

A Rare Cause of Macroscopic Hematuria: Wilms Tumor

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Abstract

Wilms tumor (nephroblastoma) is the most common kidney tumor in childhood. Two-thirds of cases are diagnosed before the age of 5 and more than 95% before the age of 10. Patients may present with abdominal mass, abdominal pain, bloody urination, fever, and weight loss [1,2]. In this article, we present a 6-year-old male patient who was examined for macroscopic hematuria. Laboratory tests for common causes of hematuria in childhood were found to be normal. Renal malignancy, a rare cause of hematuria, was considered due to a mass found in the left kidney on renal USG and abdomen tomography, and a left total nephroureterectomy was performed. After histopathological examination, Wilms tumor was diagnosed. If renal malignancies, especially Wilms tumor, are kept on mind as rare causes of macroscopic hematuria, the diagnosis can easily be made with radiological findings and pathological examination.

Keywords: Macroscopic Hematuria; Wilms Tumor; Child Patient

Introduction

Wilms tumor (nephroblastoma) is the most common kidney tumor in childhood. Two-thirds of cases are diagnosed before the age of 5 and more than 95% before the age of 10. Patients may present with abdominal mass, abdominal pain, bloody urination, fever, and weight loss [1,2].

Case Report

A 6-year-old male patient was admitted to our clinic with a complaint of bloody urination for a month. He had no further symptoms, but it was learned that he had received treatment for iron deficiency anemia. There was nothing significant in the family history. On physical examination: his weight was 21.5 kg (75-90p), height was 116 cm (75-90p), blood pressure was 100/80 mm/Hg. The patient had a good general condition and there was no further pathological finding in systemic examination. In laboratory examination: white cell: 8700/mm³, hemoglobin: 10.1 g/dl, hematocrit: %31, thrombocyte: 455000/mm³, sedimentation rate: 60. dk: 40 mm/h. In routine urine examination the appearance was red, density: 1010, Ph: 6.5, glucose (-), protein (++) , nitrate (-). Microscopic examination of urine showed abundant erythrocytes and abundant leukocytes, there was no growth in urine culture. In 24 hour, urine analysis: microprotein: 30.8 mg/dl, creatinine: 18.1 mg/dl, sodium: 125 mmol/L (RR: 41 - 115 mmol/L) was found. In spot urine analysis: Ca: 7,9 mg/dl, creatinine: 33,4 mg/dl. In biochemical examination: urea: 7,4 mg/dl, creatinine: 0,6 mg/dl, uric acid: 3,38 mg/dl, sodium: 138 mmol/L, potassium: 4,6 mmol/L, Ca: 10 mg/dl, phosphate: 4,6 mg/dl, AST: 23 IU/L, ALT: 9 IU/L, total protein: 6,9 g/dl, albumin: 4,2 g/dl, cholesterol: 155 mg/dl,

triglyceride: 141 mg/dl, CRP: 1,39 mg/dl, ASO: 65 IU/L. Patient's bleeding profile was normal. (APTT: 34,7 sec, PT: 13,5 sec, INR: 1,18). Assessed levels of C3 was 148 mg/dl (RR: 90 - 180 mg/dl), and C4 was 39,6 mg/dl (RR: 10 - 40 mg/dl). Renal ultrasonography showed a mass lesion of 85 x 58 mm in size, consisting of thick septa and wall structures, with a multicystic appearance filling the middle and lower pole calyces of the left kidney, and numerous scattered hyperechogenic areas were observed in the parenchyma of the left kidney. The appearance suggested pyelonephritis, renal abscess or multicystic mass in the differential diagnosis. The right kidney was normal. The cyst hydatid serology taken from the patient was negative. Renal color doppler USG findings were normal. In the abdominal MR, the right kidney was normal, the left kidney's pelvicalyceal system and the left proximal ureter had a dilated view, the left kidney was approximately 75 x 55 mm in the lower pole. Inside the left kidney there were; diffuse septa structures that were slightly peripherally contrasted in post-contrast areas, had air-fluid level areas, was suspected to be calyx connected, and had an appearance of belonging to calyceal abscess area, that attracted attention. In the differential diagnosis, pyelonephritis and kidney abscess were considered, and anti-biotherapy was arranged. The dynamic renal scintigraphy showed non-obstructive dilatation in the right kidney collector system, severely impaired perfusion of left kidney; and the concentration and excretion functions of the left kidney was seen to be severely impaired in the form of a thin crust surrounding the prominent large wide hypoactive area. In contrast abdominal tomography, it was seen that the left kidney parenchyma had a thin appearance, had a heterogeneous hypodense part with the widest axial size measured at 74 x 68 mm, a dense content containing grade 5 dilatation of the left kidney pelvicalyceal system and a space-occupying lesion at this level. There was nothing specific in thorax CT. A differential diagnosis of pyelonephritis, renal abscess, pelvicalyceal hematoma, and multilocular cystic lesions was made. Coagulation tests for hematoma etiology were normal, there was no bleeding diathesis, and the patient had no trauma history. In the three-week follow-up, renal symptoms did not regress despite appropriate antibiotic therapy. With the history, clinical and radiological findings; Wilms tumor was considered, and it was decided with a multidisciplinary approach that the patient should undergo left nephroureterectomy since the left kidney was nonfunctional. Pathological examination of the tissue sample from the nephroureterectomy resulted as follows: Wilms tumor, nephrogenic rests (intra-lobar type) widespread below the pelvicalyceal surface and within the renal parenchyma, with the largest diameter of 8 cm, and with a triphasic component. The patient was diagnosed with Wilms tumor and chemotherapy treatment was planned.

Discussion

Wilms' tumor is the most common kidney tumor in children. It usually occurs between 6 months and 5 years of age [1,2]. The most common symptom in patients is a large and hard mass in the abdomen (60%). Abdominal pain, macroscopic or microscopic hematuria, fever, appetite loss, nausea, vomiting are other symptoms. It is more common in girls than in boys. It is bilateral in approximately 5% of cases. In 10% of patients, anomalies such as hypoplastic kidney, horseshoe kidney, undescended testicle and hypospadias may occur. In its treatment, radiotherapy and chemotherapy are given following surgical resection [3,4].

Hematuria can be a preliminary finding of many renal or urinary system diseases and is one of the common symptoms in children. Macroscopic or microscopic hematuria may be due to a benign condition or may be a sign of serious renal pathologies. Therefore, making a differential diagnosis for etiology is particularly important [5,6]. Most of the time, the diagnosis is made with a detailed history, physical examination, and laboratory tests. In hematuria, which is recurrent in childhood, it is necessary to consider all causes of hematuria, especially glomerular pathologies. Examinations should be planned from simple to complex, and renal biopsy and electron microscopic examination should be planned at the last stage [7,8].

The most common causes of hematuria in childhood are urinary tract infections, hypercalciuria, nutcracker phenomenon, primary and secondary glomerulonephritis, Ig A nephropathy, hereditary nephropathies, cystic kidney diseases, and rarely trauma and malignancies [9-11]. Urinary system infection was not considered in our patient due to normal urinalysis and urine culture results. Urine Ca/Cr ratio was normal, hypercalciuria was not detected. Our patient's C3, C4 values were normal, ASO was normal, and there were no dysmorphic erythrocytes in the evaluation of urine erythrocyte morphology. Nutcracker phenomenon was not a viable option due to normal renal

doppler USG findings. In renal ultrasonography, a mass lesion with a multicystic appearance filling the left kidney middle section and lower pole calyces was interpreted as an important finding. The appearance suggested pyelonephritis, renal abscess, pelvicalyceal hematomia or multicystic mass in the radiological differential diagnosis. The patient had no history of trauma in terms of pelvicalyceal hematomia, and coagulation tests were normal. Renal abscess was eliminated, because the patient's renal symptoms did not regress despite appropriate antibiotic treatment at three weeks of follow-up. In the differential diagnosis of hematuria, multicystic mass and malignancy were taken into consideration and abdominal CT and MRI tests were performed, and the results suggested a Wilms tumor, a rare cause of macroscopic hematuria.

Diven, *et al.* states that in 56% of patients with macroscopic hematuria the cause of hematuria can easily be detected. The authors stated that 44% of patients had diseases that could not be easily diagnosed and require further research. These diagnoses include recurrent macroscopic hematuria (5%), acute nephritis (4%), ureteropelvic junction stenosis (1%), and less than 1% cystitis cystica, epididymitis and urinary system tumors. While 23% of the cases were diagnosed with unproven urinary infection, the etiology could not be determined in 9% of the cases [12].

Childhood kidney tumors account for about 7% of all childhood malignant tumors. The vast majority of these are Wilms tumors [13,14]. When we evaluated our patient, no diagnostic results were obtained in the initial research studies for the common causes of macroscopic hematuria. The possible diagnosis of Wilms tumor as a rare etiology of hematuria was considered, and radiological examinations and renal biopsy was performed. As a result, Wilms tumor was diagnosed.

Conclusion

In conclusion, renal malignancies, especially Wilms tumor, should be kept in mind in with patients that have macroscopic hematuria, even though they are rarely seen. After the common causes of hematuria are excluded, an early diagnosis of Wilms tumor will affect the clinical course, treatment plan and prognosis of the disease.

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