Left side variant additional renal artery

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During development of renal vasculature, there are different variations manifested in adult anatomy. Among these, variant additional renal arteries are frequently observed. This case study describes a unilateral variant additional renal artery in a male cadaver during a routine dissection session. Stating renal vasculature pattern is clinically important to anticipate proper management during renal vasculature procedure.

Key words: *Renal artery, Renal vasculature, Embryological process*

Renal arteries are paired end arteries branched from abdominal aorta supplying the kidneys. They consume around 20% of the total cardiac output. Due to embryological and racial reasons there are a lot of structural variations of renal arteries among individuals where variant additional renal arteries being the commonest (1,2).

CASE REPORT

A case of unilateral variant additional renal artery was observed during a routine cadaveric dissection session of retroperitoneal region for second year medical students. In this male cadaver a variant additional renal artery was found on the left side of the body measuring 4.2 cm. It rises from abdominal aorta 1.5 cm below the left renal artery. It entered in to the kidney parenchyma just inferior to hailum of the left kidney; anterior to the upper part of left ureter (Figure 1). No branching of this variant artery is visualized.

Figure 1) *Anterior view of retroperitoneum shows the renal vasculature pattern*

DISCUSSION

A case of variant additional renal artery can be explained through its embryological process. Between the 6th and 9th week of embryonic period, the kidneys ascend from the pelvis to the retro-peritoneum. During their path, they obtain blood supply from temporary arteries which arise from the developing abdominal aorta; later these arteries will be degenerated and replaced by new arteries above till the final paired definitive renal arteries. When these transient arteries failed to degenerate and remain persistent due to incomplete apoptosis, they will appear as variant additional renal arteries (1,2).

These variant renal arteries are the commonest anatomical variations occurring in renal vasculature which is presumed to be found about one third of the time; usually found unilaterally. In favor of current case, Studies showed that left is a common side for variant additional renal arteries to be found (2-4). In spite of this, there are contradicting reports from Brazil and India revealed variant additional renal arteries were found on the right side in most of the cases (5-7).

Even though the common site of origin for such kinds of variant artery is abdominal aorta similar with current case, there are other rare extra aortic origins identified in different literatures, such as from common iliac, inferior mesenteric, main renal artery and celiac trunk (3,8,9). As in this case Variant additional renal arteries are commonly found below the renal arteries explained by kidneys ascending path from the pelvic to retroperitoneal region during embryonic life where the most likely additional arteries fail to degenerate and persist will remain in the lower part of the renal artery (8,9).

Number of additional arteries may vary from person to person. But, up to 5 additional renal arteries might be found unlike our case which is limited only to 1 (10).

CONCLUSION

In conclusion, renal vasculature can be found varying from the commonly existing arrangement. Among these variant additional arteries are the commonest. These variant arteries can found in different number and pattern. Therefore due to the currently advanced renal vasculature surgery including renal transplantation, it is important to state the vascular distribution and variation of renal arteries among different population (Figure 2).

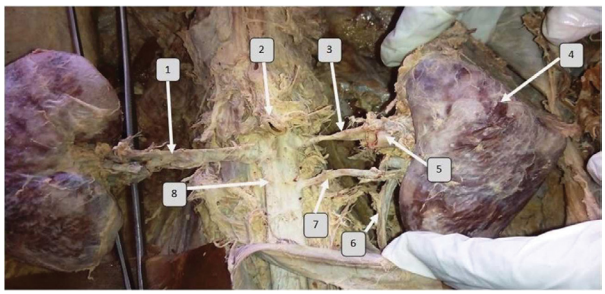

Figure 2) *Anterior view of retroperitoneum shows the renal vasculature pattern. (1-Right renal artery, 2-Superior mesenteric artery, 3-Left renal artery, 4-Left kidney, 5-Left renal vein, 6-Left ureter, 7-Left side variant additional renal artery, and 8-Abdominal aorta)*

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