

**Large renal aneurysm successfully treated by percutaneous
embolization using detachable steel coils**

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Abstract

A 71-year-old man was referred to our hospital because of hematuria. CT scan showed a huge aneurysm ($43 \times 32 \times 30$ mm) in the right kidney. The patient was treated successfully with transcatheter arterial embolization (TAE) using detachable steel coils. At present, 1 year after TAE, the patient has no hematuria and hypertension. To our knowledge, this case is the second largest aneurysm treated successfully by TAE.

Introduction

With the development of microcatheter guide-wire systems and the advent of new embolic materials used primarily in interventional neuroradiology, the number of renal artery aneurysm cases treated successfully by embolization has increased [1]. However, from the standpoint of preserving renal function, frequently repeated intervention is controversial. In some cases, it is not easy to treat renal large aneurysms, such as those 35 mm in diameter, by interventional embolization alone, because of the risk of migration of the embolic materials [2]. Previously, Saltiel *et al.* reported the embolization of a giant renal aneurysm (about 100 mm in diameter) with Gianturco-Wallace coils [3]. Here, we report the second largest aneurysm (44 mm in diameter) [4, 5] treated successfully by only one-time interventional embolization using detachable steel coils.

Case report

A 71-year-old man was admitted to our hospital with gross hematuria in June 2003. He had no history of renal biopsy or traumatic episodes. Computerized tomography (CT) showed a vascular mass measuring 43 × 32 × 30 mm in the right kidney (Fig. 1). The level of contrast was almost the same as that of the renal artery in the early phase and also in the delayed phase of enhancement. Under a diagnosis of renal aneurysm, we performed embolization of the aneurysm using 10 detachable steel coils (25 mm × 200 mm) (Fig. 2, 3). After embolization, the patient complained of very slight pain in his right back; however, the pain disappeared within one day. Enhanced CT, 4 weeks after embolization, showed no blood flow in the aneurysm. At present, 1 year after TAE, the patient has no hematuria or hypertension.

Discussion

Recently, interventional embolization has become the definitive treatment for arterio-venous fistulas, malformation, and aneurysm [1]. However, in some cases, the treatments were converted from embolization to surgery [2]. The reasons reported were: (1) the possibility of renal deterioration resulting from repeated embolization due to the large-sized aneurysm [6]; and (2) the risk of pulmonary embolism caused by the obliterating agent, which might flow directly into the vena cava through the renal vein [7]. Especially, large renal arterial aneurysms typically require nephrectomy. Kohei *et al.* reported that the indication for open surgery for renal aneurysm was a diameter of 20–25 mm [5]. In the present case, despite the large size of the aneurysm, there was not a great deal of blood flow to the renal parenchyma peripheral to the renal aneurysm, the renal vein, or the vena cava, and we used detachable steel coils with careful checking of the tips of the coils, to successfully occlude the aneurysm. After checking blood flow by CT and/or angiography and with detachable steel coils, TAE may become the first useful treatment trial for renal aneurysm, even for those that are large in size. To our knowledge, our case is the second largest renal aneurysm treated successfully by percutaneous embolization [3, 4, 5].

References

- 1, Klein GE, Szolar DH, Breinl E, Raith J, Schreyer HH. Endovascular treatment of renal artery aneurysms with conventional non-detachable microcoils and Guglielmi detachable coils. *Br J Urol* 1997; 79: 852-60.
- 2, Hayakawa K, Aoyagi, T, Ohashi M, Ishikawa H, Hata M. Surgical treatment for an idiopathic renal arteriovenous fistula with a large aneurysm. *Int J Urol* 2001; 8: 26-8.
- 3, Saltiel A A, Matalon TAS, Patel SK. Embolization of a giant renal arterial aneurysm. *J Urol* 1990; 80: 1227-8,
4. Yamamoto N, Ishihara S, Yoshimura S, Ueda T, Takeuchi T, Kawada Y. Endovascular embolization of a renal artery aneurysm using interlocking detachable coils. *Scand J Urol Nephrol* 1997; 32:143-5.
5. Kohei N, Kawanishi H, Sasaki M. Superselective endovascular treatment of renal artery aneurysms with detachable microcoils. *Acta Urol Jpn* 2003; 49: 43-6.
- 6, Brischhoff W, Pohle W, Goertler U. Treatment of arterio-venous angiomas of the kidney: Surgical intervention and intra-arterial embolization. *J Urol* 1979; 122: 825-8.
- 7, Morin RP, Dunn EJ, Wright CB. Renal arteriovenous fistulas: A review of etiology, diagnosis, and management. *Surgery* 1986; 99: 114-8.

Legends to the figures

Fig. 1

Enhanced computerized tomography (CT) showed a vascular mass measuring $43 \times 32 \times 30$ mm in the middle portion of the right kidney.

Fig. 2

Right renal arteriography showed a large aneurysm (40×32 mm) in the middle portion of the right kidney.

Fig. 3

Right renal arteriography showed that the aneurysm disappeared completely just after embolization using detachable steel coils.

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