Rare Renal Repercussions of a Rhabdomyosarcoma

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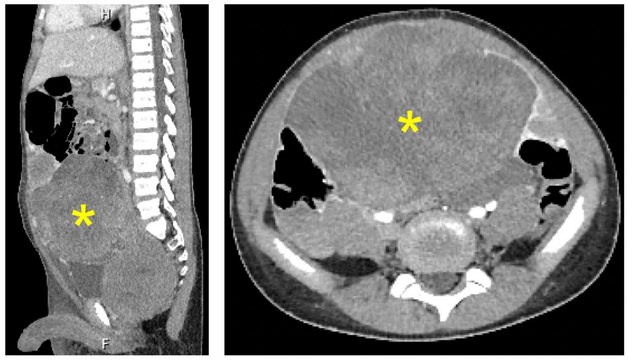
Introduction

- Rhabdomyosarcoma (RMS) is the most common malignant neoplasm of soft tissue in pediatric patients. However, these tumors comprise only 3 to 4 percent of all pediatric cancers.[1, 2]
- Young children tend to have embryonal RMS of the head and neck, while adolescents often present with alveolar RMS of the extremities.[3, 4]
- Compared to these sites, abdominopelvic RMS tends to manifest as a larger mass because it is clinically silent until it impacts major organ systems.[5]
- Large pelvic masses can compress the urinary or intestinal tract, causing urinary changes or constipation.[4]
- In this case report we will discuss a rhabdomyosarcoma located in the abdominopelvic region of a pediatric patient that led to renal complications.

Figures



Figures 1 and 2. Sagittal and transverse CT of the abdomen. Numerous abdominal and pelvic masses with mass effect upon the urinary bladder which is displaced into the left lower quadrant. Heterogeneous enhancement of the kidneys raising concern for bilateral hydronephrosis. Pelvic masses exert significant mass effect on the rectosigmoid colon. * = malignancy

Case Presentation

An 11-year-old male presented with the chief complaint of constipation & lower abdominal pain for three days. Upon interview, the patient reported difficulty urinating for a week. The patient's parents also noted weight gain over the past few months. Physical exam revealed hypertension and marked lower abdominal distension. A firm tender mass was then palpated in the abdominal and pelvic regions. A computed tomography (CT) of the abdomen and chest revealed a large mass in the abdominopelvic area as well as multiple small nodules bilaterally in the lungs (Figures 1 and 2). These findings raised concerns for neoplasia with pulmonary metastases. The pediatric surgery and the hematology and oncology departments were consulted. A surgical biopsy was performed on the abdominal mass and showed a primitive malignant neoplasm with rhabdomyoblastic differentiation.

Hours after the surgical biopsy was performed, physical exam showed newly discovered right lower extremity edema and scrotal swelling. Between the sixth and seventh day of admission, the patient's body weight increased by 4.6 kg and his creatinine reached 3.99 mg/dL, suggesting acute kidney injury (AKI) with renal dysfunction (Figure 3). A renal ultrasound revealed bilateral hydronephrosis secondary to tumor compression of the ureters prompting bilateral nephrostomy tubes to be placed. He was then transferred to the pediatric intensive care unit (PICU) for emergent chemotherapy.

The patient's blood pressure rose above the 99th percentile at 136/105, and anti-hypertensive therapy was initiated. Two days after his nephrostomy tube placement, his creatinine level and lower extremity edema rapidly improved and a post obstructive diuresis ensued, requiring aggressive fluid replacement in the following days. His blood pressure and weight began to normalize. Upon discharge, the patient had normal vitals, adequate urine output from bilateral nephrostomy tubes and one void via his urethra daily. He will continue chemotherapy treatment for the rhabdomyosarcoma and his abdominal mass will be monitored.

This patient had a unique presentation of rhabdomyosarcoma, a rare tumor of childhood. The tumor was in the abdominopelvic region causing hypertension with bilateral hydronephrosis and postrenal AKI secondary to compression of the ureters. This complex presentation required a multispecialty approach and a variety of treatments for successful management.

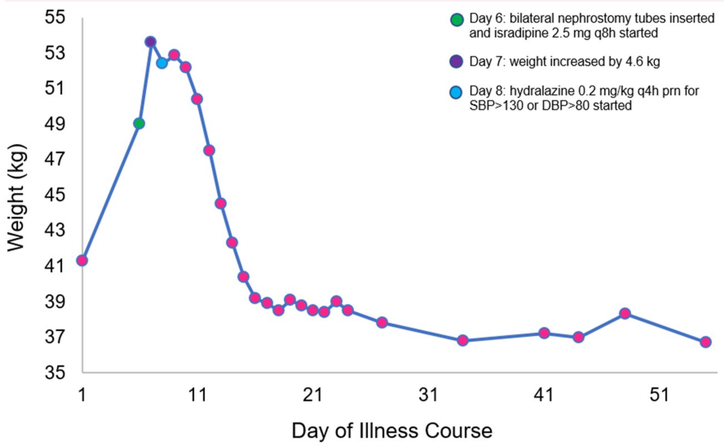


Figure 3. Weight change over the course of the illness.

Discussion & Conclusion

In this case report we follow the complex pathophysiology of a rhabdomyosarcoma that led to significant renal complications in our patient. The patient presented on admission with non-specific symptoms of constipation and abdominal pain that progressed in a fashion suggesting renal dysfunction. However, with further workup and imaging, his renal symptoms were found to be secondary to malignancy. This case represents the rare clinical manifestations of a rhabdomyosarcoma within the abdominopelvic region.

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