CASE REPORT

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A Case of Tuberous Sclerosis Complex with Renal Angiolipoma Who Has Symptom of Gross Hematuria

ABSTRACT

Tuberous sclerosis is a genetic disorder affecting cellular differentiation and proliferation, which results in hamartoma formation in many organs (eg, skin, brain, eye, kidney, and heart). Renal involvement is usually manifested by angiomyolipomas. Angiomyolipomas are benign tumors of vessels and are seen in up to 50-75% of patients. Spontaneous bleeding may be fatal but symptomatic complications are rare. Here in, we report a case of unilateral renal angiomyolipoma in a sixteen-year-old boy with tuberous sclerosis who had symptom of gross hematuria.

Keywords: Tuberous sclerosis complex, Angiomyolipoma, Hematuria, Child

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Gros Hematürisi Olan Renal Anjiyolipomlu Tuberosklerozis Kompleks'li Bir Olgu

ÖZET

Tuberosklerozis, hücre çoğalması ve farklılaşmasını etkileyen ve bunun sonucu olarak birçok organda hamartomlarla sonuçlanan (deri, beyin, göz, böbrek, kalp) genetik bir bozukluktur. Renal tutulumu sıklıkla anjiyolipomla kendini gösterir. Renal anjiyolipomalar damarların iyi huylu bir tümörüdür ve bu hastaların % 50-75'inde görülür. Spontan kanamalar ölümcüldür fakat semptomatik komplikasyonları nadirdir. Biz burada tek taraflı renal anjiyolipomaya bağlı gros hematürisi olan 16 yaşında tuberosklerozlu bir erkek olguyu sunuyoruz.

Anahtar Kelimeler: Tuberosklerozis kompleks, Anjiyolipoma, Hematüri, Çocuk

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INTRODUCTION

Tuberous sclerosis complex (TSC) is an autosomal dominant multisystem genetic disorder that affects about 1/11000 live births, and characterized by seizures, mental retardation, autism, and hamartomatous lesions in multiple organs, frequently involving the kidney (1,2). The renal lesions in TSC are angiomyolipomas (AMLs) and renal cysts. AMLs are found in an estimated 50 to 75% of the patients. Renal cysts are observed with a frequency of 17–35% in the TSC population (3-7). AMLs, which can cause spontaneous life threatening hemorrhage, are by far the most prevalent and the greatest source of morbidity (5,8).

We presented a sixteen-year-old boy with TSC with unilateral renal AML who had symptom of macroscopic hematuria. Renal involvement is common in TSC, but symptomatic complications are rare.

CASE REPORT

A sixteen-year-old boy was admitted to our hospital with left flank pain and gross hematuria with blood clot. He was the fourth child of non-consanguineous parents. At the history examination was reported until age 7 years with seizures and development delay. His sister was also similarly affected. His mother and sister have suffered seizures and taken regularly antiepileptic drugs.

On physical examination he had mild mental retardation (IQ: 55), large adenoma sebaceum (angiofibromas) on his nose, cheeks and chin (Fig. 1); shagreen patch over the lumbosacral region, hypomelanotic macule over trunk. Other systemic findings were normal. Laboratory analyses; complete blood count revealed Hb: 8.1 g/dl, macroscopic hematuria was detected in urine test. Echocardiography showed bicuspid aorta valve. Renal ultrasonography revealed left renal mass.

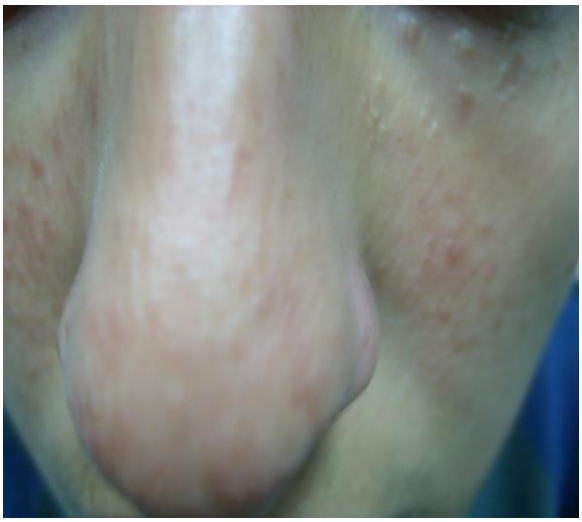

Figure 1. The appearance of the adenoma sebaceum (angiofibromas) on his nose

A computerized tomography (CT) of the kidneys with IV contrast was performed, which showed considerable enlargement of the left renal mass. The maximum craniocaudal dimension was 20 cm (Fig. 2).

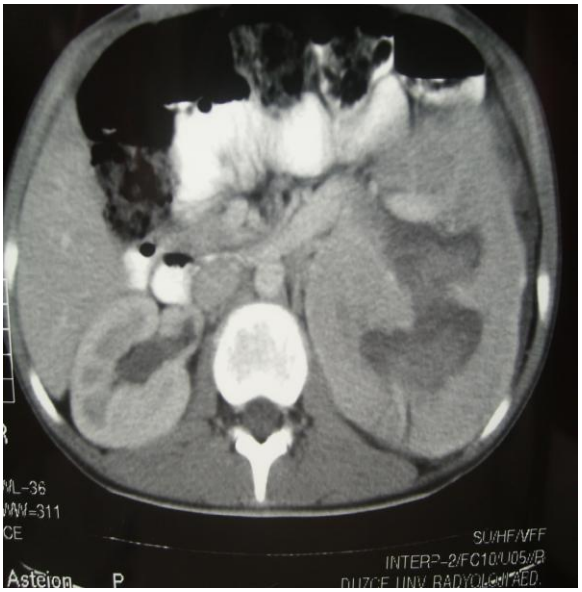

Figure 2. Abdominal CT showing changes in the left kidney.

A brain CT image showing subependymal calcified nodules was consistent with the diagnosis of TSC (Fig. 3). Because of the larger renal lesions and serious renal complication nephroctomy was performed to patient.

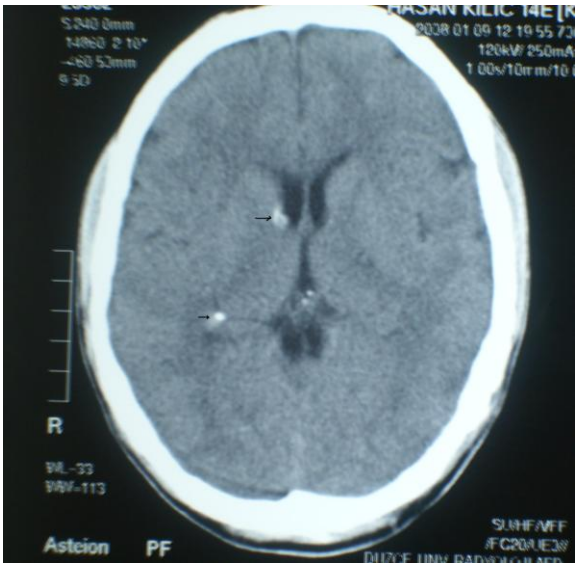

Figure 3. Brain CT scan with subependymal calcification.

DISCUSSION

TSC arises from inactivating mutations of either TSC1 (chromosome locus 9q34.3) or TSC2 (16p13.3), which encode hamartin and tuberin, respectively. These proteins are believed to function

as tumor suppressors by forming a complex that regulates cellular proliferation (8). Loss of heterozygosity at the TSC2 locus has been observed in the renal and pulmonary tumors associated with TSC (9, 10), suggesting that tumor development follows loss of the functional allele. Whereas mutations in TSC1 and TSC2 impact the same organ systems, TSC2 mutations tend to result in a more severe clinical profile, including more acute renal involvement (11,12).

The two renal pathologies most commonly seen in TSC are AMLs and cysts. The incidence of AML has been estimated at 50–75%, the incidence of cysts at 17–35% (3-7). In the general population, AML has an incidence of 1–2%, with a 6:1 female predominance (4,5). Up to 10% of AMLs are in patients with TSC. Classic AML occur sporadically, most often in middle-aged women. AML in TSC often present earlier than sporadic AML (the third decade as opposed to the fifth decade), tend to be larger, and have no clear sex-predominance. AML in TSC is also significantly more likely than sporadic AML to be multiple (97% vs. 13%), to have bilateral distribution (80 vs. 12%), to grow with time (67 vs. 21%), and to hemorrhage (44 vs.14%) (4,13,14). The natural history of the growth and progression of these lesions is poorly understood, although the number and size of AMLs are known to increase with age (3). AMLs are composed of adiposities, abnormal vasculature, and smooth muscle cells, the proportions of which may vary even across lesions in a single patient, and generally seen in the renal cortex (4).

Symptoms of AML are often absent or minimal, but affected patients may present with painless hematuria, flank pain, or a gross retroperitoneal bleed, spontaneous hemorrhage, which can lead to hemorrhagic shock in 20% of the cases (15). AMLs over 4 cm in diameter may have a heightened risk of serious hemorrhage, although this has not been prospectively examined. The other potential complications of AML include mass effects, which can cause discomfort or pain and can compromise renal function by compressing urine outflow and/or distorting normal renal parenchyma (15,16).

Malignant transformation of AMLs has been reported and seems to have a poor prognosis, and morbidity associated with AML complications far out-shadows that of carcinoma

In imaging renal AMLs in children and adults, US, computed tomography (CT), and MRI have all been utilized. The main characteristic feature of an AML on each of these modalities is the presence of focal or diffuse fat containing masses (17).

The pathogenesis and treatment of AMLs were recently reviewed by Bissler and Kingswood (5). It is often recommended that tumors over 4 cm be removed surgically in a nephron-sparing procedure, or treated nonsurgically by embolectomy. The three main surgical options for the treatment of AML are total nephrectomy, partial nephrectomy, and selective arterial embolization. Total nephrectomy was the treatment of choice for renal masses when imaging was not available to distinguish AML from renal cell carcinoma and patients presented with larger renal lesions and serious renal complications, such as gross hematuria (5).

In Conclusion, renal involvement is common in TSC, but symptomatic complications are rare. Genotype and increasing age were shown to have significant effects on renal manifestations. Renal screening should be performed regularly on all patients with TSC, but there is little information in the literature providing an appropriate timeline for initial screening and continuing surveillance.

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