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Case Report

Accessory renal artery on the right side- A case report

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Abstract: During routine anatomy dissection of first year MBBS student, we observed accessory renal artery in 60 year old embalmed female cadaver. The superior renal artery had course of normal renal artery while the inferior renal artery which is called as accessory renal artery arose from anterior aspect of abdominal aorta, below superior mesenteric artery. Microvascular technique is employed during renal transplant surgery. Knowledge of such accessory artery is essential for the safe prognosis of renal transplant surgeries.
Keywords: female cadaver, renal artery, accessory renal artery.

INTRODUCTION

Normally a single renal artery arises from lateral aspect of abdominal aorta and supplies the kidney of respective side. Various terms have been used for an additional artery supplying kidney like accessory, supernumerary, aberrant, supplementary. Accessory renal artery may enter into the hilum or reach the pole of each kidney. Accessory renal artery commonly arises from abdominal aorta[1-2]. It may rarely arise from superior mesenteric, inferior mesenteric, common iliac artery[3-5]. Knowledge of variations in the renal artery is important during renal transplants, vascular reconstructions, while performing radiological techniques, during nephrectomy and surgical resection[6,7].

CASE REPORT

During routine gross anatomy dissection of 60 years old embalmed female cadaver we observed accessory renal artery on the right side. The right kidney received superior and inferior renal arteries. Both these arteries originated from abdominal aorta, both of them entered the hilum of right kidney and were 3 cm apart from each other(Fig 1).

Fig-1: Showing origin of both arteries from abdominal aorta.

The superior renal artery arose from lateral aspect of abdominal aorta just below the origin of superior mesenteric artery. This artery reached the hilum of the kidney by passing behind the inferior vena cava and the right renal vein. The accessory inferior renal artery originated from anterior aspect of abdominal aorta 3 cm below the superior renal artery. The inferior renal artery reached the hilum of the kidney by passing anterior to the inferior vena cava and below the renal vein(Fig 2).

Fig-2: Both superior and inferior renal arteries entering hilum and there relation to inferior vena cava.

DISCUSSION

Accessory renal arteries commonly arise from abdominal aorta. Occasionally a single trunk may derive from abdominal aorta which furthur bifurcate into two branches as reported by Levine[8]. The accessory renal artery may arise from other sources like common iliac artery, superior and inferior mesenteric artery[3,9]. The reason for such variation can be explained by the embryological development of renal vessels. There can be defect in the fusion of dorsal and ventral vessels which appear in distribution of these vessels at the hilum. Merklin and Michels classified supernumerary renal arteries depending upon their origin[10]. Felix has given embryological explaination to this variation. In an 18mm fetus, the developing mesonephros, metanephros, suprarenal glands, gonads are supplied by nine pairs of lateral mesonephric arteries arising from the dorsal aorta. Felix divided these arteries into three groups as follows: 1^{st} and 2^{nd} arteries as cranial, 3^{rd} to 5^{th} as middle and 6^{th} to 9^{th} arteries as caudal group[11]. The middle group gives rise to renal arteries. Persistence of more than one group of artery of the middle group results in multiple renal arteries. Thus the accessory renal artery in our case is due to persistence of lateral mesonephric arteries from the middle group.

CONCLUSION

The knowledge of supernumerary renal arteries is essential before performing transplantation surgeries where microvascular techniques are employed to reconstruct the renal arteries. Transplanting a kidney with accessory renal arteries has several disadvantages like acute tubular necrosis, rejection episodes and decreased graft function. Knowledge of variations in the renal artery is important during renal transplants, vascular reconstructions, while performing radiological techniques, during nephrectomy and surgical resection.

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