

Case Report

MULTIPLE RENAL VESSELS

José Aderval Aragão ¹, Rosely Mota Santos ², Felipe Matheus Sant'Anna Aragão ³,
Iapunira Catarina Sant'Anna Aragão ³, Higor Dantas Gonçalves Carvalho ⁴, Ícaro
Quintela Matos ⁴, Francisco Prado Reis ⁵.

*¹ Associate Professor, Department of Morphology and the Postgraduate Applied Health Science Programs, Federal University of Sergipe (UFS), and Titular Professor of the Medical School, Tiradentes University (UNIT), Aracaju, Sergipe, Brazil.

² Nursing student at the Federal University of Sergipe (UFS), Aracaju, Sergipe, Brazil.

³ Medical Student, University Center of Volta Redonda (UNIFOA), Volta Redonda, Rio de Janeiro, Brazil.

⁴ Medical student at the Federal University of Sergipe (UFS), Aracaju, Sergipe, Brazil.

⁵ Titular Professor, Medical School of Tiradentes University (UNIT), Aracaju, Sergipe, Brazil.

ABSTRACT

Context: With the increase of the renal transplants and the new technologies advances in the vascular reconstructions as well as in the image methods, the knowledge of the renal vessels' anatomical variations has been considered of great importance to Medicine.

Objective: To report a case of triple renal arteries to the left and double renal veins to the right.

Case report: In a male human cadaver, with apparent age of 50 years old, was found multiplicity of renal vessels, triple renal arteries to the left and double renal veins to the right. The renal arteries originated on the lateral face of the abdominal aorta, the superior one being of oblique downward direction and the medium and inferior ones being of oblique upward direction. The veins, in other hand, drained to the inferior vena cava, the superior came from the lateral face and the inferior from the posterolateral face of the vena cava.

Conclusion: Anatomical variations of the renal vessels remain as an important knowledge for the practical exercise of the interventional medicine, with significance to surgery and medical imaging.

KEY WORDS: Renal Vessels, Multiplicity of renal vessels, Triple renal arteries, Double renal veins, Interventional medicine.

Address for Correspondence: Dr. José Aderval Aragão, Associate Professor, Rua Aloisio Campos 500, Bairro Atalaia, Aracaju, Sergipe, Brazil. CEP: 49035-020 Tel: +55-79-99191-6767

E-Mail: jaafelipe@infonet.com.br

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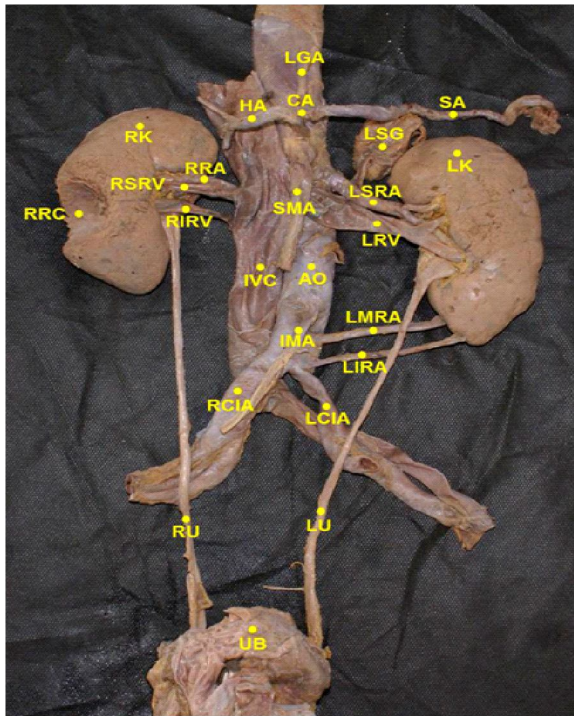
INTRODUCTION

The knowledge of anatomical variations of the renal vessels is clinically important to surgeons to the execution of a more proper and safe

preoperative evaluation [1], avoiding, this way, possible risks during surgical procedures [2-4]. The present study aims to report a case of renal artery triplicity and duplicity of renal vein.

CASE REPORT

Fig. 1: Multiplicity of the Renal Vessels.



SMA - Superior mesenteric artery, **IMA** - Inferior mesenteric artery, **LSRA** - Left superior renal artery, **LMRA** - Left middle renal artery, **LIRA** - Left inferior renal artery, **RSRV** - Right superior renal vein, **RIRV** - Right inferior renal vein, **RRC** - Right renal cyst, **LRV** - Left renal vein, **IVC** - Inferior vena cava, **RK** - Right kidney, **LK** - Left kidney, **AO** - Aorta, **CA** - Celiac artery, **LSG** - Left suprarenal gland, **SA** - Splenic artery, **RCIA** - Right common iliac artery, **LCIA** - Left common iliac artery, **RU** - Right ureter, **UB** - Urinary bladder, **HA** - Hepatic artery, **LGA** - Left gastric artery.

While performing the dissection of a male cadaver belonging to the anatomy laboratory from the Morphological Department of the Federal University of Sergipe (UFS), were found renal arteries triplicity to the left and renal veins duplicity to the right (**Figure 1**). The superior renal artery (SRA) was originated on the aorta's lateral face, below the superior mesenteric artery (SMA), with 4,5 cm in length, with oblique downward route, and divided itself in three segmental branches before entering the renal hilum. The middle renal artery (MRA) was originated on the terminal aorta's anterior face, 9,5 cm distant from the SRA, with oblique upward route in the direction of the posteromedial face of the kidney's inferior pole and had 6 cm in length. The inferior renal artery (IRA), with 7 cm in length, was 10,5 cm distant from the SRA and 1 cm distant from the MRA. It was originated on the terminal aorta's anterior face

in the transition level of the iliac arteries bifurcation, and also had an oblique upward route in the direction of the anterior face of the kidney's inferior pole.

Both veins left the renal hilum in an oblique downward direction, the superior renal vein (SRV), being larger, had 4 cm of length and ended up on the lateral face of the inferior vena cava (IVC). The inferior renal vein (IRV) had 4,5 cm of length and ended up on the posterolateral face of the IVC, with a distance of 1 cm from the SRV.

There were also found cysts on both kidneys, one being found in the transition of the middle third with the inferior of the anterolateral face of the right kidney, that measured 4,0 x 3,5 cm in its largest diameters. On the left kidney, the cyst was on the posterior face of the superior third and measured 3,5 x 2,5 cm of diameters.

DISCUSSION

The anatomical variations on the number of renal vessels are relatively common occurrences, being divided as unilateral and bilateral [5]. The presence of more than one renal artery has been the most common variation found [6,7].

According to Palmieri [8], the anatomical variations of the renal vessels must be distinguished from the malformations for not being associated to the functional alterations of the renal system. However, they can influence on the clinical symptoms of diseases such as: arterial hypertension, cardiac insufficiency, or especially hindering the surgical practice of the renal transplants [9-11].

Anatomical variations of renal arteries and veins are often reported in several studies [5,6,9,10], as well as case reports of duplicity and triplicity [12-16]. In the present study there were found triple renal arteries on the left kidney and double renal veins on the right kidney. Moore, Persuad [17], attribute this occurrence to a likely rise of the kidneys from the pelvis during the embryonic development.

All the renal arteries and veins, from this study, penetrated and left the kidney with an oblique route. This finding diverges from Ogeng'o et al.'s description [18], that found 59,5% of the renal arteries penetrating the renal hilum in a parallel route and only 7,1% in a cross shape. Kaye,

Reinke [19], highlighted that the knowledge of the vascular anatomy, associated with its countless variations, is of fundamental importance, especially when it comes to choosing the best surgical techniques.

CONCLUSION

The domain of the renal vascular anatomy is of great value to surgeons and imaging specialists in the execution of surgical, experimental and radiological procedures, in order to reduce surgical complications.

Conflicts of Interests: None

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