ORIGINAL ARTICLE

Incidence of Pediatric Urinary Stones in Orphanage Children in Pekanbaru, Riau Province of Indonesia

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ABSTRACT

Introduction: Urinary stones are seldom in children. Currently the incidence of urinary stones in children increases three time folds in the last third decade and occurs in the first decade of life.

Objectives: The aim of this study is to identify the incidence of pediatric urinary tones in orphanage children.

Materials and Methods: We examined urinary stones by using ultrasound in orphanage children of two orphanages in Pekanbaru, Riau Province, Indonesia. Univariate test was used for statistical analysis. Approval on the study was obtained from the Ethical Review Board for Medicine and Health Research, Medical Faculty, University of Riau.

Results: There were 88 orphanage children in the study in which orphanage girls were more (54,5%) than the boys (45.5%), 13 – 15 age group was the most (34.1%) and the least (4.5%)was 4 – 5 age group. The most symptom was flank pain (11.4%), followed by voiding pain (dysuria) (5.7%), bloody urine (hematuria) (5.4%), spontaneously passing stone (2.3%), urinary stone history (1.3%) and family urinary stone history (1.3%). There was no positive result of urinary stone in urologic physical examinations. In all orphanage children, there was no urinary stones found in ultrasound examinations but there were 23.9 of cystitis, less simple kidney cyst and kidney hypoplasia.

Conclusions: Although we found several symptoms and signs of urinary stone but in all orphanage children, there was no urinary stones found in ultrasound examinations but there were 23.9% of cystitis.

Keywords: Children, incidence, orphanage, urinary stone

INTRODUCTION

Urinary stone has been considered as main health problems sufferrred median age men between 20 – 50 years. In adult, urinary stone is not a cause of death but associated to financial burden due health care and loss of job productivity for peak work. In general there are constant of high urinary stone prevalence in last three decades and initial age of diagnosis has been lower. The epidemiology trend differs due to gender in certain geographic area and has been caused by diet changes such as increasing glucose contained food substances, increasing obese incidence, uncertain high temperature due to global warming and high prevalency of urology disorders. Due to all these reasons, urinary stones is often seen as rare conditions in children. Nevertheless, current researches showed that urinary stone incidence in children has been increased three time fold in the last ten years and the problems might occur in the first decade of life[1,2].

Most factor caused urinary stone is hypercalsiuria that becomes sporadic or family. The management principle are increasing fluid intake, simple restriction of animal protein intake, and increasing fruit and vergetable intakes[1,3,4,5]. Until recently there is no publication on urinary stone incidence in children of Pekanbaru, Riau Province, Indonesia.

MATERIALS AND METHODS

We examined urinary stones by using ultrasound in orphanage children of two orphanages in Pekanbaru, Riau Province, Indonesia. Univariate test was used for statistical analysis. Approval on the study was obtained from the Ethical Review Board for Medicine and Health Research, Medical Faculty, University of Riau.

RESULTS

There were 88 orphanage children in the study. Table 1 shows that orphanage girls were more (54,5%) than the boys (45.5%).

Table 1. Distribution of orphanage children according to gender

Gender	Cases (n=88) (%)
Boy	40 (45.5)
Girl	48 (54.5)

Table 2. Frequency distribution of orphanage children according to age.

Age (year)	Cases (n=88) (%)
≤ 3	0 (0)
4 – 5	4 (4.5)
6 – 8	10 (11.4)
9-10	13 (14.8)
11-12	12 (13.6)
13-15	30 (34.1)
16-18	19 (21.6)

Table 2 shows 13 – 15 age group was the most (34.1%) and the least (4.5%) was 4 – 5 age group.

Table 3 shows the most common symptom was flank pain (11.4%), followed by voiding pain (dysuria) (5.7%), bloody urine (hematuria) (5.4%) and spontaneously passing stone (2.3%).

Tabel 4 showed There was no positive result of urinary stone in urologic physical examinations Costo Vertebrae Angle (CVA), supra pubic nor external genital.

Tabel 5 showed in all orphanage children, there was no urinary stones found in ultrasound examinations but there were 23.9 of cystitis, less simple kidney cyst and kidney hypoplasia.

Table 3. Frequency distribution of orphanage children according to symptoms.

Symptoms	Total	Boys	Girls
Flank pain	10 (11.4)	4 (4.6)	6 (6.8)
Voiding pain (dysuria)	5 (5.7)	3 (3.4)	2 (2.3)
Bloddy urine (hematuria)	4 (5.4)	2 (2.7)	2 (2.7)
Urinary Tract Infection (UTI)	-	-	-
Spontaneously Passing stone	2 (2.3)	-	-
Urinary stone history in family	1 (2.3)	-	-
Total	22 (26.1)	9 (13)	11 (13.1)

Figure in parenthesis indicate percentage.

Table 4. Frequency distribution of orphanage children according to physical examination

Urology Status	Case (%)
General condition	88 (100)
-Costo Vertebrae Angle (CVA)	88 (100)
-Supra pubic	88 (100)
- External Genital	88 (100)

Table 5. Frequency distribution of orphanage children according to ultrasound examination of urinary tract

Urinary Tract	Total	Boys	Girls
Kidney			
-stone	0 (0)	0 (0)	0 (0)
-infection	0 (0)	0 (0)	0 (0)
-right kidney simple cyst	1 (1.1)	1 (1.1)	0 (0)
Ureter			
-stone	0 (0)	0 (0)	0 (0)
-infection	0 (0)	0 (0)	0 (0)
Urinary bladder			
-stone	0 (0)	0 (0)	0 (0)
-cystitis	21 (23.9)	12 (13.6)	9 (11.3)
Urethra			
-stone	0 (0)	0 (0)	0 (0)
-infection	0 (0)	0 (0)	0 (0)

Figure in parenthesis indicate percentage.

DISCUSSIONS

Urinary stone in children varies in characteristics according to gender, age and the locations[1,5,6,7]. The study result showed orphanage girls were more (54,5%) than the boys (45.5%) (see in Table 1). This study was similar to several previous studies in Europe and United State of America in which most urinary stone patients in children were girls,[8,9,10].

The study result showed 13 – 15 age group was the most (34.1%) and the least (4.5%) was 4 – 5 age group (see in Table 2). It was different from previous studies showed urinary stone incidences in children was mostly in 0 – 10 year age group[11,12]. Difference in environment, diet and life styles resulted in difference in incidency, urinary stone types and the stone locations [13].

The study result showed showed the most symptom was flank pain (11.4%), followed by voiding pain (dysuria) (5.7%), bloody urine (hematuria) (5.4%), spontaneously passing stone (2.3%), urinary stone history (1.3%) and family urinary stone history (1.3%). (see in Table 3). A study in Aceh (2018) showed there were 31.3% of family urinary stone history in children. Symptoms of urinary stones are not as clear as the ones in adults so that suspicion of urinary stone in children should be increased[14].

The study result showed that there was no positive result of urinary stone in urologic physical examina-

tions Costo Vertebrae Angle (CVA), supra pubic nor external genital (se in Table 4). Physical examination findings of urinary stones are not as clear as the ones in adults so that suspicion of urinary stone in children should be increased[13].

The study result showed in all orphanage children, there was no urinary stones found in ultrasound examinations but there were 23.9 of cystitis, less simple kidney cyst and kidney hypoplasia (see in Tabel 5). A study in (2018) showed mostly (56.3%) urinary stones were upper urinary tract stones followed by lower urinary tract stones (37.5%) and both upper and lower urinary tract stones (6.2%)[14].

In the study result although in all orphanage children, there was no urinary stones found in ultrasound examinations but there were several symptoms but there were 23.9 of cystitis. The both findings might be considered as risk factors that it is useful for further regular ultrasound examinations in detecting urinary stone in children.

CONCLUSION

Although we found several symptoms, no physical signs of urinary stone but in all orphanage children, there was no urinary stones found in ultrasound examinations but there were 23.9% of cystitis. The findings might be considered as risk factors that it is useful for further regular ultrasound examinations in detecting urinary stone in children.

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