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Case Report
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Ruptured Right Wilms Tumor after minor trauma in a 3-Year-Old Yemeni Male Patient.

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Abstract

Introduction: Wilms tumor, also known as nephroblastoma, is the most common primary malignant renal tumor in children. Although rare, tumor rupture or bleeding within a Wilms tumor can occur, leading to acute abdominal pain. Delayed diagnosis can have negative consequences on survival rates. The clinical presentation, particularly abdominal pain with tumor rupture, can complicate preoperative diagnosis, potentially resulting in misdiagnosis. Radical nephrectomy is the typical treatment for Wilms tumor, with emergent surgery necessary in cases of active bleeding or tumor rupture.

Case Summary: *In this report, I present the case of a 3-year-old male patient from Yemen who presented to the ER with an abdominal mass and pain following a minor trauma. A CT scan raised suspicion of a ruptured right Wilms tumor, leading to immediate surgical intervention in the form of radical nephrectomy. Histopathology confirmed the diagnosis of Wilms tumor, and the patient was subsequently referred to an oncologist for further management, including chemotherapy.*

Keywords: Kidney, Tumor, Wilms, Children, Rupture.

Introduction

Wilms tumor, also known as nephroblastoma, is the most common primary malignant renal tumor in children [1, 2]. It accounts for approximately 6% to 7% of all childhood cancers and is responsible for 95% of kidney cancers in children under the age of 15 in the United States [2].

The average annual age-adjusted incidence rate of Wilms tumor is 8.0 per million [3, 4]. While most cases are diagnosed before the age of 5, older children and even adults can also be affected [1, 5, 6]. Children with bilateral Wilms tumor are usually diagnosed at a younger age, as are those with a syndromic predisposition [4, 7]. Males, regardless of tumor laterality, tend to be diagnosed earlier.

I present a case of a 3-year-old male from Yemen who was diagnosed with a ruptured right Wilms tumor following minor trauma.

Objective

To present a case of Wilms tumor in a 3-year-old male following minor trauma as a rare and unusual presentation, highlighting the importance of recognizing atypical manifestations of Wilms tumor in pediatric patients.

Case Details

Medical History: A 3-year-old male from Yemen presented at the emergency room of Forty-Eight Hospital with complaints of an abdominal mass, abdominal pain, and hematuria. These symptoms developed 2 hours following a traumatic event, which

the parents observed during a minor altercation with his brother.

Clinical Examination

During the clinical examination, the patient looks ill and pale. Asymmetrical abdominal distension was noted, and vital signs were stable, except for tachycardia. On palpation, a tender and firm mass was detected in the right abdominal region, along with abdominal distension. No other significant findings were observed during the remainder of the physical examination [8].

Laboratory investigations

The complete blood count showed a hemoglobin level of 10 g/dL. Renal function tests, liver function tests, and coagulation profile assessments were systematically carried out, and all the results were found to be within the normal range.

Radiology

In order to conduct a comprehensive evaluation of the abdominal mass, the patient underwent both an ultrasound and a computed tomography (CT) scan. The imaging results revealed a significant finding: a large, irregular, heterogeneous mass accompanied by a hematoma in the right abdomen. This mass extended towards the midline and pelvis, confirming the suspicion of a ruptured mass in the right kidney [9, 10].

Management

After reviewing the diagnostic findings, the patient was immediately taken to the operating room for a radical nephrectomy, which involved removing the affected kidney, mass, associated hematoma, and any spillages. Following the surgery, the patient's condition remained stable, and they were discharged two days later. The biopsy was sent for histopathological examination, and the subsequent results confirmed the presence of a Wilms tumor, validating the treatment decision. To ensure comprehensive management, the patient was then referred to the Pediatric Oncology Unit for adjuvant chemotherapy, completing the overall management plan for their condition [11].

Discussion

In Wilms tumor, the occurrence of tumor rupture or bleeding is rare, but when it does happen, it can cause severe abdominal pain. If not accurately diagnosed, it can lead to complications during the diagnostic phase prior to surgery, resulting in further health issues for the patient [12]. Wilms tumor can have varying presentations, with some cases being incidentally discovered without symptoms. However, it's important to note that approximately 85% of Wilms cases present with an abdominal mass accompanied by symptoms like hematuria and hypertension [13, 14].

When a patient with Wilms tumor experiences gross hematuria, further evaluation is necessary to determine if the tumor has spread into the collecting system. This evaluation typically involves procedures like cystoscopy and retrograde pyelogram [15].

In rare instances, Wilms tumor may have atypical presentations, such as inferior vena cava obstruction. This can cause persistent or hepatomegaly [16].

Distinguishing Wilms tumor from other renal tumors like renal cell carcinoma or clear cell sarcoma of the kidney can be challenging due to common radiographic features [17, 18]. Therefore, diagnostic imaging, such as CT of the abdomen and pelvis with oral and intravenous contrast or MRI of the abdomen and pelvis with gadolinium, is crucial for accurate diagnosis [19-21]. Additionally, a chest CT scan, with or without contrast, is performed to rule out lung metastases. However, the clinical significance of detected lung nodules on CT alone remains controversial [22, 23].

Regarding the treatment of Wilms tumor, radical nephrectomy is the typical approach. In cases of active bleeding or tumor rupture, emergent surgery is necessary . Accurate staging during surgery is crucial for determining the need for radiation therapy and chemotherapy [24].

During surgery, it is important to examine the renal vein and inferior vena cava to assess intravascular tumor extension. However, it is possible to spare the adrenal gland without increasing the risk of tumor recurrence [25, 26]. Selective sampling of regional lymph nodes aids in staging, and performing en bloc resection helps lower the rate of positive lymph nodes [27, 28].

One must be careful during surgery to prevent tumor spillage, as it increases the risk of local abdominal relapse [29, 30]. Risk factors for local tumor recurrence include tumor spillage, unfavorable histology, incomplete tumor removal, and absence of lymph node sampling [28].

It's important to note that surgical complications, such as hemorrhage and small bowel obstruction, can occur. This highlights the need for careful management of Wilms tumor to reduce the risk of recurrence [12].

Conclusion

Wilms tumor is a primary malignant renal tumor that mainly affects children, but can also occur in older children and adults. Timely recognition and intervention are crucial for achieving optimal outcomes. In this case, a 3-year- old Yemeni male presented with a suspected ruptured right Wilms tumor following a minor trauma. The diagnosis was confirmed through comprehensive clinical examination, extensive laboratory investigations, and advanced

radiological imaging. Urgent surgical intervention in the form of a radical nephrectomy was performed. Post-surgery histopathological analysis validated the diagnosis and provided valuable insights into the characteristics and stage of the tumor. Subsequently, the patient was referred for personalized chemotherapy to effectively target any remaining cancer cells.

It is imperative to be mindful of the potential for tumor rupture in patients presenting with acute abdominal pain, as a delayed diagnosis can have a detrimental impact on survival outcomes. Therefore, early detection and implementation of tailored management strategies are crucial for improving the prognosis of patients with Wilms tumor.

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