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Research Article

**INCIDENCE OF MULTIPLE RENAL ARTERIES IN ANATOLIA
REGION AND THEIR TYPES**¹Dr Shajia Shabbir, ²Dr. Ali Raza, ³Dr Muhammad Hamza Khurshid¹Woman Medical Officer DHQ Hospital Layyah, ²Arif Memorial Teaching Hospital Lahore,
³Shalamar Hospital Lahore.**Article Received:** October 2019 **Accepted:** November 2019 **Published:** December 2019**Abstract:**

Objectives: There is much complicated embryological development of the urogenital system in human body, so, there incidence of the congenital abnormalities and different structural variation are much frequent. The incidence of these issue depends upon the social racial and ethnic disparities. Particularly, the various variations in the vascular structure of kidneys cannot be underestimated due to its prevalent development in surgeries of transplantation. This introductory study is a surveying archive research work on MRA (Multiple Renal Arteries). This research work aimed to find out the prevalence of the MRA in our populations and to assess different types of MRA.

Methodology: Ethical committee of the institute gave the permission to conduct this research work. In this research work, we reviewed the angiographic images of total one hundred and fifty patients in this research work. SPSS V.20 was in use for the statistical analysis of the collected information.

Results: In this research work, the prevalence of the MRA was present as 42.0%. This outcome was a little bit greater when compared to the other research works conducted on our population but it has correlation with the other literature in this field.

Conclusion: The findings of this research work show that the requirement of the complete radiological assessment before applying the approaches of surgical intervention.

Keywords: MRA, surgical intervention, methodology, prevalence, incidence, population, urogenital system, transplantation.

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INTRODUCTION:

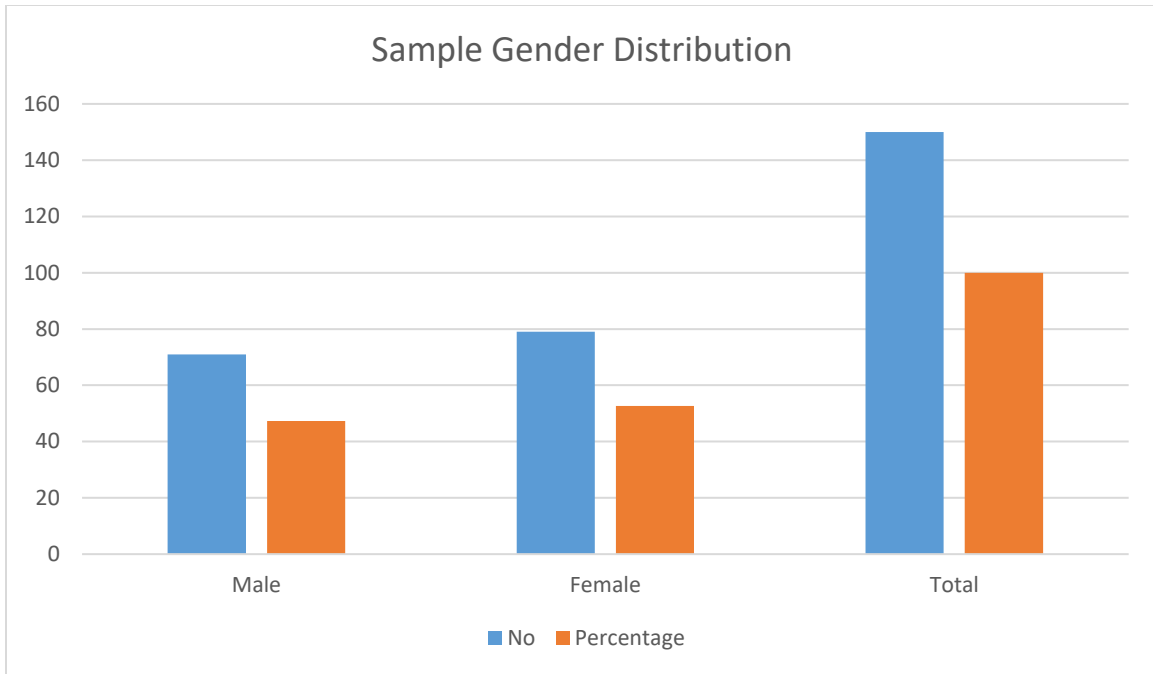
There is much complicated embryological development of the urogenital system in human beings. The rate of congenital abnormalities and the variations are much in these organs in comparison with the other organs of human body. The abnormalities in the structure of kidneys or the vascular variations are of different types. Some of the complications do not have the medical symptoms and still these complication need proper treatment. But, some of those complications are prompting factors for other pathological anomalies due to the reduction in the supply of blood or flow of urine [1]. Majorities of these abnormalities are tenacious structures those do not vanish in the duration of the complete embryological process or occur because of the delay at the completion of development [2]. When kidneys rise from pelvis in the duration of the embryological development, they are provided by the supply of the blood from the close vascular structures. At initial stage, renal arteries are kindling of the common IA (Iliac Arteries). Later, while kidneys rise, aorta supply them more branches and then the disappearing of the inferior branches of iliac arteries occurs. In the 9th week of intra-uterine life, the establishment of the between kidneys with the ascent stops & suprarenal glands. Aorta is the main supplier of most of the cranial branches to the kidneys. These supplied arteries are the permanent arteries of kidney.

Permanent mesonephric arteries separating renal arteries are IPA (Inferior Phrenic Arteries), middle supra renal and gonadal [3]. These causes the continuously alteration in the supply of blood as there is ascend of kidneys. It also explains the high prevalence of the variations in the supply of blood to kidneys. The range of the frequency of the MRA is

from 9.0% to 76.0%, but generally it has alteration between 28.0% & 30.0% [4-6]. We evaluated these in 2 subgroups; extra renal arteries and primary division of the segmental arteries before inflowing from the renal hilum. Majority of the research works on the variations of renal arteries in population of our country are just the case reports [7-9]. There are very limiting research work on the prevalence and various types of the abnormalities of renal arteries particularly in the population of our region [10-11]. The main aim of this research work was to find out the prevalence of the MRA in the persons which will undergo surgery as donors and to assess different types of these anomalies.

METHODOLOGY:

In this research work, we examined the angiographic images of one hundred and fifty patients. The range of the age of patients was from 36 to 52 years with an average age of 41.0 ± 2.44 years. Among these 150 patients, seventy nine were female and seventy one were male patients. We obtained all the images from the records of Radiological Department. All these patients were the persons who underwent examination as renal donors and no patient was present with already existing acknowledges medical disorder. Angiography is the gold standard for the evaluation of the renal vasculature among the donors for kidney transplantation. It is universally acknowledges that this method is the best for the determination of the anatomical variations [12]. In this research work, we performed the examination of these available angiographic images. Ethical committee of the institute gave the permission to conduct this research work. SPSS V. 20 was in use for the statistical analysis of the collected information.



RESULTS:

When we evaluated the radiological images, 58.0% (n: 87 out of total 150) patients were present with the fact that only a kidney was being supplied by a single renal artery. In the remaining 42.0% (n: 63) patients, there

was presence of the multiple renal arteries. There was variation in twenty four out of these 63 patients (37.0%), there was presence of the double renal arteries on right side and in 45.0% (n: 29), the presence was on left side (Figure-1).



Figure 1 (a & b)

We detected the bilateral double arteries in 12.0% (n: 8) patients and in four among these patients, there was presence of the triple renal arteries on right (Figure-2).



Figure 2(a & b)

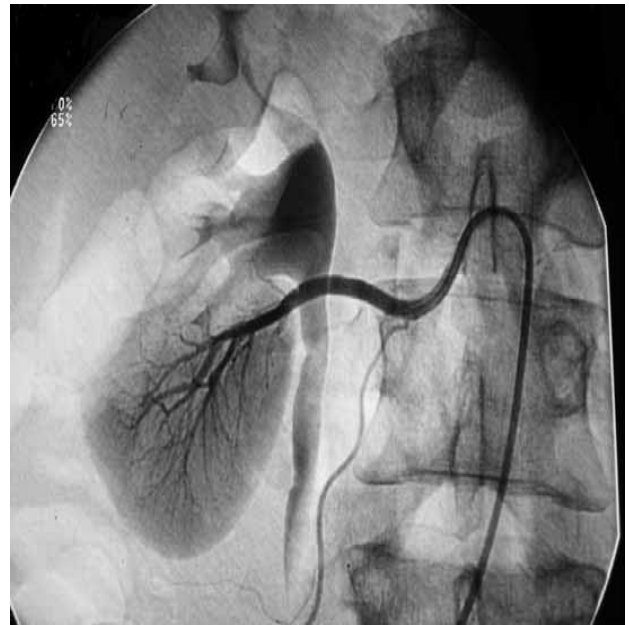


Figure 2 (c & d)

DISCUSSION:

Variation of the renal artery are much frequent in public and obtained significance in last ten years due

to the prevalent advancement in the surgeries for transplantation. Renal vasculature's variations are of much significance not for the surgeons but also for the

specialist in radiology particularly in the interventional approaches of radiology. There are several procedures in use for the examination of the renal vasculature. Cadaver dissections are highly utilized for the determination of the anatomical variations particular in initial years. Examination through radiology is the awesome way for the determination of the vascular variations as well as for the evaluation of their prevalence. Angiography is the gold standard for the evaluation of the renal vasculature among donors of renal plantation.

In current years, computed tomographic angiography & MR angiography are the modern techniques but it has its unique values [12-14, 15]. Kadir in the year of 1991 stated in his research work that 75.0% of persons with the renal artery arise from aorta of abdomen at L1 and L2 vertebrae [16]. One other research work on thirty cadavers conducted by Sancak in 1980, there was report of the rise in abdominal aorta 1.50 centimeters below the SMA (Superior Mesenteric Artery) [17]. Moar & Tobias stated the prevalence of the MRAs as 25.0% to 50.0% and also confirmed that in majority of the patients, there was observance of only single accessory renal artery, but in only few patients, it was greater than one. In one other research work on one hundred and thirty three patients, Sampaio & Passos assessed images of angiography and stated arterial variations in 30.0% patients among total [18, 19]. Novic observed the prevalence of the MRAs as 23.0% and 10.0% for unilateral & bilateral patients correspondingly [20].

One other research work on our population, there was observance of 18.0% to 30.0% MRA in the potential donors for the transplantation of kidneys [21]. One other research work representing our population observed that there was dissection of ninety fetuses after the injection of the colored latex into the vessels. There was no observance of variation in 75.0% patients [22]. The prevalence of MRAs in this current research work was 42.0% which was much high as compared to the other research work. The possibility of having bilateral MRAs varies from 5.0% to 10.0% [4, 20-23]. In this current research work, the rate of occurrence of bilateral MRAs was 12.0%. Sampaio & Passos stated no side differences associated with existence of MRAs [10].

There is variation rate of occurrence of renal artery on the basis of the social, racial and ethnic disparities among populations. Its occurrence is very frequent among Africans (37.0%) & Caucasians (35.0%) as compared to the other populations of the world. It occurrence is not common in Hindus (17.0%) [4].

Occurrence of 42.0% in our population is not expected result. The incidence of the variations in renal vasculature is very common in our population and complications after surgical intervention and danger of the loss of kidneys is very high in the patients present with MRA in comparison with the persons present with the one single renal artery.

CONCLUSION:

The findings of this research work show that the prevalence of MRA as 42.0% in our region. This rate was much high as compared to the other research work in this literature. This research work put emphasis on the requirement of the angiographic assessment for the evaluation of the renal vasculature before the surgical intervention for transplantation.

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