Development of a Perirenal Hematoma after Hula-Hooping

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The development of a perirenal hematoma is rare and primarily the result of trauma, malignancy, or a connective tissue disease. Infrequently, a continuous or even mild trauma can cause a perirenal hematoma. Here, we report a case involving the development of a perirenal hematoma after excessive hula-hooping in the absence of a major trauma history.

Key Words: Perirenal hematoma, hula-hooping

INTRODUCTION

The development of a perirenal hematoma is rare and primarily the result of trauma, malignancy, or a connective tissue disease. Major traumas (such as a traffic accident or a fall) are the most common causes of a perirenal hematoma. Here, we describe a case involving a 26-year-old woman who developed a perirenal hematoma after violent hula-hooping.

CASE REPORT

A 26-year old woman was admitted to our hospital for further evaluation of a perirenal mass. Five days earlier, she had visited an outside emergency department with complaints of a high fever and left flank pain, which radiated to the iliac fossa and posterior back. An abdominal ultrasound (US) revealed a left perinephric mass (Fig. 1). The abdominal computed tomography (CT) scan revealed a perirenal hematoma confined to the left kidney. However, other perinephric structures, including the pancreas, adrenal grand, and additional vasculature, remained unaffected (Fig. 2).

The patient had a long history of insulin dependent diabetes mellitus (IDDM), and had been treated with insulin since the age of 16. She had no other medical illness (i.e. vasculitis, immunodeficiency, hypertension, or tuberculosis) and had no relevant medication history (i.e. aspirin or non-steroid anti-inflammatory drugs (NSAIDs)). However, in an attempt to lose weight, the patient had been exercising 30 minutes daily for about six months, using a hula-hoop. She recalled experiencing intermittent left flank pain whilst exercising with the hula-hoop.

A physical examination revealed an ill-appearing woman with a body temperature of 38°C, blood pressure of 130/80 mmHg, and a heart rate of 98 beats/min. Her body weight was 54 kg, and her height was 162 cm (BMI, 20.1 kg/m²). Her abdomen was soft, not distended, and remarkable for left costovertebral angle tenderness.

Fig. 1. First ultrasonogram showing a 1.2 cm diameter mass encircling left kidney.
Laboratory examination revealed a WBC of 11,700/mm$^2$ (64.5% segmental neutrophils and 10.9% lymphocytes), hemoglobin of 11.1 g/dL, hematocrit of 34.8%, platelet 340 × 10$^3$, fasting blood glucose of 99 mg/dL, postprandial glucose of 207 mg/dL, hemoglobin A1C of 16.2%, serum sodium of 143 mmol/L, potassium of 4.6 mmol/L, blood urea nitrogen of 19 mg/dL, creatinine 0.9 of mg/dL, lipase 78 of IU/L and a lactate dehydrogenase of (LDH) 396 IU/L. Urine analysis was negative for blood and protein, and showed 0-1 WBC and 0-1 RBC. The 24-hour total protein was 473 mg/day, and creatinine clearance was 77 mL/min/1.73 m$^2$. Coagulation parameters and the liver functions were normal.

An abdominal US was rechecked at our hospital. The US showed a 1.2 cm diameter mass encircling the left kidney (Fig. 3). The size of the left perirenal hematoma was smaller than the previous image, which was conducted at a previous hospital about five days prior. Signs of persistent bleeding were absent, and the left kidney was well preserved and encapsulated. No vascular malformation was identified. She was treated with hydration and intravenous antibiotics (cephazedone, 2 g/day), and her blood glucose level was well-controlled with insulin. Four days later, her fever subsided and her general condition improved. She was discharged, and a third abdominal US was repeated 20 days later in an outpatient setting. The US revealed an overall reduction in the size of the perirenal hematoma (Fig. 4).
DISCUSSION

The cause and diagnosis of a perirenal hematoma must be established quickly so as to determine treatment direction. The causes of a spontaneous perirenal hematoma (SPH) include immunologic disorders, neoplasms (renal cell carcinomas and adenomas), and collagen vascular diseases, but the main cause of a secondary perirenal hematoma is traumatic injury. Novicki et al. reviewed the literature concerning SPH over a 45-year period. Of 194 patients, 16% had benign or malignant renal tumors, 15% had nephritis or ruptures of uncertain origin, and 4% had inflammatory vascular disorders.

Fujita et al. described an elderly man with a perirenal hematoma caused by judo training, and suggested that a trauma, even a mild trauma, can trigger the onset of this hemorrhage, because the perirenal blood vessels are supported by loose connective tissue. The renal artery and vein perforate dense connective tissue to supply the loose connective tissue around the renal pelvis, and thus vessels supplying these loose connective tissues can be damaged by shearing forces.

In our case, the patient had neither a major trauma history nor any injury compatible with the development of a hematoma. Even if she were in a poorly controlled glycemic state, she had no laboratory abnormality to develop spontaneous bleeding; coagulation parameters were normal. She recalled slight, intermittent left flank pain during hula-hooping. The hoop was made of hard plastic and was filled with iron beads. She was not obese, but she did hula-hoop excessively everyday in an attempt to lose weight. We believe that the cause of her perirenal hematoma was a result of a repeated minor injury caused by hula-hooping. However, we could not explain why the hematoma was unilateral. We treated her with intravenous antibiotics in light of her fever, flank pain, and leukocytosis.

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