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CASE REPORT

Differential diagnosis of abdominal pain: Adrenal neuroblastoma in a pediatric patient - A case report

Maria Ururahy Póvoa Duarte Villela[1], Katia Farias e Silva[1]

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Abstract

Abdominal pain in children is a common complaint, with several possible causes, ranging from benign conditions to serious diseases. The objective of this case report is to describe the condition of an eight-year-old patient who was diagnosed with adrenal neuroblastoma after several visits to the emergency room, initially complaining only of abdominal pain. For the diagnosis, complementary imaging tests were obtained, carried out months after the onset of symptoms, and it was discovered that the patient had already metastasized to the spine. Currently being monitored by a specialized pediatric oncology service for chemotherapy and treatment definition

[1] Hospital Municipal Miguel Couto, Pediatria - Rio de janeiro - Rio de janeiro - Brazil.

Endereço para correspondência:
Maria Ururahy Póvoa Duarte Villela
Hospital Municipal Miguel Cout. Rua Mario Ribeiro, 117 - Gávea, Rio de Janeiro - RJ, Brasil. CEP: 22430-160. E-mail: mariaupdv@gmail.com

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INTRODUCTION

Abdominal pain in children is a common complaint and may have multiple causes, ranging from benign conditions to severe diseases. When accompanied by systemic signs such as fever, lymphadenopathy, and progressive clinical deterioration, it becomes essential to consider rare and serious etiologies, including malignant neoplasms of the adrenal gland. In Brazil, the average percentage of tumors in the pediatric population (0–19 years) is 3%, with neuroblastoma being the most common malignant solid tumor in this age group[1].

This report describes the case of a pediatric patient with a complex clinical presentation who, after thorough investigation, was diagnosed with a malignant neoplasm of the adrenal gland.

CASE DESCRIPTION

A 6-year-old male patient, residing in Rio de Janeiro, sought medical care due to persistent pain in the lower abdominal quadrant and right lower limb, lasting more than nine months. Initially, a diagnosis of rheumatic fever was established based on laboratory findings—ASO titer of 347 IU/mL and ESR of 28 mm/h—along with a history of recurrent tonsillitis. Treatment with three doses of benzathine penicillin was initiated, without clinical improvement. Over the past three months, the condition worsened, with associated nausea, vomiting, arthralgia, and claudication of the right lower limb. The patient sought care again at a tertiary hospital and was admitted for diagnostic investigation.

During hospitalization, imaging and laboratory tests were performed to clarify the cause of abdominal pain and new symptoms, including constipation. Abdominal computed tomography (CT) revealed "signs of lymphadenomegaly, specifically a cluster of lymph nodes in the upper abdomen, with some calcified lymph nodes, suggesting the possibility of extrapulmonary granulomatous disease or immunosuppression." No significant alterations were observed in the peritoneal cavity.

Chest radiography and echocardiography showed no abnormalities. Laboratory tests demonstrated progressive elevation of C-reactive protein (CRP) and ESR, as well as microcytic anemia. TORCH serologies were negative.

Given the persistence of symptoms, the findings of intra-abdominal mesenteric lymphadenomegaly and calcifications on abdominal CT, and the development of new systemic symptoms—such as tenderness on compression of vertebral bodies and constipation—contrast-enhanced CT of the abdomen, thoracic spine, and lumbar spine was performed. The examination revealed a large mass in the region of the left adrenal gland (Figure 1), with heterogeneous density, multiple foci of calcification, and central areas of necrosis. Retroperitoneal lymphadenomegaly and bone lesions suggestive of metastatic involvement (sclerosis of the D11 vertebral body and a lytic lesion in D12) were also identified.



Figura 1. Tomografia computadorizada evidenciando massa em adrenal esquerda.

Based on these findings, the patient was referred to a specialized pediatric oncology service. A bone marrow biopsy was performed, confirming the diagnosis of a malignant adrenal gland neoplasm.

DISCUSSION

Malignant neoplasms of the adrenal gland are rare in childhood, with adrenocortical carcinomas being the most common tumors at this site.[2] Nevertheless, neuroblastoma is the most common extracranial solid tumor of childhood, accounting for approximately 8% of pediatric malignancies, and 49% are located in the adrenal gland[3].

Prognosis is highly variable, ranging from spontaneous regression to fatal disease despite multimodal therapy. Several clinical and imaging studies are required to accurately assess patient risk, with risk groups based on disease stage, patient age, and tumor biological factors. Approximately 60% of patients with neuroblastoma present with metastatic disease, most commonly involving the bone marrow or cortical bone, which significantly impacts prognosis, survival, and disease management[3,4]. Greater accuracy in risk stratification at diagnosis is essential, taking into account clinical, imaging, and surgical findings (when surgery is indicated), based on international criteria from the International Neuroblastoma Risk Group (INRG), to optimize management.

Furthermore, advances in high-dose chemotherapy, autologous stem cell transplantation, precision immunotherapy with anti-neuroblastoma monoclonal antibodies, and radiopharmaceuticals have improved 5-year survival rates in patients with metastatic disease from less than 20% to more than 50%.[5] Clinical presentation may be insidious, with abdominal symptoms, lower back pain, and signs of hormonal hyperfunction, such as Cushing syndrome or virilization, which may complicate the differential diagnosis. Neuroblastoma may also present with a range of nonspecific and unexplained neurological symptoms, as well as other common clinical manifestations such as rash, constipation, diarrhea, and even immunological disturbances in previously healthy children, as part of a paraneoplastic syndrome secondary to an undiagnosed tumor[6].

This case highlights the importance of thorough clinical and laboratory investigation in children presenting with persistent abdominal pain, particularly when symptoms do not improve with initial treatment. Abdominal computed tomography with and without contrast was crucial in identifying the adrenal mass and lymphadenomegaly, and biopsy confirmed the diagnosis of malignant neoplasm.

Although not yet widely available within the Brazilian Unified Health System (SUS), the use of microRNA as a biomarker for diagnosis and prognosis, as well as a therapeutic target and drug development strategy, has been discussed, in addition to the use of scintigraphy[7,8].

Early diagnosis of adrenocortical tumors is essential, as surgical treatment may be curative in early-stage cases[9]. However, in the presence of metastases or involvement of adjacent organs, oncologic treatment, including chemotherapy, becomes necessary, as in the present case.

CONCLUSION

Malignant adrenal gland neoplasms should be considered in the differential diagnosis of children presenting with abdominal pain and progressive systemic symptoms, particularly when the response to initial treatments is unsatisfactory. Radiological investigation and biopsy are essential for diagnostic confirmation and treatment planning[10,11]. Referral to a Pediatric Oncology Service, risk assessment to determine the need for surgery and/or initiation of chemotherapy, or follow-up with expectant management are crucial steps in patient treatment and prognosis.

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