CASE REPORT

Bilateral asymptomatic giant renal artery aneurysm

Özkan G[1], Ulusoy Ş[1], Dinç H[2], Kaynar K[1], Sönmez B[3], Akagündüz K[4]

[1]Department of Nephrology, Karadeniz Technical University, School of Medicine, Turkey
[2]Department of Radiology, Karadeniz Technical University, School of Medicine, Turkey
[3]Department of Nuclear Medicine, Karadeniz Technical University, School of Medicine, Turkey
[4]Department of İnternal Medicine, Karadeniz Technical University, School of Medicine, Turkey

Abstract
The incidence of renal artery aneurysm is very low. Approximately in 20% of these patients hypertension is observed. The diameter of aneurysm increases with accompanying complication rates. The most feared complication is rupture. The risk of rupture also increases with the diameter of aneurysm. We report an aneurysm with the biggest diameter reported in the literature. The patient had a 12 cm-diameter of aneurysm in one kidney and did not show any symptoms including hypertension until she was seventy years old. Hippokratia 2011; 15 (3): 269-271

Key Words: renal artery aneurysm, bilateral, asymptomatic, giant renal artery aneurysm, partial obstruction

Corresponding author: Gülsüm Özkan**,** Karadeniz Teknik Üniversitesi Tıp Fakültesi**,** Nefroloji Bilim Dalı**,** 61080 Trabzon**,** TURKEY**,** e-mail:gulsumozkan78@hotmail.com**,** fax :+90 462 325 22 70, tel:+ 90 462 377 56 86

In large autopsy studies, the incidence of renal artery aneurysm (RAA) was determined to be 0.01%, whereas it reaches up to 1% in angiographic examinations performed to investigate renovascular hypertension[1]. RAA may accompany Takayasu arteritis, Behcet's disease, Ehlers-Danlos syndrome and mycotic aneurysms, or may occur due to an unknown etiology. Intrarenal aneurysms are particularly congenital, post-traumatic, or accompany polyarteritis nodosa (PAN)[1].

The reported diameters of RAA range between 0.5 and 10 cm [2]. The present case had asymptomatic bilateral RAA with undetermined etiology, of which the right renal artery had aneurysm 12 cm in diameter and the left renal artery had aneurysm 5 cm in diameter. This case, presents the largest diameter of renal artery aneurysm reported.

Case Report

A 70-year-old female patient had admitted to the hematology department with the complaint of malaise three months before her admission to our clinic. While examining the patient for the etiology of anemia, an RAA image was determined on the abdominal ultrasonography (USG). She was referred to our clinic for investigation of the etiology.

At the time of admission, her blood pressure was 120/70 mmHg, pulse rate was 80/minute (min), respiratory rate was 14/min and body temperature was 36ºC. Other system examinations were normal. The patient, who had undergone right brachial artery aneurysm repair 25 years ago, had no chronic disease except for asthma. On her laboratory examination; hemoglobin (Hb) level was 8.4 g/dL, white blood cell (WBC) count was 7300 µL, platelet count was 245 x 10^3 µL, blood urea nitrogen (BUN) level was 17 mg/dL, creatinine level was 0.8 mg/dL, sodium (Na^+) concentration was 141 mEq/L, potassium (K^+) concentration was 3.6 mEq/L, total cholesterol level was 173 mg/dL, low density lipoprotein (LDL) level was 112 mg/dL, high density lipoprotein (HDL) level was 35 mg/dL, and triglyceride level was 123 mg/dL. Peripheral blood smear showed normocytic-normochromic erythrocytes. She had anemia, and it was considered as the anemia of chronic disease. On her abdominal USG, the size of the left kidney was 132 mm and the parenchymal thickness was 15-16 mm. There was a dilatation up to 3-cm in the pelvis resulted from the pressure caused by the aneurysm, and a 5x5 cm image of a thrombosed aneurysm in the left hilum. The size of the right kidney was 102 mm, the parenchymal thickness was 13 mm. The kidney was pushed superiorly and there was a 12 cm aneurysm image with turbulent flow inside. Angiography was performed to evaluate the aneurysms (Figure 1a-1b). Upper extremity arterial system USG revealed a low-rate monophasic flow in the right brachial and radial arteries, as well as collateral formations in the right subclavian area. Color Doppler revealed normal findings for carotid artery.

On Tc-99m mercaptoacetyltriglycine (MAG3) scintigraphy; right kidney showed normal scintigraphic pattern, the concentration of the radioactive material was within the normal ranges, but the collecting system had retarded function in response to diuretics with stasis. The concentration and excretion of the radioactive material was observed to be impaired in the left kidney and had partial obstruction in the collecting system.

Following the aneurysm screening and scintigraphic evaluation of the renal functions, investigations concerning the etiological factors were initiated. Regarding Behcet's disease; the patient had no dermatological or ophthalmologic signs, and had no history of recurrent

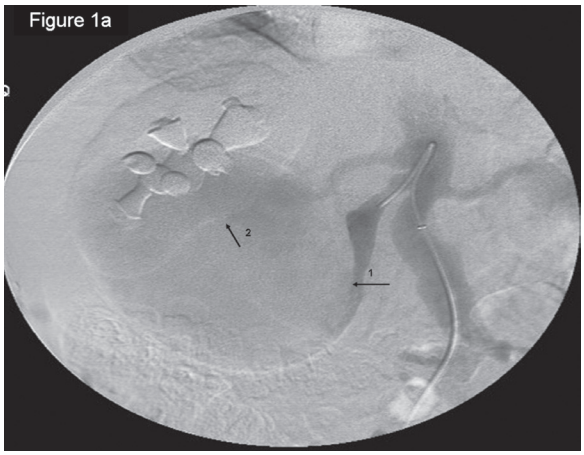

Figure 1a: Arrow 1. Selective anjiogram shows giant aneurysm 12x10 cm in diameter in distal portion of right RA.
Arrow 2. The right kidney observed to be displaced towards to the superior and posterior due to the aneurysm

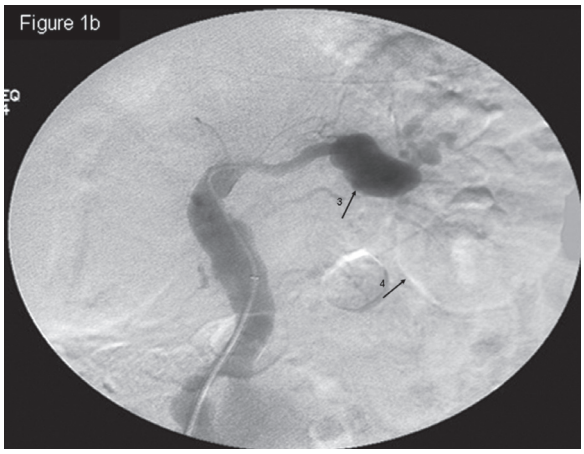

Figure 1b: Arrow 3. Selective angiogram shows large aneurysm 3x 5 cm in diameter in distal portion of left RA
Arrow 4. Left kidney; There was a dilatation up to 3-cm in the pelvis resulted from the pressure caused by the aneurysm

oral-genital aphthae. In addition, her pathergy test was negative. Regarding vasculitis; classic (c)-antineutrophil cytoplasmic autoantibody (ANCA), perinuclear (p)-ANCA, antinuclear antibody (ANA) and double stranded (ds) DNA were negative. Electromyogram (EMG) revealed mild sensorineural polyneuropathy. There was no sign of Takayasu arteritis or Fibromuscular dysplasia (FMD) on radiological imaging. A disease of unknown etiology, with asymptomatic progression and multiple aneurysms was considered for the patient. We consulted with vascular surgery and interventional radiology departments for the therapy to be planned. Surgery was planned considering the diameter of the aneurysm in the right renal artery and both the diameter of the left aneurysm and the obstructive uropathy resulted from the pressure caused by the left aneurysm. Endovascular procedure could not be performed due to the anatomical localizations of the aneurysms. Therefore, open surgical procedure was planned to be performed. However, the patient did not consent to surgical procedure; thus, she was discharged and scheduled for radiological follow-up.

Discussion

The incidence of RAA varies between 0.01% and 1%[1]. Etiology may include degeneration of renal artery due to atherosclerosis, FMD[3], vasculitis (Takayasu arteritis [4], Wegener's granulomatosis[5] , Behcet's disease[6] , PAN[7]), and trauma or congenital defects[4]. There was no evidence of these diseases in our patient's history, physical examination, biochemical and radiological findings. Therefore, the case was assessed as RAA of unknown etiology.

The main complications of RAA include rupture, thrombosis, distal emboli, renovascular hypertension, intrarenal aneurysm and arteriovenous fistulas[8]. However, most of them are asymptomatic. The present case did not have any clinical symptom.

RAAs are classified as saccular, fusiform, dissecting or intrarenal. The most common type is saccular RAA; approximately 20% of the RAAs is bilateral and leads to renovascular hypertension[1]. Our patient had saccular aneurysm and belonged to the bilateral group; however, she was normotensive.

Rupture is the most threatening complication of RAA. The risk of rupture is associated with age, gender, and the morphology and histological characteristic of the aneurysm. Postmenopausal women, males, fusiform aneurysms, and the patients with calcified aneurysms have low risk of rupture. Pregnancy, in particular, enhances the risk of rupture[8]. Our patient was in postmenopausal period. However, she had risk of rupture due to having saccular aneurysm without calcification.

The treatment of RAAs is controversial. Surgical treatment is indicated in patients with aneurysms greater than 2 cm in diameter, those with aneurysms between 1 and 2 cm in diameter having uncontrolled hypertension, those with complications due to the aneurysm (distal emboli or infarctus), those with ruptured or dissecting aneurysms, and in women of childbearing age[9]. Either open surgery or endovascular treatment can be performed for RAA. The method of choice depends on the experience of the clinic and a number of additional factors. These factors include anatomic localization of the aneurysm, the type of the aneurysm (saccular or fusiform), and the presence of additional co-morbid diseases of the patient[8]. Saccular aneurysms are generally treated by means of open surgical method. Successful studies have been performed concerning surgical treatment of RAA [10,11]. The present case had in the right renal artery aneurysm of 12 cm and left renal artery aneurysms of 5 cm; thus, surgical repair was considered due to risk of rupture. However, the patient did not consent to surgical procedure. No complications were observed during 2 years follow up.

In conclusion, although our patient had a very large RAA, no complications were developed up to age of 70. We thought that this could be due to absence of any underlying vasculitic disease or FMD. It can be considered

that the development of complication in RAA also may be due to underlying diseases regardless of the type (saccular, fusiform etc.) and size of the aneurysm.

Conflict of interest:
We have not received any financical support
We report no conflict to interest

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