CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.3235393

Available online at: http://www.iajps.com *Research Article*

OCCURRENCE OF NEPHROLITHIASIS & MICROLITHIASIS AMONG CHILDREN

[1]Dr Muhammad Awais, [2]Dr Saba Bashir, [2]Dr Rabia Nazir

[1]Jinnah Hospital Lahore, [2]DHQ Hospital Rawalpindi.

Article Received: March 2019 **Accepted:** April 2019 **Published:** May 2019

Abstract:

Objectives: *Nephrolithiasis is very serious complication for the health of children, current data has displayed that the occurrence of nephrolithiasis among children is increasing in both developed and under development countries. Pakistan, a major country in South Asia has a high rate of prevalence of kidney stones among young population. The purpose of this research work is to find out the occurrence of Microlithiasis & nephrolithiasis among children in Lahore.*

Methodology: *This research was a transverse study on the infants having less than one year of age suffering from the presence of Microlithiasis & nephrolithiasis for a period of 3 months from April 2018 to July 2018. Collection of the information about demography, total number of stones, stones size, the availability of the hydronephrosis in the kidneys, jaundice past history & past history of family for kidney stones carried out.*

Results: *The prevalence of the Microlithiasis & nephrolithiasis was 0.0487 and 0.0324, correspondingly. The most important reason for the complication was fever (30.0%). Male outnumbered the female patients. Twenty percent of our patients found with a positive history of kidney stones among their close relatives.*

Conclusion: *This particular found with high prevalence of these. There is a need of population based as well as studies with case and controls to conclude the occurrence of kidney stones in other regions of the country to reach at the cause of the disease.*

Keywords: *Kidney, Microlithiasis, Nephrolithiasis, Outnumber, Demography, Jaundice, Recurring, Population.*

Corresponding author:

Dr. Muhammad Awais,

Jinnah Hospital, Lahore.

QR code

Please cite this article in press Muhammad Awais et al., ***Occurrence of Nephrolithiasis & Microlithiasis among Children.,*** *Indo Am. J. P. Sci, 2019; 06(05).*

INTRODUCTION:

Kidney stones is a severe complication of the health of children [2] & these children face the problems of growth and feeding [3]. But the occurrence of nephrolithiasis is increasing day by day in many countries in current times [1, 4, 5] there are a very less studies on the urolithiasis of children [6, 7], there were no data of separate infants of less than twelve month of age in those studies. The diagnosis of the kidney stones among children for the prevention of the progression of failure of kidney as well as recurring of the kidney stones should be the major aim for early discovery of the stones [8].

Pakistan is located in the South part of Asia and there is a high rate of occurrence of kidney stones in the center of Punjab among adults [9]. In accordance with our awareness, there is no published report about the occurrence of the kidney stones among the infants of this region of country. It was available in the reports [2] that urolithiasis among children is very severe issue. This study aimed to determine the occurrence of nephrolithiasis & microlithiasis among infants of Lahore city.

METHODOLOGY:

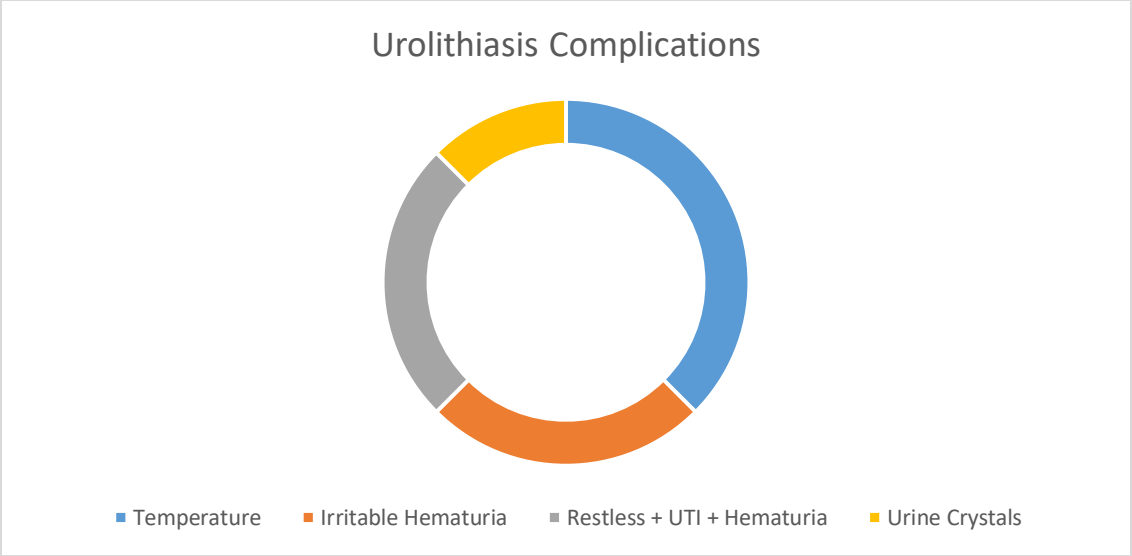
All the children having less than 1 year of age detected with the presence of kidney stones got referral from different clinic to the pediatrician of the Jinnah Hospital Lahore, were the part of this research work. The confirmation of the kidney stones confirmed with the help of ultrasound. The collection of the data carried out with the help of interview from the mothers of those infants & from the documents of ultrasonography. Demographic information, amount of stones in each kidney, stones location, hydronephrosis availability in the kidneys & major clinical factors, previous surgical background, the past family history for stone diseases, recurring of kidney stones and findings of the imaging results gathered in the documents. Examination of the past history of jaundice among the infants also carried out in seventy-two hours after birth or its associated hospitalization. Categorization of the less than 3 millimeters kidney stones carried out. Ethical committee of the main hospital gave approval to conduct this case study. SPSS V.17 was in use for the analysis of the collected information. P value of 0.050 was significant.

RESULTS:

Among ten diagnosed infants, the average age of the patients was 4.090 months. The infant with the smallest age was with one week of age and elder patient was of nine months of age. Male patients outnumbered the female patients. Nephrolithiasis was available in 36.40% (n: 4) infants & remaining patients were available with microlithiasis. Microlithiasis was present in the left side kidney in 4 patients and it was available in the right kidney in 2 patients. Total four patients were available with bilateral urolithiasis. Half amount of the patients was available with the more than one stone in the kidneys. We detected 8 stones in a single patient. More than half quantity of the patients had not stated any availability of hydronephrosis in their report of ultrasonography. Hydronephrosis was available in only 3 patients. The major symptom of the complication was fever as mentioned in Table-1.

Table-I: Main Complication of Urolithiasis.

Complications	Percentage Prevalence
Temperature	30.00%
Irritable Hematuria	20.00%
Restless + UTI + Hematuria	20.00%
Urine Crystals	10.00%



Excluding 2 infants whose father was available with disease of kidney stones (one found with surgical intervention for the removal of the stone in his childhood), none of the patient was available with the family history for this disease in close relatives. Citrate potassium for three days was available in the prescription of every infant. Excluding 2 patients, all of the infants were the outcome of term pregnancy. The recognition of all the stones carried out with the help of ultrasonography. Excluding only one patient, all the infants were the victims of jaundice after their birth.

The authentic data from the heads of health centers of the region displays that high and low rates of births were in September & May correspondingly. We were able to find ten children in a duration of 3 months in a single hospital, it means that the occurrence was 10 per 123.3 new births. We can say that the occurrence of Microlithiasis as well as nephrolithiasis was 0.0487 & 0.0324 respectively.

DISCUSSION:

Majority of the case works on urolithiasis among infants did not include children of less than twelve month of age as isolated group of age [2, 5, 10-14]. This research work is among few studies on the occurrence of microlithiasis & nephrolithiasis prevailing in infants. Mohamad J [15] concluded that urolithiasis is not common in the infants having age of less than 5 months of age if the baby was not outcome of immature birth. It appears that this current work discovered the highest occurrence of both complications in the whole world i.e. in this particular region, the frequency of kidney stones was 484.10 & 514.90 times greater than the prevalence in New Zealand [6] & Iceland [5] correspondingly. The case study of Iceland [5] included the patients of less than eighteen year of age. But the actual occurrence of the nephrolithiasis and microlithiasis in current research work appears to be very high as compared to the incidence of other works.

Only 20.0% participants of this research work were available with the strong history of kidney stones in the fathers. Positive past history of family for kidney stones was 16.0% in the close relatives of children in UK [3]. Total 1/3rd children in Iceland [5], 10.0% in Tunisia [11] & 25.0% in Ontario, Canada [14] found with positive history of family for the renal stones. One research work in Turkey on infants discovered that 60.0% infants were available with positive history of family for urolithiasis [16]. In this research work, male patients outnumbered female patients which is consistent with majority of the studies of the past on the urolithiasis of infants in UK [3], Ontario, Canada [14] & Kuwait [17].

Tablet-II: Incidence of Urolithiasis in other studies.

Location	Study Period	Age	Occurrences	Remarks
Kuwait	Jan 1996 to Sep 2000	< 15 yrs	1.8 / 100,000	Only 31 Children with an average age of 38 Months
Iceland	1995 to 2000	< 18 yrs	5.6 and 6.3 / 100,000 children less than 18 and 16 years of age, respectively	All children inclusion with Nephrolithiasis in the whole Iceland. The hospital admission rate was 0.98/1000.
New Zealand	On Oct 2008, Pediatricians were asked to report any Nephrolithiasis in the previous 12 months	< 1 yr	Incidence: 0/55500.The upper 95% confidence interval for this zero incidence is approximately 6.7/100000 or 1 / 15000.	There were 86% responses from pediatricians.
Emergency Departments of South Carolina state, USA	First period: 1996; Second period: 2007	< 18 yrs	First period: 7.9 per 100000; Second period: 18.5 per 100000	Not reported clearly (because authors had categorized patients into 4 age group)

There were only 2 infants with kidney stones in New Zealand last complete year & both of the infants were from male gender [6]. In Iran, the ratio was 1.172 & 2.252 among Qom Children & in infants of Iranian LBW correspondingly. But the amount of the male patients was much high in this current work as compared to other case studies. Inn current case study, the main reason of the complication was fever. Restlessness was the main symptom among the infants suffering from urolithiasis in Turkey followed by high temperature [8]. Whereas 90.0% infants of current work were available with jaundice in first seventy-two hours after their birth, but it appears that there is no published case study on the relationship between the incidence of kidney stones & jaundice.

There are some limitations of this research work

1. We did no examination for the determination of the composition of these stones because no infant underwent surgery for the removal of those stones at the very moment.
2. There was non-availability of the laboratory evaluations like metabolic anomalies or the deficiency of the financial as well as the facilities of the laboratories.
3. There was the belief of some researchers that CT KUB utilization is necessary for the confirmation of the microlithiasis.
4. The small sample size was also a limitation of the work.

CONCLUSION:

The results of this case study concludes that there is very high occurrence of microlithiasis & nephrolithiasis in this particular region of our country. There is a need of case control studies as well as research work on populations of different regions to find out the actual presence of the disease of kidney stones in the country among infants and to know the reason of the high prevalence of disease.

REFERENCES:

1. Lopez M, Hoppe B. History, epidemiology and regional diversities of urolithiasis. Pediatr Nephrol 2010;(25):49–59.
2. Edvardsson V, Elidottir H, Indridason OS, Palsson R. High incidence of kidney stones in Icelandic children. Pediatr Nephrol 2005;(20):940–944.
3. Dickson N, Kara, T, Tuohy P. Rapid national survey of renal stones in New Zealand infants. J Paediatr Child Health 2009;45(11):633-635.
4. Alpay H, Ozen A, Gokce I, Biyikli N. Clinical and metabolic features of urolithiasis and microlithiasis in children. Pediatr Nephrol 2009; 24:2203–2209.
5. Guven AG, Koyun M, Baysal YE, Akman S, Alimoglu E, Akbas H, et al. Urolithiasis in the first year of life. Pediatr Nephrol 2010; 25:129–134.
6. Basiri A, Shakhssalim N, Khoshdel AR, Naghavi M. Regional and seasonal variation in the incidence of urolithiasis in Iran: A place for obsession in case finding and statistical approach. Urol Res 2009;(37):197–204.
7. Sahu LK, Hota D, Sahu JK, Haldar S, Sil K. Paediatric urolithiasis in western orissa - A 10-year study. Indian J Urology 2000;17(1):20—23.

8. Sepahi MA, Heidari A, Shajari A. Clinical manifestations and etiology of renal stones in children less than 14 years age. Saudi J Kidney Dis Transpl 2010;21(1):181-184.
9. Jallouli M, Jouini R, Sayed S, Chaouachi B, Houissa T, Ayed M, et al. Pediatric urolithiasis in Tunisia: A multi-centric study of 525 patients. J Pediatric Urology 2006;2(6):551-554.
10. Coward RJ, Peters CJ, Duffy PG, Corry D, Kellett MJ, Choong S, van't Hoff WG. Epidemiology of paediatric renal stone disease in the UK. Arch Dis Child 2003;88(11):962-965.
11. Sas DJ, Hulsey TC, Shatat IF, Orak JK. Increasing Incidence of Kidney Stones in Children Evaluated in the Emergency Department. J Pediatr 2010;157(1):132-137.
12. Nasseri F, Azhir A, Rahmanian S, Iranpour R, Adibi A. Nephrocalcinosis in very low birth weight infants. 2010;21(2):284-289.
13. Mortazavi F, Mahbubi L. Clinical Features and Risk Factors of Pediatric Urolithiasis. Iran J Pediatr 2007;17(2):129-133.
14. VanDervoort K, Wiesen J, Frank R, Vento S, Crosby V, Chandra M, et al. Urolithiasis in Pediatric Patients: A Single Center Study of Incidence, Clinical Presentation and Outcome. J Urology 2007; 177:2300-2305.
15. Acar B, Arikan F, Emeksiz S, Dallar Y. Risk factors for nephrolithiasis in children. World J Urol 2008; 26:627–630.
16. Chang Kit L, Filler G, Pike J, Leonard MP. Pediatric urolithiasis: Experience at a tertiary care pediatric hospital. CUAJ 2008;2(4):381-386.
17. Mohamed J, Riadh M, Abdellatif N. Urolithiasis in infants. Pediatr Surg Int 2007; 23:295–299.
18. Guven AG, Koyun M, Baysal YE, Akman S, Alimoglu E, Akbas H, Kabaalioglu A. Urolithiasis in the first year of life. Pediatr Nephrol 2010; 25:129–134.
19. Al-Eisa AA, Al-Hunayyan A, Gupta R. Pediatric urolithiasis in Kuwait. Int Urol Nephrol 2002;33(1):3-6.