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HORSESHOE KIDNEY AND NEPHROTIC SYNDROME DUE TO AA AMYLOIDOSIS

AT NALI BÖBREĞİ OLAN BİR HASTADA AA AMİLOİDOZA BAĞLI NEFROTİK SENDROM

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ABSTRACT

Horseshoe kidney is the most common type of renal fusion anomaly. It consists of functioning kidneys on each side of the midline, connected at the lower poles. Urinary tract infection, hydronephrosis, calculi, and tumour of the renal pelvis are known as complications and multiple congenital anomalies can occur together with horseshoe kidney. Here, we report a patient with horseshoe kidney and nephrotic syndrome. A fifty-year old woman was admitted to our emergency department because of generalized edema. Physical examination was not remarkable, except for edema. Daily urinary protein excretion was 7900 mg/day. Antinuclear antibody, rheumatoid factor, hepatitis B surface antigen, anti-HBs, and hepatitis C virus antibody were negative. On abdominal ultrasound and computerized tomography, horseshoe kidney was revealed. Rectal biopsy was performed revealing amyloid deposition in the vessels. Amyloid was demonstrated in the vessels with Congo Red and Cyrstal Violet. Colchicine was initiated 1.5 mg per day and supportive therapy was given. Horseshoe kidney with nephrotic syndrome is extremely rare. According to our literature search, this is the first case of horseshoe kidney with amyloidosis. We believe this presentation is a coincidence; however, one should keep in mind the possibility of renal disorders other than reflux nephropathy in patients with horseshoe kidney and nephrotic syndrome.

Key words: Horseshoe kidney, nephrotic syndrome, amyloidosis

ÖZET

Atnalı böbrek en sık görülen renal füzyon anomalisidir. Bu böbrekler normal parankimden ya da fibrotik dokudan oluşan istmus ile genellikle alt polde birleşir. Renal pelvis ön taraftadır ve üreter de önden çıkıp istmusun üzerinden geçer. Üretral duplikasyon, kriptorşizm, hipospadias gibi diğer ürogenital sistem anomalileri yanı sıra üriner sistem enfeksiyonları, hidronefroz, nefrolitiazis ve renal tümörler atnalı böbrek ile birlikte bulunabilir. Burada atnalı böbrek ve nefrotik sendromu olan bir vaka sunulmaktadır. Elli yaşında kadın hasta, polikliniğimize vücudunda yaygın şişlik nedeniyle başvurdu. Fizik muayenede anazarka tarzında ödem dışında bir özellik saptanmadı.Yirmidört saatlik idrarda protein atılımı 7,9 g/gün idi. Antinükleer antikor, romatoid faktör, HBs Ag, Anti HBs ve Anti HCV negatifti. Çekilen batın ultrasonu ve bilgisayarlı tomografide atnalı böbrek tespit edildi. Klinik ve labarotuar bulgularıyla nefrotik sendrom düşünülerek etyolojik tanı amaçlı yapılan rektal biopside damar çevresinde AA karakteristiğinde amiloid birikimi saptandı. Hastaya 1,5 mg/gün Kolşisin ve proteinüri için destek tedavisi verildi. Atnalı böbrek ve nefrotik sendrom birlikteliği literatürde ancak birkaç vakada tespit edilmiştir. Bizim literatür taramamıza göre, amiloidoz ile birlikte nefrotik sendrom ve atnalı böbrek henüz bildirilmemiştir. Biz bunun bir tesadüf olduğunu düşünüyoruz; ancak, atnalı böbrek ve nefrotik sendrom olan hastalarda, reflü nefropatiden başka renal bozukluklar ihtimali de göz önüne alınmalıdır.

Anahtar kelimeler: Atnalı böbrek, nefrotik sendrom, amiloidoz

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INTRODUCTION

The horseshoe kidney is the most common type of renal fusion anomaly. It consists of functioning kidneys on each side of the midline, connected at the lower poles by an isthmus of functioning renal parenchyma or fibrous tissue that crosses the midline of the body (3).

The most common associated finding in horseshoe kidney is ureteropelvic junction (UPJ) obstruction, which occurs in up to 35% of the patients. Urinary tract infection, hydronephrosis, calculi, and tumour of the renal pelvis are known as complications and multiple congenital anomalies can occur together with a horseshoe kidney (3). However horseshoe kidney with nephrotic syndrome is extremely rare (1,4,6). Here, we report a case of nephrotic syndrome due to secondary amyloidosis occuring in a patient with horseshoe kidney.

CASE

A 50-year old woman was admitted to our emergency department because of generalized swelling. The physical examination was not remarkable, except for edema. Daily urinary protein excretion was 7900 mg/day and creatinine clearence was 108 mL/min. Urine microscopy showed 2-3 hyaline casts, 4-5 leukocytes/mm^3 and urine culture showed pseudomonas spp. The blood tests revealed the following results: hemoglogin:121 g/L, hematocrit: 0.36, white blood cells: $11.5x10^9$ /L, platelets: $594x10^9$/L, sedimentation rate: 112 mm/h, blood urea nitrogen: 3.57 mmol /L, creatinine: 44.16 µmol/L, total protein: 60 g/L, albumin: 30 g/L, total cholesterol: 8.42 mmol/L, triglyceride: 1.98 mmol/L, aspartate aminotransferase: 0.48 µkat/L, alanine aminotransferase: 0.2 µkat/L, alkaline phosphatase: 3.74 µkat/L, sodium: 140 mmol/L, potassium: 4.6 mmol/L. Antinuclear antibody, rheumatoid factor, hepatitis B surface antigen, anti-HBs , hepatitis C virus antibody were negative. On abdominal ultrasound and abdominal computerized tomography, horseshoe kidney was revealed. Rectal biopsy was performed in our patient revealing amyloid deposition in the vessels. Amyloid was demonstrated in vessels with Kongo Red, Cyrstal Violet and immunoperoxidase technique. Colchicine was initiated as 1.5 mg per day and lisinopril, 1 mg/day was prescribed as a supportive therapy; but after taking the first dose of lisinopril, periorbital and neck edema developed in eight hours. At the same time, after taking the first dose, the patient's tongue was swollen and displaced anteriorly. She denied any allergies and had not taken any other medications or foodstuff that day. After receiving IV corticosteroids, the patient's symptoms were relieved in 24 hours. She was discharged without any angiotensin converting enzyme (ACE) inhibitor therapy.

DISCUSSION

Horseshoe kidney occurs in a range of, one out of 400 live births to one out of 800 live births. It is twice as common in males than in females. No genetic determinant is known, although it has been reported in identical twins and in siblings within the same family. By itself, the horseshoe kidney does not produce any symptoms. However, by virtue of its embryogenesis and anatomy, it is predisposed to a higher incidence of disease when compared to the normal kidney. The most common problem in horseshoe kidney is ureteropelvic junction (UPJ) obstruction, which occurs in up to 35% of patients. The prevalence of stone disease in the horseshoe kidney is between 20-60%, which is associated with hydronephrosis or UPJ obstruction that causes stasis of urine. Urinary stasis and stone disease also predispose the horseshoe kidney to infection, which is seen in 27-41% of the patients (3).

Horseshoe kidney with the nephrotic syndrome is extremely rare. Primary causes of nephrotic syndrome include minimal change disease, focal segmental glomerulosclerosis, membranous glomerulonephritis; it can also be due to secondary causes such as drugs, vasculitis, amyloidosis, diabetes, allergens and toxins (2). Until now, membranous nephropaty, focal segmental glomerulosclerosis have been reported in a horseshoe kidney (1,4,6).

Amyloidosis and the dysproteinemias should be considered in patients older than 40 years, although most patients are older than 50 years. Eighty percent of patients with amyloidosis have proteinuria, and the nephrotic syndrome occurs in about one third. Amyloidosis may be idiopathic or associated with multiple myeloma, long-standing rheumatoid arthritis or chronic infections, although the latter have been much less common in recent decades (9). Most patients with amyloidosis in the United States have immunoglobulin light chain–associated disease (8). However, Familial Mediterranean Fever (FMF) is the leading cause of secondary amyloidosis in Turkey, followed by tuberculosis (12). Accompanying systemic symptoms and cardiac involvement are common, although other organs may be affected. A monoclonal spike is found in the serum or urine by electrophoresis in more than 80% of proteinuric individuals and more than 90% of patients with nephrotic syndrome; approximately 20% of these patients will have free light chains (9). Demonstration of amyloid deposits in biopsy specimens is the only means of confirming the diagnosis of amyloidosis. In experienced hands, nonsurgical biopsies of the rectal mucosa or, preferably, of the abdominal fat pad or labial salivary glands provide the diagnosis in 80 to 85% of cases (8). In our patient, in order to find the etiology of nephrotic syndrome, serologic tests were performed; but they were noninformative. Therefore we planned a less invasive rectal mucosal biopsy; since renal biopsy could be difficult due to the anatomic malformation. Rectal biopsy revealed congo positive amyloid deposition and immunoperoxidase technique showed amyloid A component antibody 1 (clon MCl). There were no clinical symptoms and signs suggestive of a secondary cause for the amyloidosis as may occur in tuberculosis, FMF, rheumatoid arthritis and Crohn's disease.

The treatment of nephrotic syndrome due to secondary amyloidosis consists of high dose colchicine as well as other supportive therapies including ACE inhibitors (2). High dose colchicine is associated with improvement and increased probability of kidney survival in amyloidosis. Similar results are obtained in transplanted kidneys in patients with amyloidosis associated with FMF (11). The colchicine dosage required for treatment of established amyloidosis is higher than the regular dosage needed to prevent it and the higher dosage has been

shown to be completely safe (10). Accordingly, our patient was administered high dose colchicine. In order to alleviate proteinuria, an ACE inhibitor, lisinopril, was prescribed but it led to an infrequently reported adverse effect, angioneurotic edema.

Angioneurotic edema has been associated with any ACE inhibitor, but it is most commonly reported with captopril. Recent studies suggest that the patient most likely to develop catastrophic angioedema is obese, has had head or neck surgery, or has had prior endotracheal intubation (7). Because a dose-response relationship for the proinflammatory effects of ACE inhibitors has been demonstrated, patients with renal impairment are also at greater risk for adverse reactions. Interestingly, onset of angioedema has been reported within hours after the ingestion of ACE inhibitor (5). Our patient developed angioedema after ingestion of the first dose of ACE inhibitor. Most individuals are treated with adrenaline, antihistamines, and glucocorticoids. Our patient was also administered glucocorticoids and antihistamines and she responded fully, in a short time.

Nephrotic syndrome due to secondary amyloidosis is frequently encountered in our country. Therefore, it is important to examine amyloidosis in nephrotic syndrome. Nonsurgical biopsies of the rectal mucosa or, preferably, of the abdominal fat pad or labial salivary glands provide the diagnosis. On the other hand renal biopsy provide the diagnosis at risky patients. Horseshoe kidney with the nephrotic syndrome is extremely rare. This is the first case of horseshoe kidney with amyloidosis. We believe this presentation is a coincidence but one should keep in mind the possibility of renal disorders other than reflux nephropathy in patients with horseshoe kidney and nephrotic syndrome.

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