

LETTER / *Interventional Imaging*

Selective bilateral renal artery embolization with tris-acryl microspheres in focal segmental glomerulosclerosis



Keywords Tris-acryl gelatin microspheres; Primary focal segmental sclerosis; Renal artery embolization (RAE)

Dear editor,

Renal artery embolization (RAE) was originally used only in patients with symptomatic hematuria and palliation of metastatic renal cancer. Nowadays, RAE is used for the treatment of renal medical diseases, renal lesions such as angiomyolipoma [1,2] and vascular malformations and for preoperative reduction of vascularization of renal masses. RAE is getting more popular due to its minimally invasive nature. Various embolization agents are used in RAE; the most frequently used are metallic microcoils. Additionally polyvinyl alcohol (PVA), ethanol, gelatin sponge and tris-acryl gelatin microspheres can be used as well [2]. Primary focal segmental glomerulosclerosis (PFSGS) is the cause of 20–30% of nephrotic syndrome in the adult population. It is the most common cause of idiopathic glomerular diseases and nephrotic proteinuria. More than 50% of these may progress to end-stage renal disease (ESRD) in 5–10 years when left untreated [3]. RAE can be used as an alternative method to nephrectomy in the treatment of ESRD with massive proteinuria and uncontrolled hypertension [4]. We

present a technique of selective bilateral RAE using tris-acryl gelatin microspheres in a patient having PFSGS with resistant proteinuria.

Proteinuria resistant to medical therapy (20 g/day) was detected in a 38-year-old woman with PFSGS known for 3 years. She was on dialysis program for ESRD. She needed protein supplementation because of malnutrition and bilateral RAE was thought to be the appropriate treatment for her. For this purpose, a 5-F introducer sheath was inserted to the right common femoral artery under sterile conditions after local anesthesia (Prilocain 20 mg/mL, Citanest®, AstraZeneca). A diagnostic 5-F pigtail catheter (Terumo, Tokyo, Japan) was advanced through the introducer over the 0.035 inch 150 cm guide wire (Terumo) into the aorta. Aortogram was performed to evaluate accessory renal arteries. At least two projections were achieved to evaluate vascular branches. No accessory renal arteries or parasitized vessels were observed. Each renal artery was catheterized separately with a hydrophilic coated cobra catheter (Glidecath®, Terumo). The catheter was placed in the distal part of the renal artery with the aim to protect adrenal and gonadal arteries. Then, 300–500 μ and 500–700 μ tris-acryl gelatin microspheres (Embosphere®, Merit Medical Systems, South Jordan, UT, USA) were injected slowly one after another combined with iodinated contrast media (Ultravist 370®, Bayer, New Jersey, USA) in 1/1 dilution. Distal segments of both renal arteries were completely embolized on control angiograms (Fig. 1). Direct manual compression was applied to the femoral vascular access site until bleeding stops. No procedure related adverse effect was observed. After

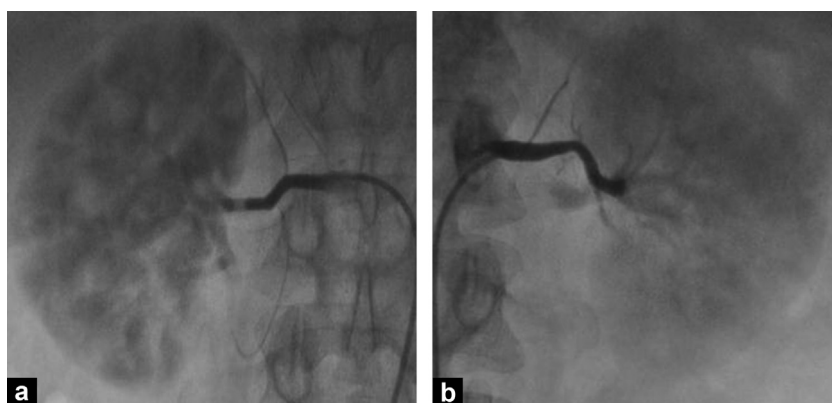


Figure 1. Angiogram shows total embolization of the distal branches of renal artery in right (a) and left (b) kidney with tris-acryl gelatin microspheres.

embolization of both kidneys, the patient became anuric. During the follow up, the patient was treated by hemodialysis and total protein values resumed to normal values. Proteinuria was not observed.

Therapeutic embolization is a well-known method for the treatment of vascular lesions. Various embolization agents can be used for this purpose [5]. Administration of particulated agents to lobar branches of the renal artery results in renal parenchymal infarcts and occlusion of the distal branches. These microinfarcts cause nephron damage resulting in proteinuria and diminished urine excretion [6]. PVA is probably the most frequently used particulated embolization agent. It is a relatively permanent embolization agent with proven biocompatibility. Unfortunately, irregular PVA particles tend to cluster and create aggregates, which may cause catheter occlusion. Besides this, penetration of these particles may not be adequate to occlude selected vessels. New agents have been developed to overcome these challenges. Administration of tris-acryl gelatin microspheres through a catheter is easier and more effective than delivering PVA particles [5]. Post-embolization syndrome, which is characterized by fever, blunting and generalized pain can be seen following RAE. Embolization of adrenal and gonadal arteries during RAE is an undesirable effect of this method [6]. In our patient, we used tris-acryl gelatin microspheres in an attempt to embolize each kidney effectively and to prevent catheter occlusion during the procedure.

In conclusion, RAE may be an alternative to surgery in the treatment of PFSGS with concurrent ESRD. Usage of tris-acryl gelatin microspheres appears to be a safe and efficient method in patients with this condition. Proper use of the technique and pre-procedural planning should be performed to reduce the incidence of dangerous complications and to optimally treat patients.

Disclosure of interest

The authors declare that they have no competing interest.

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N. Dogan^a, O.F. Nas^{b,*}, B. Canver^c,
K. Ozturk^b, G. Gokalp^b

^a *Radiology Clinic, Private Bahar Hospital, Bursa, Turkey*

^b *Department of Radiology, Uludag University, Faculty of Medicine, Gorukle Campusu, 16059 Bursa, Turkey*

^c *Nephrology Clinic, Bursa State Hospital, Bursa, Turkey*

* Corresponding author.

E-mail addresses: drndogan@gmail.com (N. Dogan), omerfatihnas@gmail.com (O.F. Nas), drburak_75@hotmail.com (B. Canver), keremov54@hotmail.com (K. Ozturk), drgekhangokalp@yahoo.com (G. Gokalp)

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