PRECAVAL RIGHT RENAL ARTERY: A CASE REPORT

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INTRODUCTION

Precaval right renal artery is an uncommon variation in which the right renal artery traverses anterior to the inferior vena cava. A number of clinical implications such as its possible association with ureteropelvic junction obstruction, certain renal anomalies and its risk of being injured during endopyelotomy make this rare variation important especially in surgical practice. In addition, the precaval right renal artery has the possibility of being confused with an aberrant hepatic artery or superior mesenteric vessels during laparoscopic diagnostic and surgical procedures (Brelman 2001).

CASE REPORT

During routine dissection of an elderly male cadaver, the right kidney was found to have its artery traversing anterior to the inferior vena cava. It was a single artery which reached the hilum of right kidney inferior to the right renal vein. It was also observed that there are no postcaval renal arteries on the right side. Its length was 4.4 cm and originated from the lateral aspect of abdominal aorta 4.6 cm inferior to the superior mesenteric artery. This artery divides close to the hilum into anterior and posterior branches. The lower pole of the right kidney is slightly rotated anteriorly as it is usually associated with a precaval right renal artery (Brelman 2001).

Figure 1 - Photograph of the dissected right renal artery

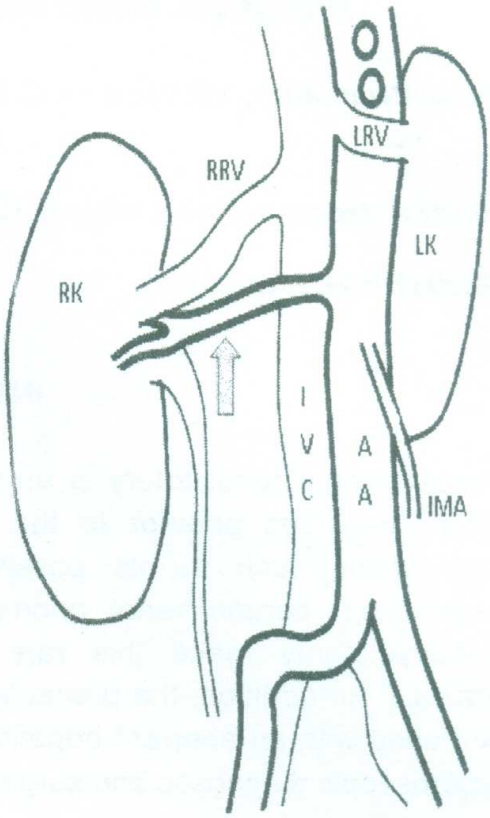

Figure 2 - Schematic diagram to show the anomaly

IVC- inferior vena cava, AA-abdominal aorta, RRV- right renal vein, LK- left kidney, RK- right kidney IMA- inferior mesenteric artery, LRV- left renal vein, arrow indicates right renal artery

DISCUSSION

Precaval and /or postcaval accessory renal arteries, proximal subdivision of the artery into its anterior and posterior branches, and the origin of the artery from the bifurcation of aorta or from the common iliac artery are the commonly described anatomical variations of the right renal artery (Healy 2005).

The prevalence of precaval right renal artery has been recorded as 0.8 % and this artery could be an accessory artery with the presence of a postcaval artery. The precaval artery could be either dominant or accessory in function (Brelman 2001). It may arise from the lateral side of the aorta as in the normal manner or from the anterior side of the aorta. The lower pole of the right kidney may have rotated anteriorly as an association.

Knowledge of this possible anatomical variation of the right renal artery, even though it is relatively uncommon, is essential particularly in abdominal diagnostic and surgical procedures. It may be injured inadvertently, especially during the retroperitoneal approach when only the right gonadal artery is expected to lie in the precaval area. Injury of a crossing vessel during endopyelotomy for ureteropelvic junction obstruction may result in severe hemorrhage. This anterior origin may result in misidentification at laparoscopy of such vessels as the inferior or superior mesenteric or hepatic arteries (Brelman 2001). Awareness of the possible anterior origin of precaval artery would also be important during endovascular embolization or stent placement procedures.

This knowledge would ensure a better outcome in those procedures mentioned above.

REFERENCES

Brelman, RS, Coakley, FV, Meng, MV, Stoller, M, Yeh, BM 2001, 'Precaval right renal arteries: prevalence and morphologic associations at spiral CT', *Radiology, 230(2),* pp. 429 - 33.

Healy, JC, Glass, J, Mundy, AR 2005, Kidney. In: H. Gray., et al. ed. 2005. *Gray's Anatomy, The Anatomical Basis of Clinical Practice,* London, Elsevier, pp.1269 - 84.