Intrarenal pseudoaneurysm after percutaneous nephrostolithotomy: endovascular treatment with N-butyl-2-cyanoacrylate

Sir,

Selective renal embolization is currently considered as the most appropriate technique in the treatment of arterial complications following percutaneous renal procedure [1]. Cyanoacrylic glue is a persisting and efficient occluding agent that has been successfully used for more than 20 years in the endoluminal treatment of vascular cerebral malformation [2]. We report one case of intrarenal pseudoaneurysm of the right kidney which occurred after percutaneous nephrostolithotomy that was treated by endovascular occlusion using N-butyl-2-cyanoacrylate because of gross hematuria 10 days after percutaneous nephrostolithotomy.

A 69-year-old man with a past history of right renal colic due to oxalocalcic calculi had right percutaneous nephrostolithotomy because of a 20-mm inferior caliceal stone in the right kidney. Arterial pressure, serum creatinine level, and clotting time was within the normal range. After the procedure, no residual stone was visible and no immediate complication was clinically observed. Ten days later, the patient was readmitted because of gross hematuria and a drop in hemoglobin level (13 to 7 g/100 ml). Sonography showed multiple clots in the right renal pelvis and bladder. The patient was thus transferred to our department for renal angiography and possible embolization. After a right femoral arterial approach, selective angiography of the right renal artery was performed with a 5-F end-hole angiographic catheter (Cook, Bloomington, Ind.) that was advanced over a 0.032-in. angled (J-shaped) hydrophylic guidewire (Terumo, Tokyo, Japan). Selective angiography revealed an intrarenal pseudoaneurysm originating from an inferior pole branch (Fig. 1). No other vascular abnormality was seen in the kidney. No abnormality was seen in the right adrenal artery. Then, superselective catheterization was performed with a 3-F coaxial catheter (Ventur II, Boston Scientific-Meditech, Watertown, Mass.) and a 0.014-in. platinum-tipped guidewire (Transend Ex, Boston Scientific-Meditech, Watertown, Mass.) that was advanced into the 5-F catheter. Occlusion was performed with 0.5 ml of N-butyl-2-cyanoacrylate (Embucrilate, Histoacryl, Braun, Melsungen, Germany). To delay the polymerization time of N-butyl-2-cyanoacrylate, 0.8 ml of iophendylate oil (Lipiodol, Laboratoires Guerbet, France) was mixed with N-butyl-2-cyanoacrylate. The resulting mixture was injected continuously in 10 s under fluoroscopic control to prevent reflux into the renal artery. After withdrawal of the coaxial catheter, control angiography did not show further opacification of the pseudoaneurysm (Fig. 2). No immediate complication related to the procedure was noted. Total procedure time took 45 min. Complete hemostasis was achieved immediately. Two years later, physical examination was normal and the hemoglobin level resolved to normal value (13 g/100 ml). No change in arterial pressure or in serum creatinine level was noted. Color Doppler ultrasound did not show pseudoaneurysm.

Various embolic agents have been used to treat vascular complications of percutaneous renal procedure; they include polyvinylalcohol particles, silicone rubber, cotton pellets, silk filaments, gelfoam, autologous clot, detachable balloon, and microcoils. We used cyanoacrylate as the first intention embolization material. The use of a comparable embolization material has been reported to perform distal and irreversible arterial occlusion in patients with renal or bladder cancer [3]. N-butyl-2-cyanoacrylate that we used in our case is a substitute for isobutyl-2-cyanoacrylate that has been already used for preoperative embolization of renal carcinoma [3].

Because economic pressures favor the use of less expensive therapeutic strategies, one must notice that the use of N-butyl-2-cyanoacrylate is less expensive than the use of microcoils. In our case, we used only one ampulla of N-butyl-2-cyanoacrylate, which costs approximately US$40. On the other hand, the average price of microcoil is around US$80–100. In addition, in the majority of published cases, two coils were needed to obtain complete obliteration of pseudoaneurysms, thus increasing the procedure cost.

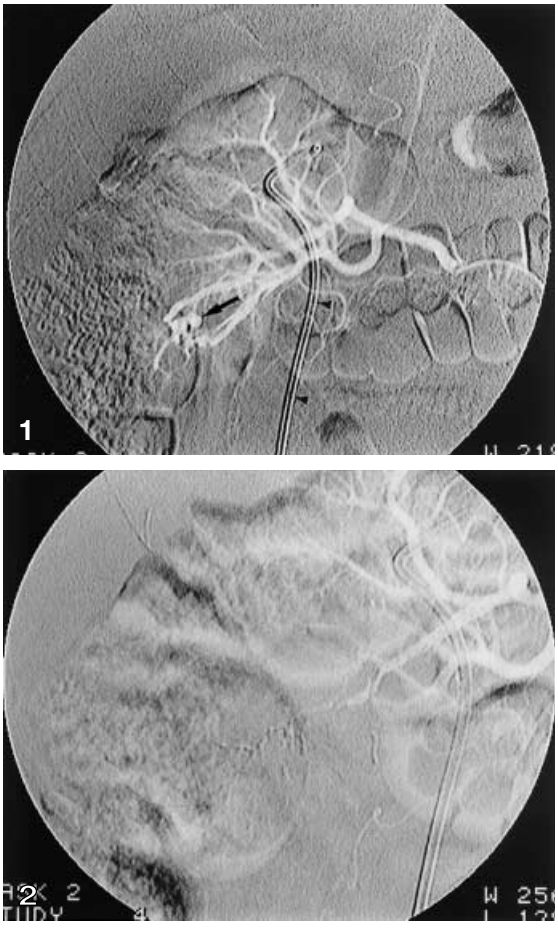

Fig. 1. Digital subtraction angiographic image from right renal artery injection obtained with a 5-F catheter reveals a lobulated posttraumatic pseudoaneurysm *(arrow)* emanating from an inferior pole branch. Double-J catheter is seen *(arrowheads)*

Fig. 2. After occlusion of the pseudoaneurysm, control angiography obtained after withdrawal of the coaxial catheter does not show further opacification of the pseudoaneurysm

References

1. Beaujeux R, Saussine C, al-Fakir A, Boudjema K, Roy C, Jacqmin D, Bourjat P (1995) Superselective endo-vascular treatment of renal vascular lesions. J Urol 153: 14–17
2. Vinters HV, Lundie MJ, Kaufmann JCE (1986) Long-term pathological follow-up of cerebral arterio-venous malformations treated by embolization with bucrylate. N Engl J Med 314: 477–483
3. Carmignani G, Belgrano E, Puppo P, Giuliani L (1978) Cyanoacrylates in transcatheter renal embolization. Acta Radiol 19: 49–56

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