the localization of such tumors. We presented a case of anterior wall chest pain that did not improve with conservative therapy and subsequently worsened with increased intrathoracic pressure. This symptomatology should immediately raise suspicion of malignancy. Moreover, adding neurologic symptoms should be considered a red flag to the physician, prompting an MRI to diagnose this condition. Imaging of intradural extramedullary lipomas is also required to plan the surgery needed to decompress the spine without causing neurologic damage. We emphasize the need for an extenuate physical examination in every consult, as well as a high degree of suspiciousness for mass occupying lesions in the thoracic spinal cord when anterior chest wall pain fails to improve with conservative measures. This is particularly important when the pain evolves to manifest neurological symptoms. Clinicians should remember that intradural neoplasms have the potential to progress, limiting patient functionality and significantly impacting their quality of life. Moreover, this progression can contribute to an increase in both morbidity and mortality.

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