

CASE REPORT

Aberrent Renal Artery: A Case Report

Purvi Mishra¹, Deepali Onkar²

1- Assistant Lecturer, NKP Salve Institute of Medical Sciences & Research Centre Nagpur

2- Associate Professor, NKP Salve Institute of Medical Sciences & Research Centre Nagpur

Abstract

The renal arteries are a pair of lateral branches arising from the abdominal aorta below the level of superior mesenteric artery at the upper lumbar level (L1-L3). Variation in the number, source, branching and course of the renal arteries are very common. These accessory renal arteries or the aberrant arteries account for about 30% of existence, while 70% owes for the normal type. Existence of the aberrant arteries is accountable in cases of renal pathologies, radiological interventions, renal transplants, and other surgical approach on them. During routine dissection, we come across an unusual case of aberrant artery in a cadaver 60 years of age. In the present case, we noticed that the aberrant right renal artery originated from the normal right renal artery.

Keywords: Renal artery, Aberrant renal artery, Renal pathologies

Address for correspondence: Dr. Purvi Mishra, Assistant Lecturer, NKP Salve Institute of Medical Sciences & Research Centre Nagpur. drpurvimsihra@gmail.com

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Introduction

The renal arteries are a pair of lateral branches arising from the abdominal aorta below the level of superior mesenteric artery at the upper lumbar level (L1-L3). The paired renal arteries take about 20% of the cardiac output to supply organs that represent less than one-hundredth of total body weight [2]. The right renal artery is longer in its course owing to the location of the abdominal aorta more towards the left side of midline. Each renal artery divides into anterior and posterior divisions at or very close to the hilum of the kidney. Further it divides into segmental arteries to supply the respective segments of the kidney being themselves the end arteries [1].

Variation in the number, source, branching and course of the renal arteries are very common. These accessory renal arteries or the aberrant arteries account for about 30% of existence, while 70% owes for the normal type. Further there is a difference in terminologies related to an aberrant renal artery and accessory renal artery. An accessory renal artery is the one that is accessory to the main artery accompanying the same towards the hilus and entering the

kidney through the hilum to supply it, while the aberrant artery supplies the kidney without entering its hilum [2]. Existence of the aberrant arteries is accountable in cases of renal pathologies, radiological interventions, renal transplants, and other surgical approach on them.

Case Report

During routine dissection done in the dissection hall of our college for the purpose of teaching medical students, we come across an unusual case of aberrant artery in a of cadaver 60 years of age. The medical history of this cadaver was not available. In the present case we reported a rare case of aberrant renal artery arising from the renal artery on the right side. Following the fine dissection, the aberrant renal artery was photographed. However, such variation was not found on the opposite side of the same cadaver.

In the present case, we noticed that the aberrant right renal artery originated from the normal right renal artery. This aberrant renal artery had a parallel course with that of the right renal artery lying superior and inferior to it. The trunk of the aberrant renal artery entered the kidney from its anterior surface through its capsule giving off branch to the upper and lower pole.



Discussion

Variations are explained in various literatures owing to the development of mesonephric arteries. These mesonephric arteries extend from C6 to L3 during the development. Most cranial vessels disappear while the caudal arteries form a network, the rete arteriosumurogenitale that supplies in future the metanephros. The metanephros in future develops into adult kidney deriving its blood supply from the lowest suprarenal artery which gives out a permanent renal artery. Persistent roots of the network form these segmental arteries of the adult kidney having variations at their point of origin. The kidney grafts with multiple arteries resulted in post-transplant morbidity and graft loss following the ligation of the polar arteries. The transplantation of the kidney with the single renal artery is technically easier compared to the kidney with multiple arteries [4].

Aberrant or accessory arteries have been of interest to the clinicians for some years, mainly because of the possible part the vessel may play in the causation of hydronephrosis. However, judging by the many descriptions of these vessels in the literature, it is evident that there is no established criterion for aberrance; the term has been applied equally to an additional artery in the renal pedicle, or to a vessel entering the kidney at either pole, whether derived from the main renal artery, from the aorta or from a branch of the aorta [5].

Aberrant renal arteries are common in fused kidneys. Aberrant arteries perforate the substance of the kidney rather than entering its hilum to supply it. These arteries could arise as high as inferior phrenic artery or as low as internal iliac arteries. The unusual vessels may originate from the aorta, as well as gonadal, common iliac, middle sacral, external or internal iliac or superior or inferior mesenteric arteries.

Superior renal polar renal arteries are usually single. They arise as separate branches from the aorta or as branches of the renal artery, inferior suprarenal, inferior phrenic or superior mesenteric artery. Inferior renal polar arteries are usually single and arise from the aorta or renal artery. They have also occasionally been reported arising from asuprarenal, common iliac or superior mesenteric artery. The inferior polar arteries are sometimes doubled, with one arising from the aorta and the other from the renal artery, or the pair from the either source. The inferior polar arteries have been implicated as an etiological factor in a form of hydronephrosis correctable by surgery [6].

The presence of multiple renal arteries has been reported more common in male 28% than female 5.1%.with an incidence of 31.1% in Africans, 5.4% in Indians (10).

Conclusion

Aberrant or accessory arteries have been of interest to the clinicians for some years, mainly because of the possible part the vessel may play in the causation of hydronephrosis. Early detection can be useful for the prevention of further complications.

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