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Case Report

Renal Arteriovenous Malformation Showing Peripelvic Extravasation and Elevated Urine Catecholamine

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SUMMARY

Renal arteriovenous malformation (AVM) shows extrarenal bleeding with asymtomatic gross hematuria. A 48-year-old woman presented with a chief complaint of gross hematuria and right flank pain. Abdominal ultrasonography demonstrated a mass in the right renal pelvis. Computed tomography and magnetic resonance imaging showed a retroperitoneal mass, 5cm in diameter, adjacent to the renal pelvis. Urine dopamine and noradrenalin were elevated. Renal angiography failed to show the tumor. Right radical nephrectomy was performed under the diagnosis of catecholamine-producing retroperitoneal tumor, which invaded the right renal pelvis. The renal pelvis was filled with clots. The retroperitoneal mass seemed to be a hematoma. A hematoma due to extravasation showed a tumor-like mass in this case.

Key Words : renal arteriovenous malformation, peripelvic extravasation, catecholamine

INTRODUCTION

Renal arteriovenous malformation is usually revealed by renal angiography in case of examination of asymptomatic gross hematuria. A case of renal AVM complicated with peripelvic extravasation which showed retroperitoneal tumor has not yet been reported.

CASE REPORT

A 48-year-old woman presented with gross hematuria and right flank pain. Abdominal ultrasonography demonstrated a mass in the right renal pelvis and hydronephrosis (Fig. 1). Cystoscopy revealed grosshematuria and its clot from the right ureteral orifice.

Subsequent computed tomography and magnetic resonance imaging showed a retroperitoneal mass, 5cm in diameter, adjacent to renal pelvis (Fig. 2, 3). Ten days later, right retrograde pyelography was performed, but there was no apparent mass in renal pelvis (Fig. 4). Cytology of catheter urine was class Ⅱ.

In September 25th, she was hospitalized under the diagnosis of retroperitoneal tumor which invaded the right renal pelvis.

Serum chemistry (catecholamine, cortisol, aldosterone, etc.) studies showed no abnormality, however, urine dopamine and noradrenalin were elevated (2500 μg/day (< 1000), 164 μg/day (< 120), respectively). She had no hypertension, hyperglycemia, headache or tachycardia.

3 days later, abdominal arterial angiography was performed that showed a dilatation of renal artery, pooling of contrast medium in the right renal parenchyma, and rapid visualization of the right renal vein (Fig. 5). The finding suggested an arterio-venous malformation of upper portion of the right kidney.

It was difficult to diagnose the retroperitoneal mass by the findings, but the mass was comparatively large and

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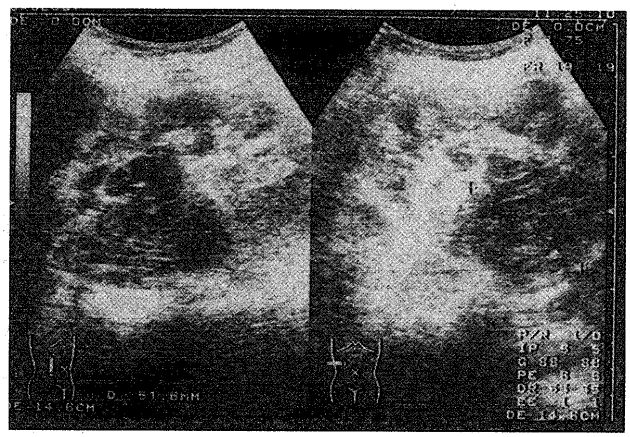

Fig. 1 Abdominal ultrasonography shows a mass of the right kidney.

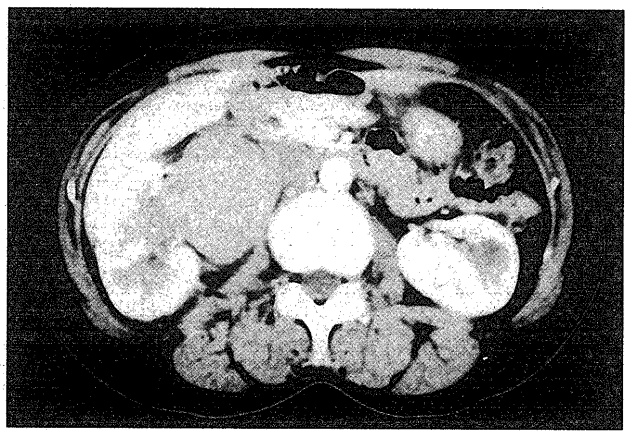

Fig. 2 Computed tomography shows a retroperitoneal mass.

urine catecolamine was elevated. We performed transabdominal right nephrectomy in October 10th. There was no apparent mass or tumor around the right renal hilus, but the renal pelvis was filled with clots. The pathological diagnosis revealed that a small arterio-venous fistula in the renal parenchyma was the cause of hematuria.

DISCUSSION

Arteriovenous malformation of the kidney is not seen often clinically, however, more than 250 cases are reported. Of these cases, 70 to 75 % are acquired either from renal biopsy or traumatic injury[1]. There have been more than 50 cases of congenital arteriovenous malformations of the kidney reported, and these are classified into 2 different types according to angiographic lesions : the cirsoid type and the aneurythmal type[1,2]. The cirsoid type is seen most often in patients between 20 and 30 years old, and is more predominant in women. The aneurismal

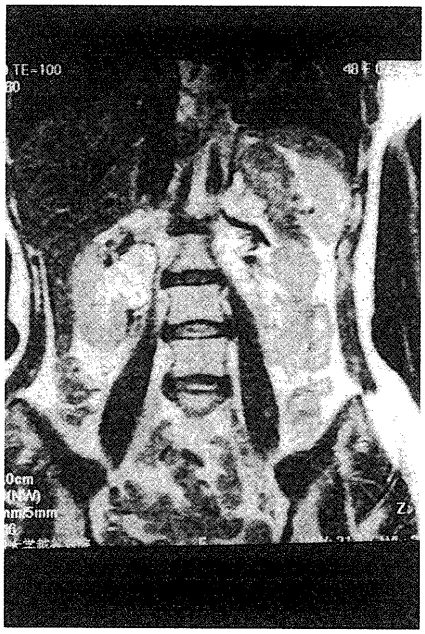

Fig. 3 Magnetic resonance imaging shows a retroperitoneal mass invading to renal pelvis.

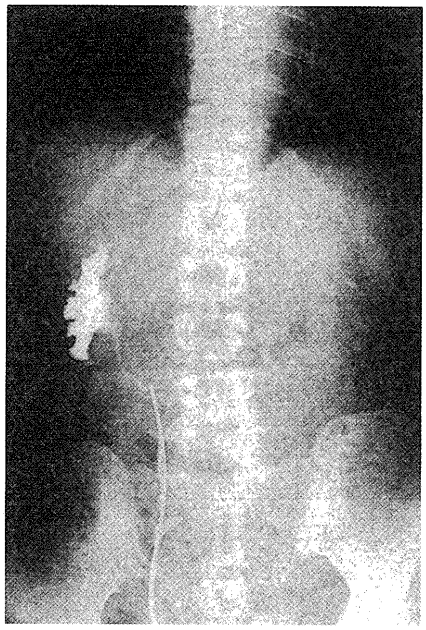

Fig. 4 Retrograde pyelography shows hydronephrosis without filling defect.

type is seen in elderly subjects and is also predominant in women. Previously, treatment of an arteriovenous malformation consisted of nephrectomy, partial nephrectomy or ligation of the feeding artery. However, conservative techniques have been more commonly used in these days. Transcatheter embolization has been reported as the

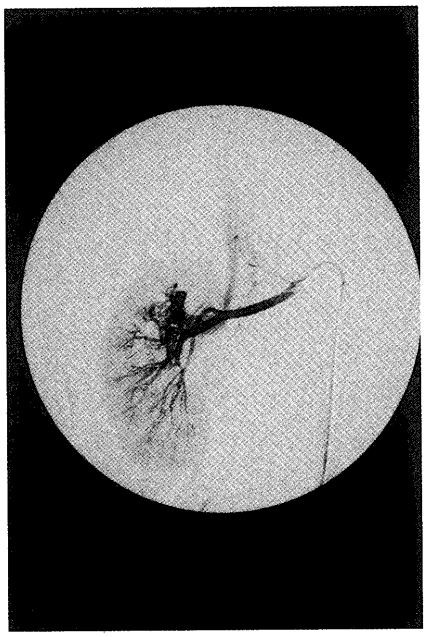

Fig. 5 Renal arteriography shows a pooling of contrast medium in the upper lobe, rapid visualization of renal vein, and no finding of tumor

method to control bleeding from an arteriovenous malformation of the kidney.

In this case, the retroperitoneal mass seemed to be a hematoma, which was caused by peripelvic extravasation related to AVM of the kidney. There were several cases in which AVM or hematoma in itself was diagnosed as a renal tumor, but we could not find any case with the peripelvic extravasation related to AVM of the kidney, nor with elevated urine cathecolamins.

The mechanism of massive hematuria in the renal AVM is thought to be the arterio-venous shunt of the intra-lobler vessels in the renal parenchyma. If some causes, such as exercise or hypertension, induce the rapid increase of shunt-flow, the dilated intra-lobler veins rupture to the renal pelvis. However, the massive hematuria may soon elavate the renal pelvis pressure, which may lead to the decrease of shunt-flow. Therefore, massive hematuria in the renal AVM is temporary in the most cases[3]. In our case, the acute obstruction of ureter by clots induced the peripelvic extravasation. Furthermore, we thought that the rapid increase of the renal pelvis pressure caused the ischemia of the renal parenchyma, which elevated urine catecolamines. Serum and urine cathecolamines tend to be influenced by body or mental conditions (dehydration, bleeding, exercise, mental stress etc.).

A retroperitoneal mass with massive hematuria may be a hematoma caused by peripelvic extravasation and may disappear by absorption. Following up by CT scans could have avoided the needless nephrectomy.

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