Case report

Abdominal Wall Schwannoma: A Case Report and Review of the Literature

Abstract:
Abdominal wall schwannomas are rare neoplasms originating from peripheral nerve sheaths. We present a case report of a 21-year-old patient with a ten-year history of a subcutaneous mass on the left flank of the abdomen. The mass exhibited a hard consistency and was adherent to the deep plane. Palpation elicited pain, and magnetic resonance imaging (MRI) initially suggested a dermoid cyst in intimate contact with the external oblique muscle. The patient underwent wide excision of the mass with a 2 cm margin and subsequent closure of the resulting muscle and aponeurotic defect by direct suturing. Histopathological examination confirmed the diagnosis of a completely excised subcutaneous schwannoma. This case emphasizes the importance of considering schwannomas as a differential diagnosis for abdominal wall masses and highlights the challenges in diagnosing and managing abdominal wall schwannomas. By presenting a comprehensive review of the literature, we aim to contribute to the existing knowledge on this rare entity, facilitating early recognition and appropriate management of abdominal wall schwannomas in clinical practice.

Keywords: abdominal wall, schwannoma

1. Introduction:

Schwannomas are benign neoplasms originating from Schwann cells, which are responsible for myelination of peripheral nerves. While they commonly occur in the head, neck, and extremities [1–3],schwannomas arising from the abdominal wall are extremely rare[3–7]. We present a case of an abdominal wall schwannoma and provide a comprehensive review of the existing literature on this topic.

2. Case Presentation:
   A 21-year-old patient presented with a subcutaneous mass on the left flank of the abdomen. The mass had been progressively growing over a ten-year period and was characterized by its hard consistency. On palpation, the mass was painful and firmly adhered to the deep plane. Magnetic resonance imaging initially suggested a dermoid cyst of the soft tissues in close proximity to the external oblique muscle (Figure 1).

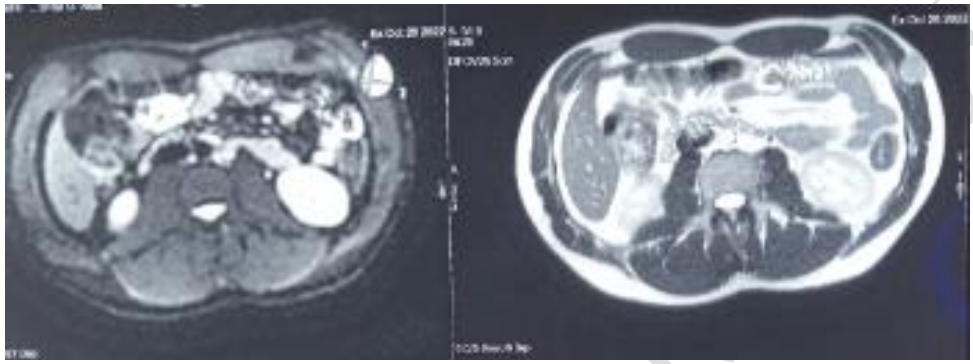

Figure 1: Axial magnetic resonance imaging (MRI) of the abdomen reveals an oval-shaped, well-circumscribed, homogeneous mass in the left abdominal wall, in intimate contact with the left oblique muscle. The mass is hypointense on T1-weighted images and intermediate in signal intensity on T2-weighted images, with areas of fatty signal. There is no enhancement of the mass with contrast administration.

3. Treatment:
   Considering the clinical presentation and radiological findings, the patient underwent surgical intervention. The adherence to the deep plane raised suspicion fora neoplastic processapuncturebiopsywasperformed but wasinconclusiveso wide excision of the mass was performed, with a margin of 2 cm to ensure complete removal. Subsequently, the resulting defect in the muscle and aponeurotic tissue was closed using direct suturing (Figure 2).

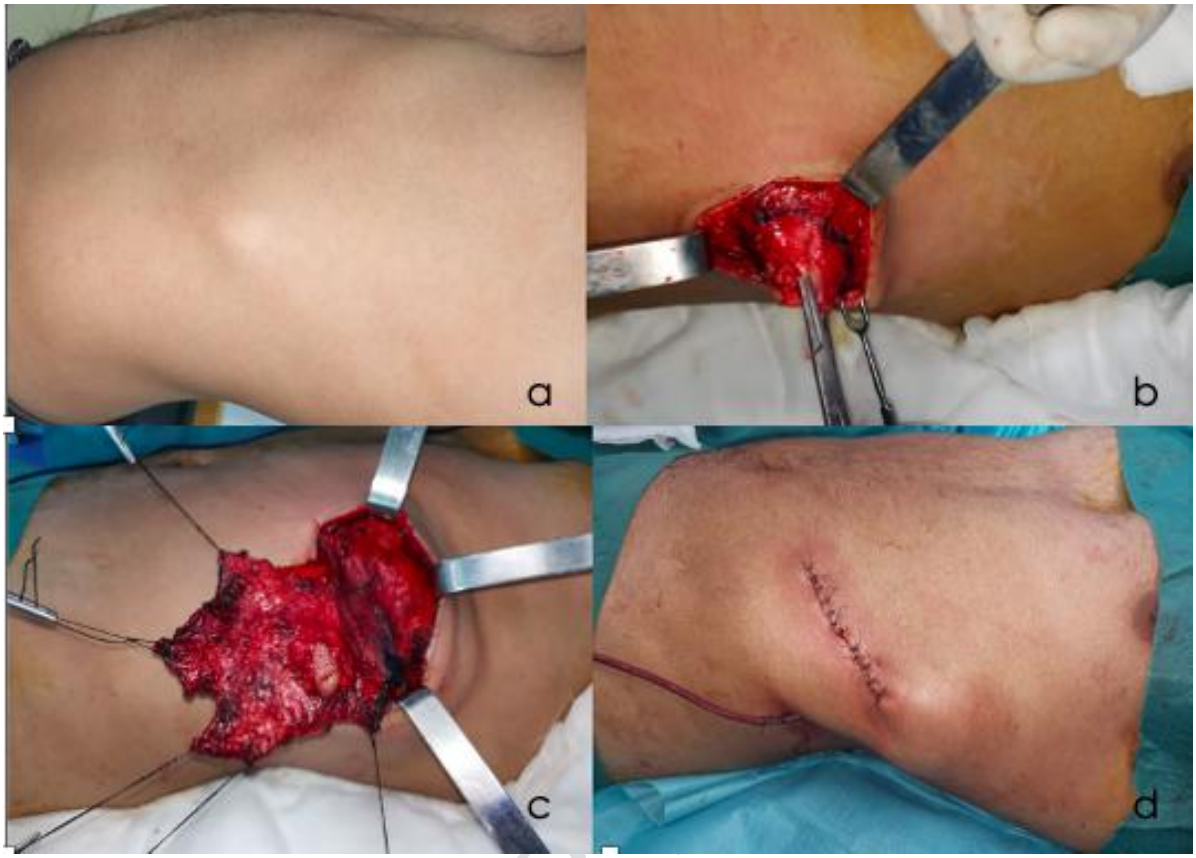

Figure 2: a: subcutaneous mass on the left flank of the abdomen. hard consistency painful on palpation, and firmly adhered to the deep plane
b,c: wide excision of the mass was performed, with a margin of 2 cm to ensure complete removal
d:the resulting defect in the muscle and aponeurotic tissue was closed using direct suturing

4. Histopathological Findings:
   Histopathological examination of the surgical specimen revealed the characteristic appearance of a subcutaneous schwannoma. Microscopic evaluation demonstrated spindle-shaped cells arranged in interlacing fascicles, with Antoni A and Antoni B areas (Figure 3). The immunohistochemical staining for S100 protein was not necessary and was not performed.
   With12 months follow-upnorecurrence was found.

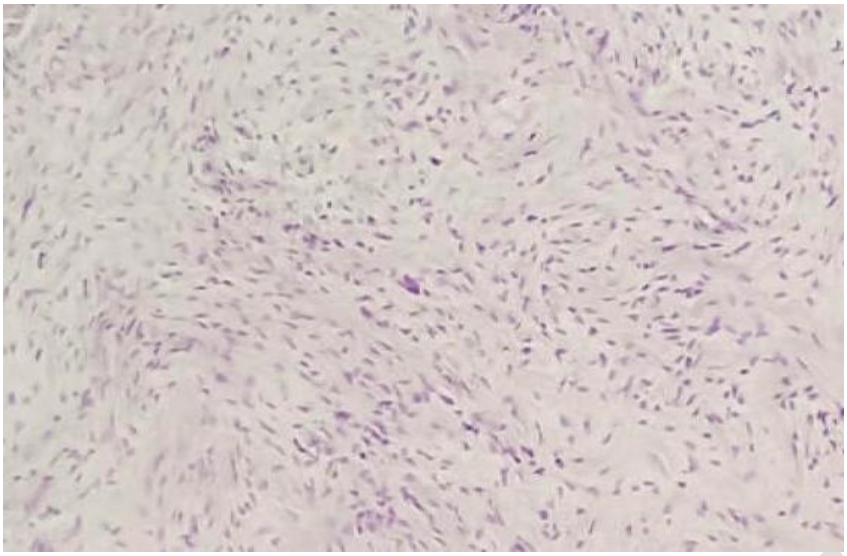

Figure 3: Microscopic findings: Tumor proliferation composed spindle-shaped cells arranged in interlacing fascicles, with Antoni A and Antoni B areas with a benign appearance. No evidence of mitosis or cytonuclear atypia.

5. LiteratureReview:

We conducted a comprehensive review of published cases of abdominal wall schwannomas to gain further insights into this rare entity[3-18]. The literature search identified a total of 25 cases, including the present report, which were included in our analysis. The cases spanned a wide range of demographics, with patients ranging from 18 to 67 years of age. There was no apparent gender predilection, as schwannomas were reported in both males and females.

The clinical presentation of abdominal wall schwannomas varied among the cases[1,2]. The most common presenting symptom was the presence of a subcutaneous mass, which was often painless or associated with mild discomfort. Some patients reported a progressive increase in the size of the mass over time, while others noted a stable or slow-growing nature. Rarely, patients experienced pain or tenderness at the site of the mass. It is important to note that the clinical presentation of schwannomas is nonspecific and may overlap with other

subcutaneous lesions, emphasizing the significance of thorough evaluation and histopathological confirmation.

Radiological imaging played a crucial role in the diagnosis and preoperative evaluation of abdominal wall schwannomas. Magnetic resonance imaging (MRI) was the most commonly employed imaging modality, followed by ultrasound and computed tomography (CT). Schwannomas typically appeared as well-defined masses with homogenous or heterogeneous signal intensity on MRI[10, 11]. They frequently exhibited close association with peripheral nerves, which could aid in distinguishing them from other soft tissue tumors. However, the imaging features alone were often insufficient for definitive diagnosis, emphasizing the importance of histopathological examination.

Histopathological examination remains the gold standard for diagnosing abdominal wall schwannomas. Microscopically, schwannomas exhibit characteristic features, including spindle-shaped cells arranged in interlacing fascicles and the presence of Antoni A and Antoni B areas[9]. Immunohistochemical staining for S100 protein, a marker of Schwann cells, is routinely performed to confirm the diagnosis. Positive staining for S100 protein supports the Schwann cell origin of the tumor and differentiates schwannomas from other soft tissue neoplasms[12].

Surgical excision with complete removal of the tumor is the primary treatment modality for abdominal wall schwannomas. The main goal of surgery to achieve negative margins while preserving the integrity of surrounding structures. In the reviewed cases, various surgical approaches were employed, including wide local excision, enucleation, and excision with muscle or fascial reconstruction. The reported margins ranged from 0.5 cm to 5 cm. Despite the variability in surgical techniques, complete excision was achieved in the majority of cases, resulting in favorable outcomes and low recurrence rates.

Follow-up data were available for a subset of the reviewed cases. The duration of follow-up ranged from 6 months to 10 years. Recurrence was uncommon, with only a few reported cases[13-16]. Long-term outcomes were generally favorable, with no

instances of malignant transformation or metastasis observed. The limited available data suggest that abdominal wall schwannomas have a benign clinical course, consistent with schwannomas arising in other anatomical locations.

In conclusion, our comprehensive review of the literature on abdominal wall schwannomas underscores the rarity of this entity and the challenges associated with its diagnosis and management. Radiological imaging, particularly MRI, can provide valuable information for preoperative evaluation. However, histopathological examination remains essential for definitive diagnosis. Surgical excision with negative margins is the preferred treatment approach, resulting in excellent long-term outcomes. Further studies and case reports are needed to elucidate the pathogenesis, optimal surgical techniques, and long-term follow-up of abdominal wall schwannomas, enhancing our understanding and guiding clinical management decisions.

6. Discussion:

Abdominal wall schwannomas are exceedingly rare, with only a limited number of cases reported in the literature[5–7]. Malignant transformation is extremely rare in
isolated lesions [2, 8, 9]. Their clinical presentation can vary, often leading to diagnostic challenges. In the present case, the patient presented with a subcutaneous mass on the left flank of the abdomen, which had been progressively growing over a ten-year period. The hard consistency of the mass and its adherence to the deep plane raised suspicion for a neoplastic process. However, the initial MRI findings suggested a dermoid cyst in intimate contact with the external oblique muscle. This highlights the importance of considering schwannomas as a differential diagnosis for abdominal wall masses, even in cases where imaging characteristics may initially resemble other soft tissue tumors.

Radiological imaging, including MRI, plays a crucial role in the evaluation of abdominal wall masses. Although schwannomas may have variable appearances on imaging, certain features can provide clues for their diagnosis. These features include a well-defined margin, homogeneity, and a close relationship to

peripheral nerves[10, 11]. In our case, the initial imaging findings, while suggestive of a dermoid cyst, did not definitively exclude the possibility of a schwannoma. Therefore, histopathological examination remained crucial for accurate diagnosis.

Histopathological examination of the surgical specimen confirmed the presence of a subcutaneous schwannoma. Microscopic evaluation demonstrated characteristic features of schwannomas, such as spindle-shaped cells arranged in interlacing fascicles and the presence of Antoni A and Antoni B areas[9]. Immunohistochemical staining for S100 protein, a marker of Schwann cells, can further support the diagnosis but it's not mandatory. These findings align with previous reports in the literature, confirming the histological characteristics of schwannomas[12].

Surgical excision with complete removal of the tumor is the treatment of choice for abdominal wall schwannomas. The main goal of surgery is to achieve negative margins while minimizing damage to surrounding structures. In our case, wide excision of the mass with a 2 cm margin was performed, ensuring complete removal due to the suspicion fora neoplastic process[13-16]. The resulting defect in the muscle and aponeurotic tissue was successfully closed by direct suturing. This approach aimed to restore the structural integrity of the abdominal wall while minimizing the risk of recurrence.

7. Conclusion

Abdominal wall schwannomas are rare neoplasms that should be considered in the differential diagnosis of subcutaneous masses. this case report highlights the challenges in diagnosing and managing abdominal wall schwannomas. By presenting a comprehensive review of the literature, we aim to contribute to the existing knowledge on this rare entity, facilitating early recognition and appropriate management of abdominal wall schwannomas in clinical practice.

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