

RIGHT KIDNEY WITH AN ACCESSORY RENAL ARTERY: A CASE REPORT

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INTRODUCTION:

Knowledge of the variation of renal vascular anatomy has importance in exploration and treatment of renal trauma, renal transplantation, angioplasty or vascular reconstruction.

The renal arteries typically originate from the anterolateral aspect of the abdominal aorta at approximately the level of the L1 and L2 vertebral bodies just below the origin of the superior mesenteric artery (1, 2). These two end arteries carry nearly 25% of the cardiac output to the kidneys (1). Usually there is only one right renal artery and one left renal artery penetrating the hila of each kidney.

Renal artery variations are common in the general population and the frequency of variations shows social, ethnic, and racial differences (3, 4). It is more common in Africans (37%) and Caucasians (35%), and is less common in Hindus (17%) and the populations except Caucasians (18%). The frequency of extra renal arteries (ERA) shows variability from 9% to 76% and is generally between 28%–30% in anatomic and cadaver studies (3, 5, 6). Renal artery variations are becoming more important due to the gradual increase in interventional radiological procedures, urological and vascular operations, and renal transplantation (5, 8).

CASE REPORT:

During routine dissection of the posterior abdominal wall of an approximately 75 years old male cadaver, in the anatomy department of umm Alqura university faculty of medicine, it was observed that there was one accessory renal artery branching from the abdominal aorta just below and 1.3 cm from the main renal artery on the right side. The length of accessory artery is 6.4 cm and its diameter is 5.4 mm (Fig.1). The right main renal artery branched from the abdominal aorta below the superior mesenteric artery passing posterior to the right renal vein as it entered the hilum of the right kidney (Figure 1). The main renal artery on the right was smaller in diameter and length than the accessory renal artery. The venous drainage pattern of the kidneys was normal. No other vascular abnormalities were evident in the abdominal vasculature.

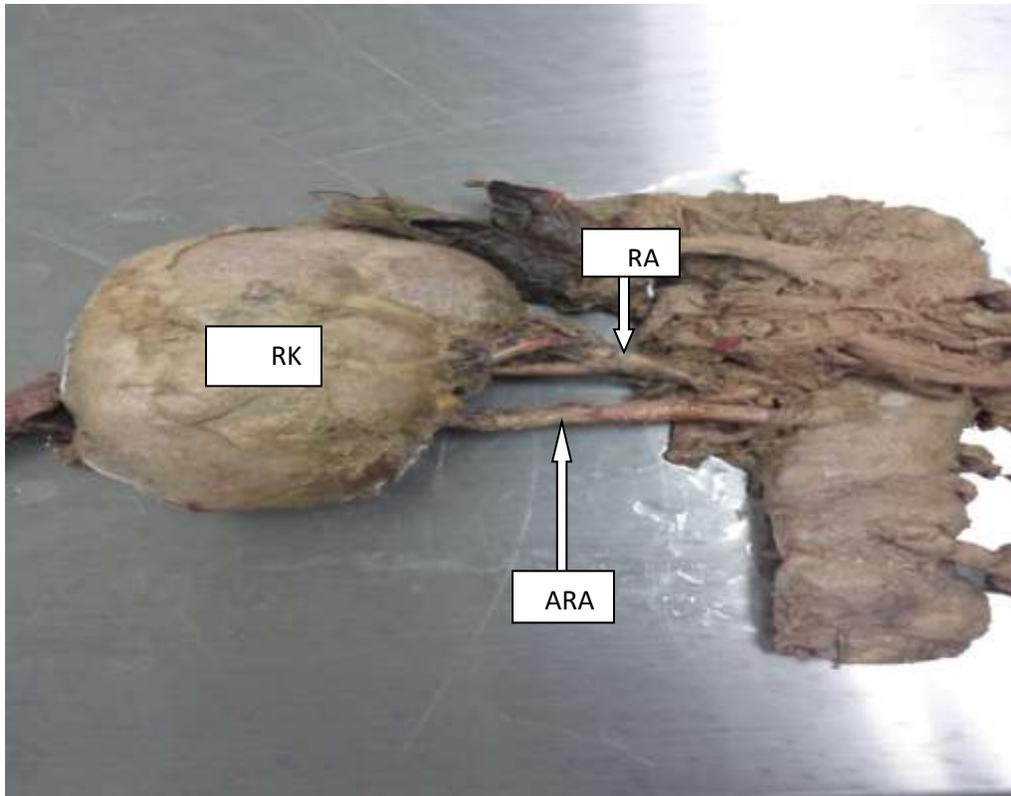


Fig. 1. Right kidney showing the presence of Accessory Renal Artery inferior to main Renal Artery.

RK = Right Kidney

RA = Renal Artery

ARA = Accessory Renal Artery

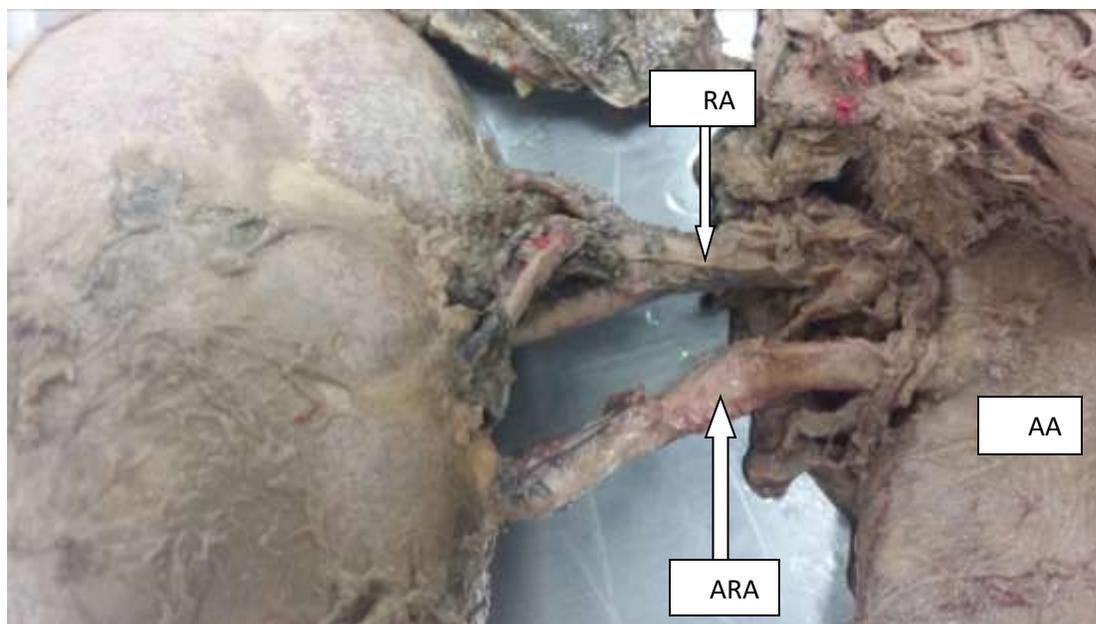


Figure 2: Renal artery (RA) and accessory renal artery (ARA). Originating from the abdominal aorta (AA).

DISCUSSION

Knowledge of the presence of the accessory renal arteries is very important because they may be injured during renal surgery and their presence must be considered in evaluating a donor kidney for possible renal transplantation (9).

The kidney initially located in the pelvic region, later shift to more cranial position in the abdomen. In the pelvis, the metanephros receives its arterial supply from a pelvic branch of the aorta. During its ascent to the abdominal level it is vascularized by arteries which originate from the aorta at continuously higher levels. The lower vessels usually degenerate, but vascular variations such as two or three renal arteries may result from persistence of the embryologic vessels (19).

Most workers have found accessory arteries in 15-35% of the kidneys in their studies (12-15). However Budhiraja (16) reported 11.66% and Elvira Talovic (10) reported 46.15%. Some authors have reported accessory arteries in as low as 2% (17) and as high as 73% (18).

CONCLUSIONS:

Variations in the number of the renal Arteries are very common and it becomes mandatory for the surgeon to understand the abnormality or variation in the renal vasculature. Awareness of the variations in the renal arteries is important for surgeons in performing operations like renal transplantation.

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