



Emergency embolization of a Wilms' tumor for life-threatening hemorrhage prior to nephrectomy[☆]



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ABSTRACT

A 2 year 9 month-old girl presented with active hemorrhage from a Wilms' tumor. The hemorrhage was controlled with embolization of the left renal artery and a left nephrectomy was subsequently performed. Embolization to control active bleeding in trauma scenarios and as a preoperative intervention to minimize blood loss has been extensively reported in the pediatric population. There are very few case reports of embolization of an actively bleeding tumor.

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A 2 year 9 month-old girl presented with acute major hemorrhage from a Wilms' tumor. This was controlled by renal artery embolization allowing subsequent radical nephrectomy in a stable patient, rather than subjecting her to an emergency operation while bleeding. Enough viable tumor persisted to allow precise diagnosis by the pathologist.

1. Case report

A 2 year 9 month-old girl with no significant past medical history presented to a walk-in clinic with abdominal pain and non-bilious, non-bloody vomiting for four days with a maximum fever of 104 °F. The parents reported that for the last 2–3 weeks the patient had been pale, lethargic, and constipated with a decreased appetite and mild abdominal pain. Her parents also noted that her clothes were fitting more tightly. Vital signs in the Emergency Department included: temperature of 101.5 °F, heart rate of 142 beats per minute, blood pressure of 117/70 mm Hg, respiratory rate of 28 breaths per minute, and SpO₂ of 100% on room air. Physical exam showed a distended abdomen and left-sided

tenderness with rebound, guarding, and fullness. Her laboratory data revealed a normocytic, normochromic anemia with hematocrit of 18.9, hemoglobin of 6.5, red blood cell count of 2.34, white blood cell count of 14.1, and platelet count of 130. She was transfused with packed red blood cells.

An abdominal X-ray showed a non-obstructive bowel gas pattern with no intraperitoneal free air, organomegaly, or pathologic calcifications with bulging of the left flank suggestive of a soft tissue mass. Abdominal ultrasound showed a large heterogeneous mass with internal cystic components in the left upper quadrant. The mass was in close proximity to the left kidney suggesting that it was renal in origin. The left renal pelvis and left retroperitoneum contained echogenic fluid, signifying hemorrhage. Computed tomography scan revealed an enlarged, heterogeneous left kidney with a subcapsular hematoma. There was a large retroperitoneal hemorrhage. In the lateral aspect of the upper pole there was a heterogeneous spherical mass (measuring 6.3 × 5.9 × 6.7 cm) with tortuous, dysplastic vessels (Fig. 1a and b). Within the renal mass there was an area isodense with the aorta. This area of contrast pooling is consistent with a pseudoaneurysm, which is one of the direct radiographic signs of bleeding (Fig. 1c and d).

Instead of undertaking an emergency nephrectomy in the face of active bleeding from a renal tumor, interventional radiologists were consulted. They performed a left renal arteriogram that demonstrated tumor vascularity primarily in the lower pole of the

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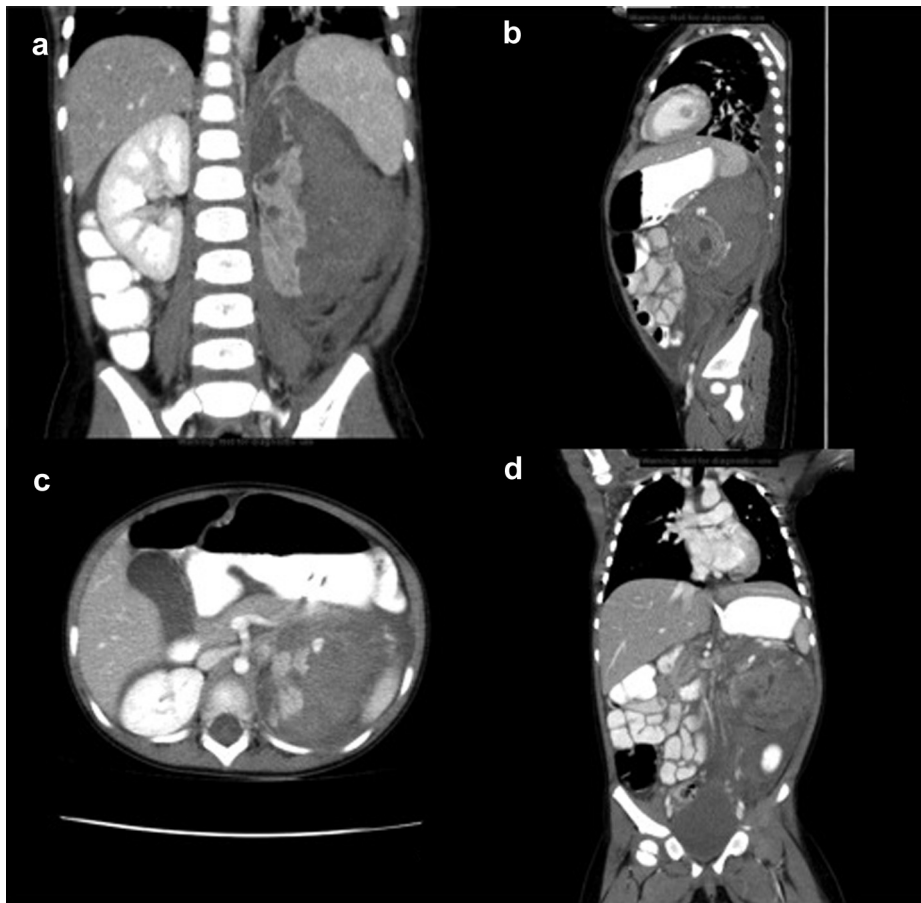


Fig. 1. Composite: Image 1a: Coronal CT image of the abdomen and pelvis with IV and oral contrast showing distortion of the left kidney and a large perinephric hematoma. Image 1b: Sagittal CT image with contrast showing a heterogeneously enhancing spherical mass in left kidney with a large perinephric hematoma. Image 1c: Axial CT image through the kidneys showing a hyperdense focus in the left retroperitoneum, that follows the same density as the aorta, compatible with active arterial extravasation. Image 1d: Coronal CT image through the kidneys showing a hyperdense focus in the left retroperitoneum, that follows the same density as the aorta, compatible with active arterial extravasation.

kidney (Fig. 2a). The site of active bleeding was not seen, but a pseudoaneurysm on CT scan was confirmed. A 4 French Cobra catheter was used to establish access through the right common femoral artery. A microcatheter was placed through the 4 French

catheter and advanced into the left upper pole renal artery branch where embolization was performed with 0.3 cc of 500 microns Embosphere particles. Embolization of the left lower pole renal artery branch was performed with 1.2 cc of 500 microns Embosphere

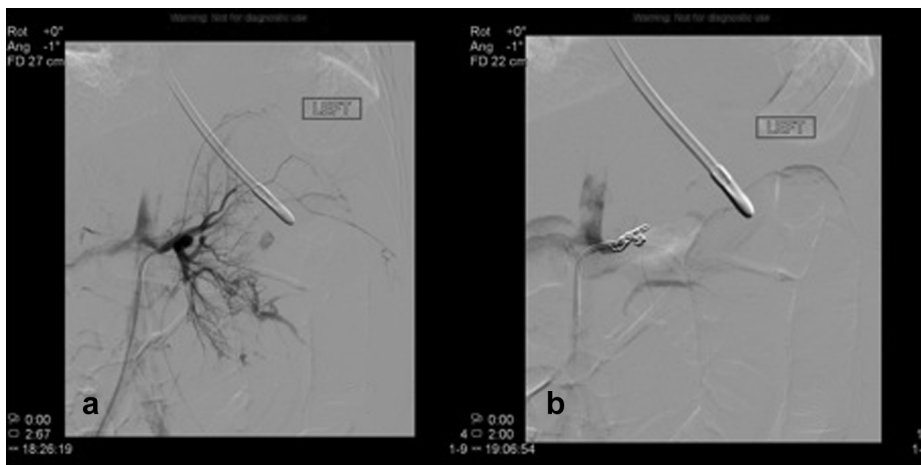


Fig. 2. Composite: Image 2a: Selective angiogram of the left renal artery shows tumor vasculature in the lower pole consisting of abnormally dilated and tortuous vessels with areas of abnormal contrast pooling consistent with pseudoaneurysm seen on CT scan. Image 2b: Post-embolization angiogram of left renal artery without previously visualized tumor vasculature or renal parenchyma.

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