

ACCESSORY RENAL VESSELS

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Case report

ABSTRACT

Knowledge of the variations of the renal artery has grown in importance with increasing of renal transplants, vascular reconstructions and various surgical and radiologic techniques

performing in recent years. We report the presence of unilateral doubled renal vessels, discovered on routine dissection of a male cadaver, on the right side; additional renal artery originated from the abdominal aorta. In addition the right suprarenal gland received

arteries from right renal and inferior phrenic arteries only. The right inferior phrenic originated from the right renal artery.

Key words: renal artery, accessory renal vessels.

1. INTRODUCTION

Multiple (accessory, supernumerary) renal arteries and their position are common; accessory renal arteries commonly derived from the abdominal aorta (1, 2, 3, 4), rarely from single trunk (5, 6), common iliac (4, 7), and superior mesenteric (8); rarely originate from inferior mesenteric (9). Also variations in number doubled (3, 4, 5, 6, 7), triplet (2, 4, 10), and four (11) renal arteries have been reported. In addition multiple renal veins have been reported (2, 11, 15). Accessory renal vessels may associated with other vascular variations (10) including testicular (15, 16), suprarenal (2) and inferior phrenic vessels (17, 19).

Knowledge of the variations of the renal artery has grown in importance with increasing numbers of renal transplants, vascular reconstructions and various surgical and radiologic techniques being performed in recent years; as well as during nephrectomy and segmental resection.

2. CASE HISTORY

During a gross anatomy dissection of the abdomen of a 55-year-old male cadaver, at (faculty of Medicine and Health sciences, University of Dongola); we observed multiple variations included the right renal and inferior phrenic vessels. The

right kidney received two (superior and inferior) renal arteries, of which took their origin from the lateral aspect the abdominal aorta just at the level, and below the origin of superior mesenteric artery respectively (Figure 1). Both arteries were equal in size, and reach the kidney through the hilum, the superior lied anteriorly with the renal veins while the inferior behind them; both arteries gave arise to hilar branches.

The right inferior phrenic artery originated from the superior renal

artery. The right suprarenal gland received arteries from superior renal and inferior phrenic arteries only (Figure 2).

In addition the right kidney had two renal veins of almost equal size, both of which terminated into the inferior vena cava (Figure 3). No such variations found in the left side.

3. DISCUSSION

Accessory renal arteries are common and mainly derived from the abdominal aorta (1, 2, 3, 4), as well as our case. Levine (5), and Shimada et al (6), reported that both renal arteries originated from abdominal aorta by single trunk. Pestmalci et al (4), and Asala et al (7) reported accessory renal arteries originated from common iliac artery. Origin of accessory arteries from superior and inferior mesenteric has been reported (8,9). According to number of accessory arteries doubled (3, 4, 5, 6, 7), triplet (2, 4, 10), and four (11) renal arteries have been reported comparing to our case there was unilateral double renal arteries and vein which are enter and emerged through the hilum of the right kidney.

Nayak (2) reported a case of doubled renal veins in addition to supernumerary renal arteries; the inferior one received the testicular vein. Fernandes et al (12) reported case of trip-

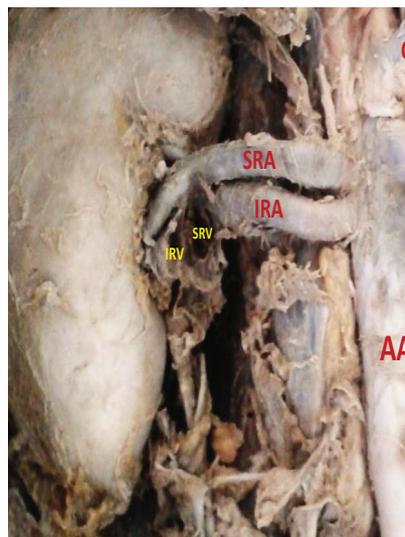


Figure 1. The renal arteries of right kidney AA: Abdominal aorta, CT: Coeliac trunk, IRA: Inferior renal artery, IRV: Inferior renal vein, SMA: Superior mesenteric artery, SRA: Superior renal artery, SRV: Superior renal vein.

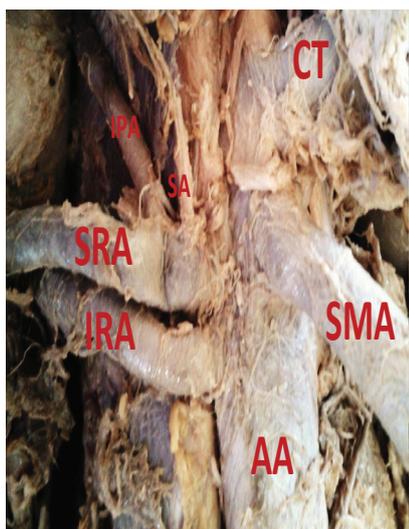


Figure 2. Origin of the right inferior phrenic and suprarenal arteries. AA: Abdominal aorta, CT: Coeliac trunk, IPA: Inferior phrenic artery, IRA: Inferior renal artery, SA: Suprarenal artery, SMA: Superior mesenteric artery, SRA: Superior renal artery.

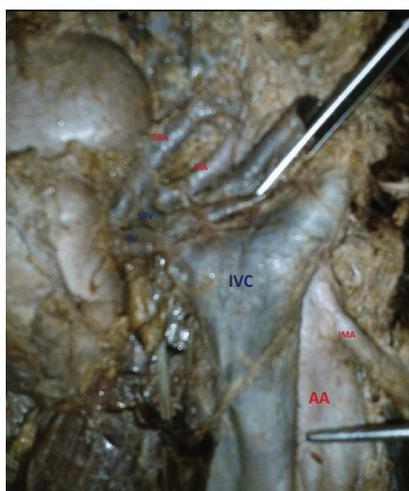


Figure 3. Doubled right renal veins. AA: Abdominal aorta, IMA: Inferior mesenteric artery, IRA: Inferior renal artery, IRV: Inferior renal vein, IVC: Inferior vena cava, SRA: Superior renal artery, SRV: Superior renal vein.

let renal veins drained the right kidney; also the inferior one received the testicular vein. In this case there was two unilateral, right renal veins, no such variation concerning the right testicular. All of the accessory renal veins drained into the inferior vena cava directly with respect of level of drainage (2, 11, 15).

Accessory renal vessels may associated with other vascular varia-

tions (10) including testicular (15, 16), suprarenal (2) and inferior phrenic vessels (17, 18, 19). In this case the right superior renal artery gave rise to both right inferior phrenic and branch to right suprarenal gland.

The authors suggest explanation for this case based on this step of the embryological development of the right renal vessels. There was error in fusion of the dorsal and ventral vessels which appeared in distribution of these vessels at the hilum.

Conflict of interest: none declared

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