Journal of Morphological Sciences
J Morphol Sci
Brazilian Society of Anatomy

Case Report
J Morphol Sci 2022;39:514-516

Bilateral Polycystic Kidney Observed in a Male Cadaver

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Disclose and conflicts of interest: none to be declared by all authors

ABSTRACT

Introduction: the polycystic kidney disease (PKD) is a renal disease can be either congenital or acquired in which multiple cysts over the kidneys forms. The congenital form of PKD is more common which can occur because of the autosomal dominant or autosomal recessive genetic disorder.

Case report: here we have reported a case of bilateral polycystic kidneys during dissection class in a male cadaver whose had died at age of 55 years. There were multiple cysts were present over both the right and left kidneys. There was a big cyst found inside the kidney when it was cut open. The adrenal glands were appeared normal. The nearby organs like liver was normal. There were no abnormality detected in urethra, urinary bladder, testis or any other organs of pelvic region.

Conclusion: this case report of polycystic kidney diseases having cyst present exterior as well as interior of kidney improves the knowledge for nephrologist and anatomist.

Keywords: Polycystic Kidney; Acquired Disorders of Kidney; Congenital Kidney Diseases.

Introduction

The Gentical disease - polycystic kidney (PKD) causes development of many cysts in the kidney which is of two types- auto dominant and auto recessive. From these, the Autosomal dominant PKD is the more common inherited disorder of the kidneys. In autosomal dominant PKD, patient can get the disorder by inheriting the gene mutation occurs either from father or mother whereas Autosomal recessive PKD is a rare genetic disorder that affects the three organs, apart from both kidneys it affect liver as well. In initial months of life, the signs of autosomal recessive PKD appear in which the patient has to receive the gene mutation from both parents in an autosomal recessive disorder. The autosomal recessive variety of PKD is a progressive disease, where there are cysts forming from the collecting ducts and the size of the kidney enlarge and renal failure occurs in childhood or infant life. In case of autosomal dominant polycystic disease, the renal failure does not take place in childhood and the development of the cysts from all segments of the nephron rather than one part like in recessive one[1].

Case Report

50 years old, embalmed male cadaver was dissected in routine practical class of anatomy for MBBS and it was found that kidneys were having multiple cysts (Fig. 1, 2). When kidney was dissected and observed the interior view, a large cyst was found inside (Fig.3). This was a case of bilateral

Figure 1. Showing the Right polycystic kidney dissected from male cadaver. Black arrows showing cysts in the kidney.

DOI: 10.51929/jms.39.514.2022
ISSN 2177-0298

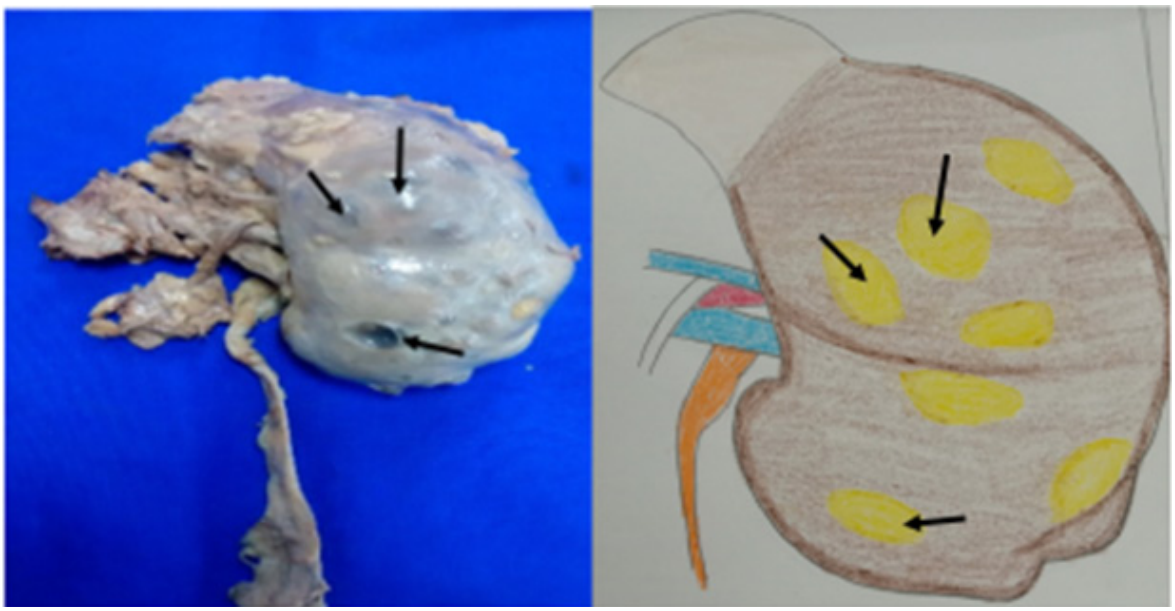

Figure 2. Showing the Left polycystic kidney dissected from male cadaver. Black arrows showing cysts in the kidney.

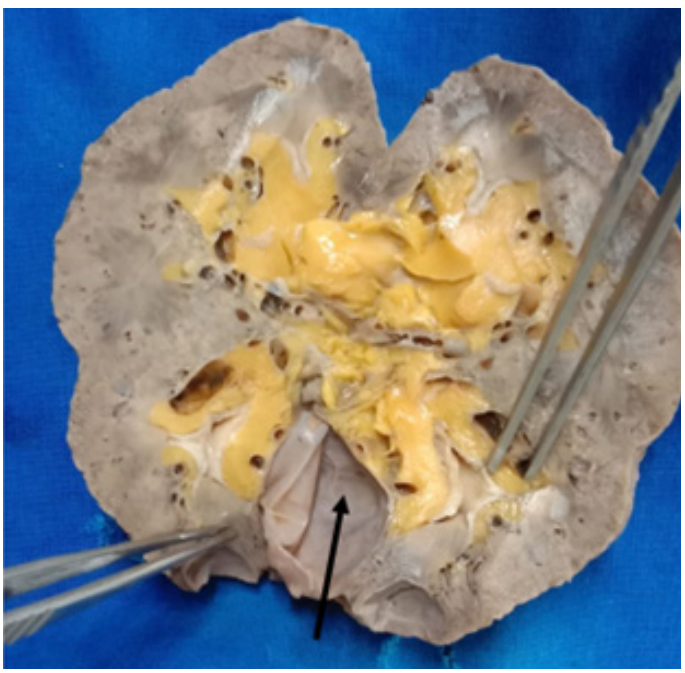

Figure 3. Showing the interior of polycystic kidney. Black arrow showing a large cyst in the kidney.

polycystic kidneys. Other structures related to both kidneys were found normal in size and position like ureter and adrenal glands. While doing dissection of pelvis and abdomen it was noted that all other organs of GIT were normal in size like liver, pancreas, stomach, small intestine, large intestine etc. The walls of renal arteries found dilated and constricted at some places which is suggesting that patient was suffering from hypertension.

Discussion

Polycystic kidney is an inherited disorder and almost bilateral. There is failure in establishing luminal continuity between the nephrons and collecting tubules. The glomeruli continue to function and the filtrate accumulates in the tubules for lack of outlet. Thus the tubule show cystic enlargement[2]. In majority of the patients, autosomal dominant variety of PKD is due to the mutation in the pkd1 and pkd2 gene which are expressed in human embryo from around one and half month of development within the mesonephros. In this type of PKD the dilatation of cyst can occur in any part of nephron, beginning from bowman's capsule, proximal convoluted tubule, distal convoluted tubule, loop of henle and collecting tubules. In infantile cystic renal disease, the collecting ducts are grossly affected which is less commonly observed[3]. Human kidney excretory part and collecting part of the kidney arise from two different sources. The nephrogenic cord give rise to excretory tubules whereas the collecting part of the kidney develops ureteric bud[1]. Adult polycystic disease of the kidney is an important cause of renal failure[4]. Polycystic kidney more common anomaly due to failure of fusion between secretory (excretory) and collecting part and characterized by numerous small cysts filled with urine within kidney[5]. As Autosomal recessive PKD (ARPKD) is much rarer than Autosomal dominant PKD (ADPKD), the available epidemiological data for ADPKD are much extensive from ARPKD[6]. The clinical study was done in Denmark and Minnestoa, As per there records the number of patients suffering from ADPKD are between one in 400 to 1,000 live births. On this basis of data, around 10 million people worldwide are affected from this disorder[7, 8].

The autosomal dominant PKD can increase blood pressure, can lead to renal failure, urinary tract infections (UTs), renal stones, cysts in liver and pancrease, abnormality in cardiac valve, diverticula as well as brain aneurysm. The autosomal recessive PKD leads to the death because of respiratory problems,

renal failure, liver damage, increase blood pressure and urinary infection. Genetic testing is very useful to indentify gene mutation in the cells responsible for autosomal dominant PKD. Radiological test includes CT-scan, MRI, USG-abdomen. For autosomal dominant PKD, the symptomatic treatment can be given like analgesic for pain, anti-hypertensive for high blood pressure, antibiotics for UTI, and dialysis or kidney transplant for renal failure.

Autosomal recessive PKD is treated by nutrition therapy for growth failure, artificial ventilation for breathing problem, peritoneal dialysis for renal failure children, anti-hypertensive medicine for hypertension but there is no treatment available for enlarged kidney except kidney transplant. Kidney disease leads to renal cysts, pain abdomen, hypertension, renal infection, hemorrhage, and failure of kidney. Extra renal involvement includes hepatic cysts, colonic diverticulosis, intracranial aneurysms and prolapse of mitral valve[9]. According to some authors, the old hypothesis of failure of nephrons to unite with collecting tubule is not accepted anymore. The identified 2 genes were topographically found at the short arm of the chromosome number 16[10]. Ravine *et al*. (1994) proposed the diagnostic criteria for polycystic kidney disease 1 (PKD1). In people aged less than 30 years, presence of at least two cysts in either one or two kidneys, at least 2 cysts in both the kidneys in people aged between 30-59 years is mandatory for the diagnosis of the PKD. The criteria for the patients aged above 60 years, at least four cysts in each kidney are essential[11]. In our case we have observed multiple cysts in both the kidneys in 55 years adult male cadaver which is indicative for PKD.

Conclusion

This case report of congenital or acquired disorder of polycystic kidney will helpful for physician, surgeons, nephrologist, embryologists and anatomist. It will improve the knowledge of anatomist to be vigilant during dissection.

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Received: June 20, 2022
Accepted: August 17, 2022

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