

ORIGINAL ARTICLE

A STUDY OF KIDNEY ANOMALIES - HYPO PLASTIC KIDNEY

Komarabattina Rattaiah¹, Kotikala Prabhakara Rao²

HOW TO CITE THIS ARTICLE:

Komarabattina Rattaiah, Kotikala Prabhakara Rao. "A Study of Kidney Anomalies - Hypo Plastic Kidney". Journal of Evidence based Medicine and Healthcare; Volume 2, Issue 08, February 23, 2015; Page: 959-962.

ABSTRACT: INTRODUCTION: The subject of kidney anomalies has created much interest to the scientists in late 1950 and 1960 with the aim of prevention and curing. Etiological factors includes various genetic environmental factors, teratogens such as physical, chemical, nutritional, causing mutations in the genes. Hypoplastic kidney indicates small kidney that have less normal number of calices and nephrons. **MATERIAL AND METHODS:** The present study has been under taken on 76 kidneys from cadavers and 60 from sonograms and 40 from fetal kidneys. Kidneys identified and photographs are taken in situ wherever necessary **OBSERVATION:** 10 hypo plastic kidneys were observed. **SUMMARY AND CONCLUSION:** The cause for this is many birth defects, it may be unilateral or bilateral, in unilateral the other kidney shows greater compensatory group.

KEYWORDS: Hypoplasia, Dysplastic kidney, Teratogen, Embryonic, Meta nephric.

INTRODUCTION:

- The subject of kidney anomalies including their incidence has created much interest to the scientist in late 1950 & 1960 with the aim of prevention and curing them as much as possible.
- Knowledge about their incidence particularly helps us to know how frequently they are seen in the population and makes us to search the possible etiological factors for search high occurrence.
- Embryology^{1, 2} explains the etiological factors of many birth defects including the anomalies of the kidney and among the explained many are due to various genetic and environmental factors teratogens such as physical, chemical, nutritional, and biological causing mutations in the genes and affecting the development at various stages of growth it is the intricate action between the differentiation and maturation of the organ systems of the body.
- Hypo plastic kidney³ indicates small kidney that have less than normal number of calyces and nephrons but are not dysplastic or embryonic, contrary to the hypo plastic kidney, a dysplastic kidney contains focal, diffuse or segmentally arranged primitive structures, specifically primitive ducts, as a result of abnormal meta nephric differentiation. Further dysplastic kidney may or may not show cysts, and in the former case it will be called as multi cystic dysplastic kidney (MDK).
- Hypoplasia³ may be bilateral or unilateral. In unilateral cases the other kidney usually shows greater compensatory growth. True Renal hypoplasia is congenital³ with no apparent familial tendency. This condition may be demonstrated by ultra sound and excretion urography but diagnosis is confirmed by histopathological examination where the renal parenchyma must be normal without dysplasia.

ORIGINAL ARTICLE

- The incidence of renal hypoplasia exactly unknown, because many investigators fail to distinguish among the various causes of small kidney. But following data regarding incidence of unilateral renal hypoplasia is available.
- The comparative statement of incidence of hypoplastic kidney is as follows:

Name of the worker (s)	Incidence	Method adopted
• Campbell (1963)	1:577(0.18%) 1:462(0.21%)	Autopsies of children Autopsies of adults
• Rubin stein & co-workers (1961)	2.5:100(2.5%)	Autopsy

Table 1

- Renal hypoplasia may be associated with other anomalies like limb deformities, gall bladder agenesis, VSD etc.

AIM OF STUDY:

- An attempt has been made to know the various anomalies.
- The study has been taken up with the fond hope of helping the clinician, sonologist, and surgeons during their routine work.
- To apply this knowledge to the incoming post graduates in their research works.

MATERIALS & METHODS: The present study has been undertaken on 76 kidneys from cadavers and 60 from sonograms and 40 from foetal kidneys. The study was started and finished in a period of 2 years. The specimens from cadavers were obtained from Siddhartha Medical College, Vijayawada and Kakatiya Medical College, Warangal. The sonograms are obtained from GGH Vijayawada from the in and out patients attending to the radiology department. The parameters like weight, length of the kidney, breadth of the kidney and the breadth at the superior pole, inferior pole and at the hilum are taken with the help of electronic weighing machine, vernier calipers, the scale and thread are used. During the routine dissections the kidneys identified and the photographs are taken in situ wherever necessary. The parameters are taken, anomalies are noted and detailed diagrams are drawn.

OBSERVATION: Another anomaly observed was hypoplastic kidney. Campbell (1963) observed an incidence of 1:577 (i.e. 0.18%) on autopsies of children and 1:462 (i.e. 0.21% on the autopsies done an adult. By Rubin stein and co-workers (1961) incidence of occurrence is 2.5% in autopsies. In the present study 10 specimens showed hypoplastic kidney out of 176 cadaveric specimens (i.e. 5.6%)-6 on right side and 4 on left side.

SUMMARY & CONCLUSION: It is of interest to note that congenital anomalies were noted from as early as 460-377 B.C. it is stated that anomalies of the urinary tract rank 3rd or 4th in positions and they constitute 3-4% of total congenital anomalies and seen in 2-3% of population. The present study is confined mainly to study various anomalies of kidney. The study was undertaken in 176

ORIGINAL ARTICLE

specimens, which includes cadavers (including fetuses) and sonograms, ten hypoplastic kidneys were reported. Further in the present study, a foetal kidney showed unilateral agenesis. To conclude the findings of the present study may be useful to clinicians and urologists at large.

REFERENCES:

1. Arthur Keith 1948, Human Embryology and Morphology Publ. Edward Arnold Land.
2. 1948, Development of urogenital system Human Embryology & morphology. 577
3. Gutierrez R: Surgical aspects of renal agenesis: with special reference to hypoplastic kidney, renal aplasia, congenital absence of one kidney, Arch Surg 1933, 27: 686.
4. Alexander, Magri & Purpan, 1950, Crossed Ectopia of Kidneys in absence of contralateral kidney. Embryology for surgeons, 443.
5. Anson BJ. Kurht LE: Common variations in the renal blood supply. Surg, Gynec, Obstet 1955:100:157.

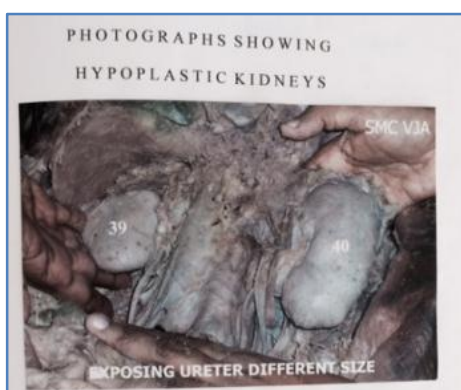


Figure 1

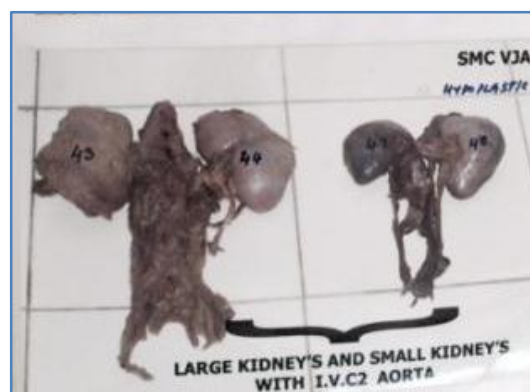


Figure 2

Sl. No.	Specimen No.	Sex	Right Kidney	Left Kidney
1	11	Male	Hypoplastic Kidney	-
2	12	Male	-	Hypoplastic Kidney
3	13	Male	Hypoplastic Kidney	-
4	16	Female	Hypoplastic Kidney	-
5	37	Female	Hypoplastic Kidney	-
6	39	Male	Hypoplastic Kidney	-
7	47	Male	Hypoplastic Kidney	-
8	48	Male	-	Hypoplastic Kidney
9	55	Female	-	Hypoplastic Kidney
10	58	Male	-	Hypoplastic Kidney

Table 2: HYPOPLASTIC KIDNEY

ORIGINAL ARTICLE

Name of the Workers (5)	Incidence	Method Adopted
Campbell (1963)	1: 577 (0.18%)	Autopsies of Children
Campbell	1: 462 (0.21%)	Autopsies of Adult
Ruben Stein & co- workers (1961)	25:100 (2.5%)	Method Autopsy
Present Study	10: 176(5.6%)	Discussions (Foetal& Adult)

Table 3

AUTHORS:

1. Komarabattina Rattaiah
2. Kotikala Prabhakara Rao

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Anatomy, Katuri Medical College, Katuri Nagar, Guntur.
2. Professor & HOD, Department of Biochemistry, Katuri Medical College, Katuri Nagar, Guntur.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Komarabattina Rattaiah,
Sarada Colony, 17th Lane,
866, Guntur,
Andhra Pradesh, India.
E-mail: drkotikala@gmail.com

Date of Submission: 02/02/2015.

Date of Peer Review: 03/02/2015.

Date of Acceptance: 09/02/2015.

Date of Publishing: 17/02/2015.