CLINICAL CASE

Thoracic lipoblastoma in a 6-year-old African male: a case report

Lipoblastoma torácico en varón africano de 6 años: reporte de un caso

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Abstract

Lipoblastoma is a very infrequent tumor, characteristic of early childhood. The thoracic location is infrequent, with isolated reports to date. We present the case of a 6-year-old male patient with a right thoracic tumor of months of evolution that was surgically removed by right anterolateral thoracotomy and in which the diagnosis of classic well-differentiated lipoblastoma was histologically confirmed. The patient evolved favorably and was discharged. He is currently under follow-up and without recurrence 1 year after surgery. This is, to our knowledge, the first thoracic lipoblastoma reported in an African pediatric patient. The importance of knowing the clinical, semiological, and intraoperative characteristics of this tumor becomes even more important, as in our case, in the context of international cooperation, where in many cases, there is no possibility of performing pre-operative imaging studies or subsequent genetic studies.

Keywords: *Lipoblastoma. Thoracic. Pediatric. African. Male.*

Resumen

El lipoblastoma es un tumor muy infrecuente, característico de la primera infancia. La localización torácica es infrecuente, con reportes aislados hasta la fecha. Presentamos el caso de un paciente varón de 6 años con una tumoración torácica derecha de meses de evolución que fue extirpada quirúrgicamente mediante toracotomía anterolateral derecha y en la que se confirmó histológicamente el diagnóstico de lipoblastoma clásico bien diferenciado. El paciente evolucionó favorablemente y fue dado de alta. Actualmente se encuentra en seguimiento y sin recidiva un año después de la cirugía. Este es, hasta donde sabemos, el primer lipoblastoma torácico reportado en un paciente pediátrico africano. La importancia de conocer las características clínicas, semiológicas e intraoperatorias de este tumor cobra aún más importancia, como en nuestro caso, en el contexto de la cooperación internacional, donde en muchos casos no existe la posibilidad de realizar estudios de imagen preoperatorios ni estudios genéticos posteriores.

Palabras clave:*Lipoblastoma. Torácico. Pediátrico. Africano. Varón.*

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Introduction

Lipoblastoma is a very infrequent tumor, characteristic of early childhood. Its origin is related to the proliferation of embryonic fat in the post-natal period[1]. There are multiple localizations described, with a predominance of extremity localization (where embryonic fat persists longer). Thoracic localization is infrequent[2-6], as is mediastinal[7]. Clinically, these lesions usually have an insidious course and are usually asymptomatic, although the thoracic location may be associated with extrinsic pulmonary compression. Imaging tests can help characterize the extent of the lesion and the degree of involvement of adjacent structures, but the radiologic features of lipoblastomas are generally non-specific, requiring a high degree of diagnostic suspicion on the part of the surgeon. In most cases, complete surgical resection is curative, although local recurrences have been described[4].

Case report

A 6-year-old male patient with no previous medical history presented with a right thoracic tumor of months of evolution. There was no relevant family history of neoplastic disease. He had no associated symptoms. Physical examination revealed the presence of a fixed, fluctuant, relatively soft mass in the anterolateral segment of the right thorax, measuring approximately 15 cm in its major axis (Fig. 1). No cutaneous involvement was observed. Due to the patient's care setting (a surgical cooperation campaign in Velingara, Senegal), pre-operative imaging studies could not be performed. The lesion was approached by right anterolateral thoracotomy. An encapsulated lipomatous tumor was identified, with an extrathoracic and an intrathoracic component, clearly different macroscopically (Fig. 2). The lesion seemed to be dependent on the costal wall. The lung and the rest of the thoracic cavity were free. A complete resection was performed, including the two costal arches that were in direct relation to the tumor. A thoracic drain was placed. The surgical specimen is shown in figure 3. The post-operative course was favorable and without complications. After 1 year, the patient is asymptomatic and without clinical recurrence. Although a cytogenetic study of the specimen could not be performed due to the limitations of the care context, the diagnosis of classic well-differentiated lipoblastoma was histologically confirmed.

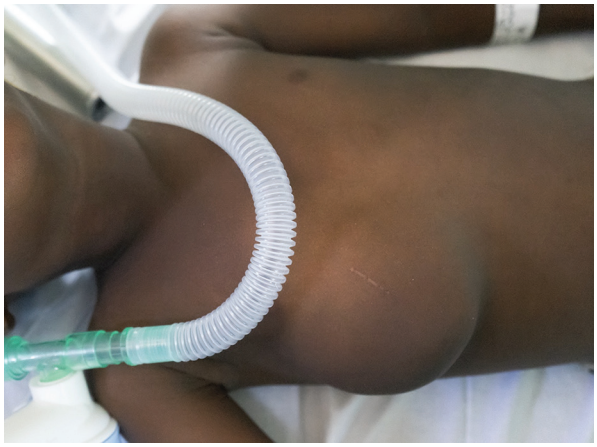

Figure 1. *Clinical photograph of the patient before surgery. Note the presence of a large rounded tumor involving the anterior and lateral wall of the right hemithorax.*

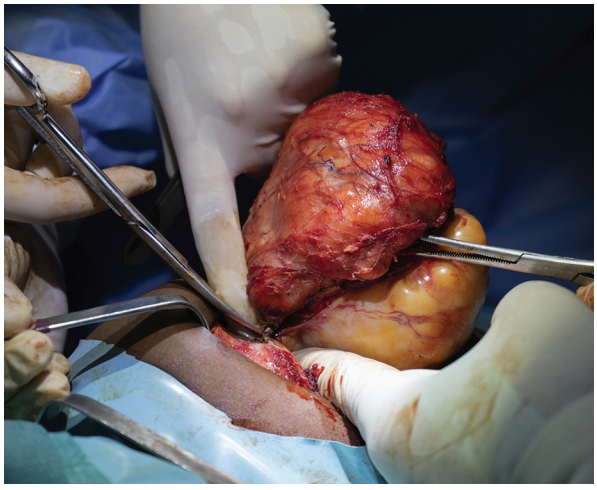

Figure 2. *Intraoperative photograph. Large encapsulated lipomatous tumor, with two clearly differentiated components (above, extrathoracic component. Below, intrathoracic component).*

Discussion

Regarding chest wall lipoblastomas, there are 15 cases reported to date in the medical literature[2-4,6,8,9]. The non-specificity of the radiological findings (absence of bone destruction or pathological fractures, absence of calcifications, and absence of adenopathies) sometimes determines the need for diagnostic biopsies[2,3,6], the result of these being inconclusive in some cases (non-specific fibrocollagenous tissue)[2]. In other cases, however, radiological studies establish a formal diagnostic suspicion of lipoblastoma[3] and directed biopsies confirm the diagnosis[3,6].

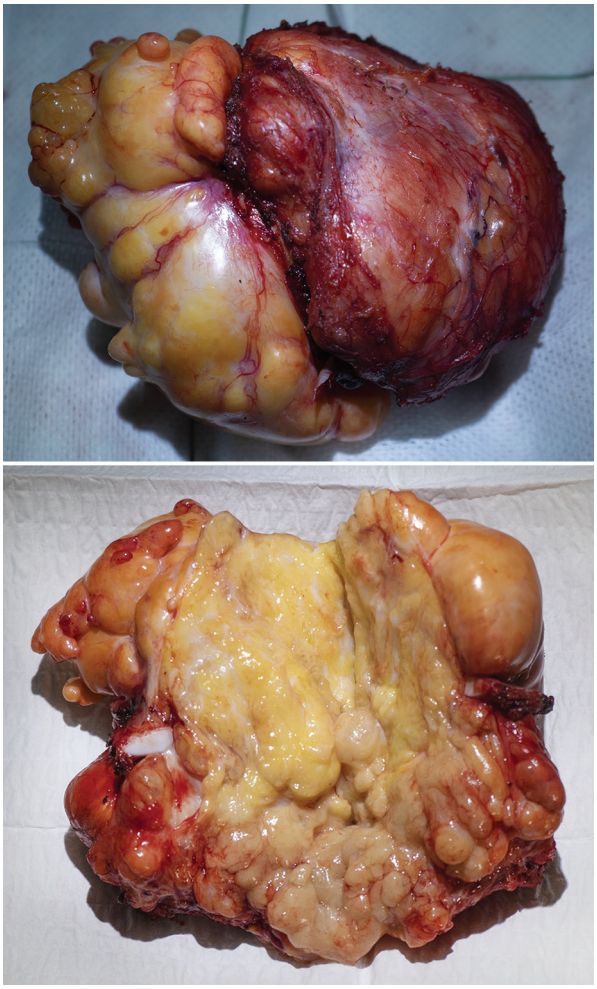

Figure 3. *Macroscopic photograph of the tumor after excision. Above: whole specimen. Encapsulated lipomatous tumor, with two clearly differentiated zones and with a narrow transition in the central zone. Below: open tumor following the major axis. Note the difference between the internal aspect of the intrathoracic zone (above) and the extrathoracic zone (below), with the extrathoracic zone presenting a more cystic aspect and a more grayish tone. Note the presence of the resected costal arches, marking the transitional boundary between the intra- and extrathoracic sections of the tumor.*

Regarding the surgical approach, it should be noted that no standardisation exists to date. It is known that lipoblastoma is a locally aggressive tumor and that resection should be, as far as possible, radical and complete. However, it is also known that in incomplete resections, a close evolutionary surveillance attitude can be taken with the remaining lesion, and maturation of residual lesions to typical lipomas or fibrolipomas has been demonstrated[4].

In most cases published to date, the surgical approach has been by thoracotomy[3,4,5]. However, in isolated cases, the thoracoscopic approach has been successfully described[6]. In smaller and localized tumors, there are authors who have reported performing wide excisional biopsies with subsequent close follow-up[2]. Intraoperative findings can be highly variable, with exclusively extrathoracic tumors[2] and tumors with both intra- and extrathoracic components with pleural involvement[3]. In the case presented here, we documented a tumor with both an intra-and extrathoracic component, although the pleura was intact and separated from the tumor.

It should be noted that in thoracic wall tumors, depending on the histology and the degree of bone involvement, resection of the ribs adjacent to the lesion may be indicated. This is the case of the two patients reported in the series of Maistry et al.[9]: both had the two ribs involved in the lesion resected, followed by reconstruction with Biodesign® with good oncologic and functional results. In our case, we opted for a limited resection, considering that such resection would not limit the closure or condition the integrity of the costal wall.

From the point of view of international cooperation, the diagnostic challenge posed by the presence of a thoracic tumor in this context is multiple: on the one hand, the absence of imaging tests prevents us from having useful information for the surgical approach, such as the degree of extension of the tumor, the potential involvement of vascular or neural structures, and the presence of other associated lesions. On the other hand, the absence of a conventional hospital structure with resources such as an intensive care unit makes it necessary to act with caution, limiting the surgical procedure to those acts that do not result in the need for non-existent post-operative support. Therefore, we believe that this type of patients should be approached by experienced surgeons who can calibrate well the benefit-risk balance of the procedure. In relation to the differential diagnosis and as previously mentioned, it is complex to establish a pre-operative suspicion of thoracic lipoblastoma given the scarcity of the existing literature and given the low specificity of the radiological findings. In our case, this complexity was increased by the absence of studies. We believe that anatomical and functional criteria should prevail in cooperation, so we chose to approach the patient with the widest possible resection within the previously described safety limits. The presence of an adequate cleavage plane with the pulmonary parenchyma and adequate tolerance to the anesthetic procedure were the keys to complete resection of the lesion. When approaching a

lipoblastoma surgically, the potential costal involvement and the eventual need for costal resection should be foreseen as far as possible, knowing that in the context of cooperation, it is difficult to count on prosthetic resources for the reconstruction of the thoracic wall.

Conclusion

This is, to our knowledge, the first thoracic lipoblastoma reported in an African pediatric patient. The age of the patient is also noteworthy, given that this type of tumor is notably more frequent in children under 3 years of age. The importance of knowing the clinical, semiological, and intraoperative characteristics of this tumor becomes even more important, as in our case, in the context of international cooperation, where in many cases, there is no possibility of performing pre-operative imaging studies or subsequent genetic studies. A surgical approach based on the principles of safety and performed by an experienced surgeon is an indispensable pre-requisite.

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Conflicts of interest

There are no conflicts of interest to declare.

Ethical considerations

Protection of humans and animals. The authors declare that no experiments involving humans or animals were conducted for this research.

Confidentiality, informed consent, and ethical approval. The authors have followed their institution's confidentiality protocols, obtained informed consent from patients, and received approval from the Ethics Committee. The SAGER guidelines were followed according to the nature of the study.

Declaration on the use of artificial intelligence. The authors declare that no generative artificial intelligence was used in the writing of this manuscript.

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