

RUPTURE OF A GIANT RENAL ARTERY ANEURYSM: REPORT OF A CASE

Kohei Kurokawa, Hiroto Tomo Takahashi, Yoshio Ichinose
and Daishiro Kobayashi

From the Department of Urology, Ashikaga Red Cross Hospital

Kuni Nishikawa and Mamoru Suzuki

From the Department of Cardiovascular Surgery, Ashikaga Red Cross Hospital

Yoshikazu Mizuhashi and Masaru Kojima

From the Department of Radiology, Ashikaga Red Cross Hospital

Takanori Suzuki, Kyoichi Imai and Hidetoshi Yamanaka

From the Department of Urology, Gunma University School of Medicine

We report a case of rupture of giant renal artery aneurysm (10 cm diameter) with lower abdominal discomfort and a syncopal attack. The patient was successfully treated by nephrectomy. Rupture of a giant renal artery aneurysm is lethal in most cases and prompt diagnosis is indispensable. As preoperative diagnosis, ultrasonography was useful as it showed the blood flow in the renal artery aneurysm in real-time. CT scan was also useful in determining accurately the size of the aneurysm and extension of hematoma in its surroundings.

(Acta Urol. Jpn. 39: 455-458, 1993)

Key words: Kidney, Giant aneurysm, Rupture

INTRODUCTION

Renal artery aneurysm is a rare lesion and its incidence is reported to be 0.015% in autopsy cases¹⁾, 0.3% in the aortograms²⁾ and 1.0% in the selective renal arteriograms³⁾. Most of the renal artery aneurysms are small and asymptomatic, and require no treatment. Rupture of a renal artery aneurysm is rare, but lethal in most cases and urgent treatment is needed⁴⁾. We report a patient with rupture of a renal artery aneurysm, with a diameter, which in our investigation of the literature, is second in size^{5,6)}. We also discuss the incidence and diagnosis of the rupture of renal artery aneurysm.

CASE REPORT

A 64-year-old woman was admitted with lower abdominal discomfort and syncopal attack. She claimed that the lower abdominal discomfort had started 2~3 days previously and she fainted in a toilet on that day. She had hysterectomy due to

uterine myoma at the age of 45 and had been medicated for hypertension of 150/90~180/100 mmHg for several years. When she arrived at the hospital, her face was pale and seemed to be in agony though her consciousness was clear. The abdomen was swollen and intense tenderness was detected in the left upper abdomen without a distinct palpable mass. Her blood pressure was 80/40 mmHg and heart rate was 110/min. The laboratory investigations revealed a white blood cell count of 12,000/mm³ (normal: 4,000~9,000), red blood cell count of 193×10^4 /mm³ (normal: $410 \sim 530 \times 10^4$), hemoglobin value of 6.1 g/dl (normal: 14~18), platelet count of 9.4×10^4 /mm³ (normal: $16 \sim 43 \times 10^4$), glutamic oxaloacetic transaminase value of 47 IU/ml (normal: 8~40), lactate dehydrogenase value of 747 IU/ml (normal: 240~450), creatinine value of 1.4 mg/dl (normal: 0.8~1.3) and no microhematuria in urinalysis. Ultrasonography performed immediately in the out-patient clinic revealed a 10 cm hypoechoic mass in the upper pole of the

left kidney, inside which a vortical blood flow was observed (Fig. 1). CT scan revealed a mass of the size of an infant head in the upper pole of the left kidney. The mass was divided into two densities; a large uniform low density area was observed in the center adjacent to the kidney and a slightly higher density area surrounded it (Fig. 2A). Injection of a contrast

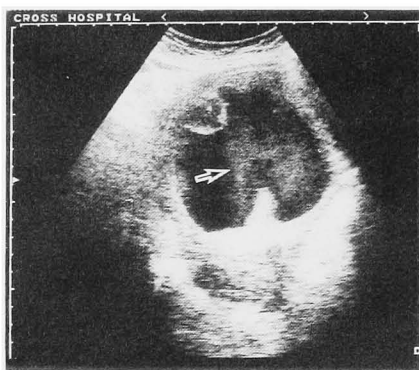


Fig. 1. Ultrasonography of the aneurysm. Arrow indicates the vortex of the blood flow.

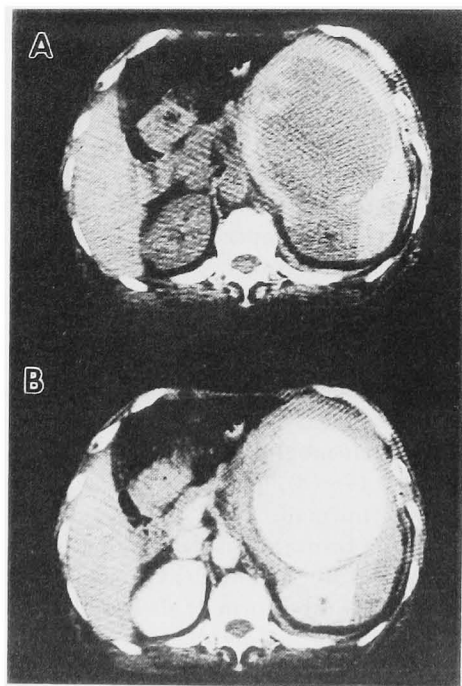


Fig. 2. CT scan of the ruptured aneurysm. A: plain CT scan B: enhanced CT scan.

medium enhanced the central area (Fig. 2B). Therefore, retroperitoneal hematoma due to rupture of a renal artery aneurysm was suspected strongly. To establish the diagnosis, selective arteriography was done. In the selective arteriography, the contrast medium influxed into the mass from a branch of the renal artery in jet and formed a vortex within the mass (Fig. 3A). An attempt to embolize it with a 5 mm diameter steel coil failed, but the occlusion was completed by a balloon catheter of Berman wedge type (Fig. 3B). At this stage, we were convinced it was a giant intrarenal saccular aneurysm and retroperitoneal hematoma due to its rupture.

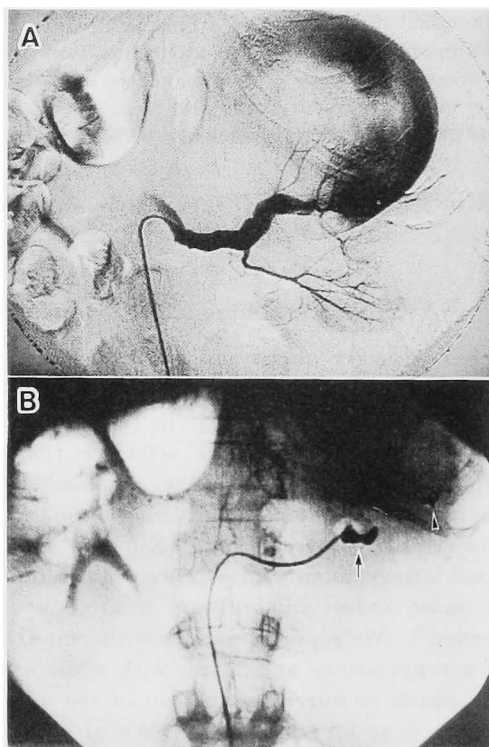


Fig. 3. Selective arteriography of the ruptured aneurysm. A: contrast medium flows like a vortex. B: Arrow head indicates the steel coil dropped in the aneurysm. Arrow indicates the balloon of the Berman wedge type catheter.

The patient was given an urgent operation after blood transfusion of 15 units of packed red blood cells. Upon approaching

the retroperitoneal space by a lumbar incision, a large amount of blood clot was found inside the Georta's fascia. After removing this clot, we found a mass in the upper pole of the kidney. After blunt dissection, the renal artery and vein were clamped and nephrectomy was performed. The patient received a total of 20 units of packed red blood cells. Fig. 4 shows the step section of resected specimen. The pathological analysis of the aneurysm wall demonstrated intimal thickening of the fibrous arterial wall. The postoperative course was satisfactory and the patient was discharged from the hospital 10 days postoperatively.



Fig. 4. Gross appearance of the step-sectioned resected specimen. Arrow indicates a branch of the renal artery

DISCUSSION

Renal artery aneurysms are classified into saccular aneurysm, fusiform aneurysm, dissecting aneurysm and intrarenal aneurysm. Most of these either saccular or fusiform. Intrarenal aneurysms such as our case account for approximately 17% of renal artery aneurysm⁷⁾.

Pregnancy may predispose to ruptured renal artery aneurysms by causing an increase in cardiac output and blood volume thus increasing blood flow through the renal artery⁸⁾. Eighteen cases have been reported and eight mothers (44%) and for fetuses (22%) have been saved⁹⁾. In these cases, placental abruption is a common preoperative diagnosis and, most often, the diagnosis is made at emergency Caesarean section when a retroperitoneal hematoma

is found⁹⁾. In the case of the general population, on the other hand, the probability of rupture is considered extremely low as given below. McCarron et al.¹⁰⁾ reported that, among 19,600 autopsies at New York Hospital, no case of rupture of a renal artery aneurysm could be found. Also, Tham et al.³⁾ reported that, in 36,656 cases of sudden death autopsies in Southern Sweden in the past 10 years, 19 cases of rupture of artery aneurysm were found yet no case of rupture of a renal artery aneurysm was found among them. In Japan, only two cases of rupture of renal artery aneurysm were reported^{6,11)}.

Even though the incidence of rupture of renal artery aneurysm is extremely low, the prompt and exact diagnosis suggesting a renovascular accident is indispensable. Ultrasonography may be performed first and can give a conclusive clue when a renovascular accident is suspected on the basis of jet and vortical blood flows, while CT scan is useful because it can depict the size of an aneurysm and the extension of hematoma in its surroundings.

REFERENCES

- 1) Glass PM and Uson SC: Aneurysms of the renal artery: A study of 20 cases. *J Urol* **98**: 285-292, 1967
- 2) Hageman JH, Smith RF, Szilagyi DE, et al.: Aneurysms of the renal artery: Problems of prognosis and surgical management. *Surgery* **84**: 563-572, 1978
- 3) Tham G, Ekelund L, Herrlin K, et al.: Renal artery aneurysms: Natural history and prognosis. *Ann Surg* **197**: 348-352, 1982
- 4) Ippolito JJ and Le Veen HH: Treatment of renal artery aneurysms. *J Urol* **83**: 10-16, 1960
- 5) Pliskin MJ, Dresner ML, Hassell LH, et al.: A giant renal artery aneurysm diagnosed post partum. *J Urol* **144**: 1459-1461, 1990
- 6) Naito A, Ito K, Mori M, et al.: Transcatheter embolization of giant renal artery aneurysm with steel coil: Report of a case. *Jpn J Clin Radiol* **31**: 437-440, 1986
- 7) Novick AC: Renal arterial aneurysm and arteriovenous fistulas. In: *Vascular problems in urologic surgery*. Edited by Novick AC and Straffon RA, pp. 189-204, Saunders Co., Philadelphia, 1982
- 8) Barrett JM, Dean RH and Boehm FH: Rup-

- ture of a renal artery aneurysm during pregnancy. South Med J 74: 1549-1550, 1981
- 9) Cohen JR and Shamash FS: Ruptured renal artery aneurysms during pregnancy. J Vasc Surg 6: 51-59, 1987
- 10) McCarron JP, Marshall VF and Whitsell JC: Indications for surgery on renal artery aneurysms. J Urol 114: 177-180, 1975
- 11) Okabayashi S, Matsumoto T, Kaneko S, et al.: Ruptured renal artery aneurysm treated by embolization.: Report of a case. Jpn J Pediatr 42: 2235-2238, 1989
- (Received on November 24, 1992)
(Accepted on January 17, 1993)

和文抄録

破裂巨大腎動脈瘤の1例

足利赤十字病院泌尿器科（部長：高橋溥朋）

黒川 公平，一ノ瀬義雄，小林大志朗，高橋 溥朋

足利赤十字病院心臓血管外科（部長：西川 邦）

鈴木 守，西川 邦

足利赤十字病院放射線科（部長：水橋義和）

水橋 義和，小島 勝

群馬大学医学部泌尿器科学教室（主任：山中英寿教授）

鈴木孝憲，今井強一，山中英寿

下腹部不快，失神発作にて発症した 10 cm 径の破裂巨大腎動脈瘤の1例を報告した。エコー，CTにて腎動脈瘤の破裂を強く疑い，血管造影にて確診した。この際コイルによる塞栓を試みたが不能で，腎摘出を行い救命しえた。腎動脈瘤破裂は致命的なことが多く迅速な診断が大切である。術前診断においては，エコー

ーは外来レベルで即座に行える検査ではあるが，腎動脈瘤内の血流をリアルタイムで観察できるという点で，CTは動脈瘤の大きさおよびその周囲の血腫の広がりを正確に診断できる点で非常に有用であった。

（泌尿紀要 39：455-458，1993）