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Case Report

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Urinary lithiasis in the pediatric age group: Case report and literature review

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Abstract

The authors report a urinary lithiasis in an infant of 22 months old after being treated unsuccessfully for urinary infections in several hospitals. This observation corroborates with literature about the scarcity of cases of urolithiasis in infant and it shows also the difficulty in diagnosing this desease in poor background in lack of specialists, and equipments.

Keywords: Urinary, Lithiasis, Infant, Democratic Republic of Congo.

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INTRODUCTION

The urinary lithiasis is a rare entity in the pediatric age group; and is even rarer in infant aged one to five [1-5]. According to the Literature, urolithiasis among infants represent 20 % of the frequency of urolithiasis retrieved in the whole pediatric age group [4]. Studies have suggested that urinary lithiasis is 50 to 100 times less frequently found in infants than it is in the other pediatric patients. In United Kingdom, the incidence of urolithiasis in childhood is estimated around 2 among one million when it is about 2 adults among 1000 [3].

The discovery of urolithiasis would impose a rational exploration based upon a rigorous anamnesis, radiological explorations, a metabolic statement as well as an analysis of the calculi because of the high potential risk of relapse and the alteration of kidney's function [2,6].

We are reporting a case of vesical lithiasis treated at Biomed hospital, a healthcare facility located in Uvira, one of the regions of the South Kivu Province, in the Democratic Republic of Congo. Our goal is to display the limits and difficulties that have been faced in the processes involving not only diagnosis but also therapy of such an unusual disease retrieved in an area basically characterized by well-equipped devices background and a shortness of specialized professionals in surgery and high investigation domains.

CASE REPORT

It's about BM, a 22 month old boy, weighing 10kg, with 79cm of height, who consulted because of micturition burning pain and recurrent fever. In the history, the infant had restlessly moved around many facilities in the region for a year and has been receiving too many drugs without any successful remission. There was even an effective circumcision that had been proceeded, presuming that balanoposthitis was the cause of those recurrent symptoms.

Regarding personal and family background: no dysuria was reported in other family members, there was no link of consanguinity between his parents, and the family diet is poor in milk, cheese, and cacao but rich in vegetables.

The microscopy of urinary pellet showed a leucocyturia and crystalluria (urate crystals) and the abdominal ultrasound displayed anobvious evidence of normal kidneys and anhypo echogenic image in the vesical walls (Figure 1). A diagnosis of vesical calculi (stone) was established. A surgical cystolithotomy enabled to extract a stone adhering onto the mucous membrane in the basal region of the bladder.

The calculi measured 16 mm of length in its major axis (figure 2) and weighed 1.2g. The post-operational period was clinically simple and the patient was discharged after a twenty day hospitalization stay.

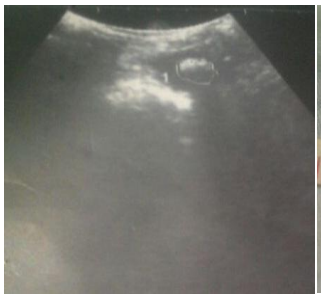

Figure 1: Caliculi's image in vesical walls on ultrasound picture

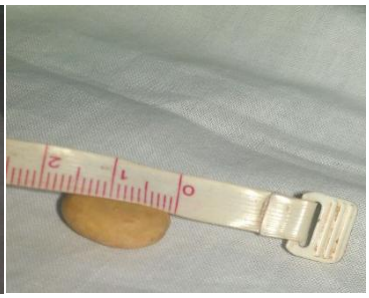

Figure 2: Calicli's measuring after surgery

DISCUSSION

Although vesical lithiasis can be found in all socio-economic levels in the society, the entity is predominantly encountered among people pertaining to a lower-level of life and income'[7]. Urolithiasis of infant is predominant in male children [2, 4,5]. Our patient was a little boy from a family with a very low income based background. Recurrent urinarytract infection is the main symptom found in urolithiasis [4].

The other discovery circumstances include gross (macroscopic) hematuria, anuria, urinary retention, micturition burning pain, spontaneous passage of stones, failure to thrive, and rectal prolapse. Review of medical and family history is pertinent because urinary stones may be recurrent or family-related. Episodes of diarrhea and dehydration can be correlated to urolithiasis outbreak. Dietary history, especially nutrition based on high protein intake, salts, and food and vitamin supplements, ought to be figuredout. Ultimately, we have to find out actual family background (other urolithiasis cases, proof of family related consanguinity) as well as episodes of gastroenteritis and dehydration [3, 4, 11].

Our patient's onset disease was only revealed by micturition burning pains, in absence of any medical and family history of urinary stones or even any manifestly established dehydration.

In about 75% of cases related to urinary stones in children, an obviously detectable cause can be found: 40% of urolithiasis are consequences of metabolic imbalance actually due to by diets rich in animal proteins and excessive vegetable diets intake; 25% are caused by congenital malformations of urinary tract and 10% are caused by urinary tract infections [9]. Dry season in specific tropical areas in Africa is also incriminated in pathogenesis of urinary calcula [5, 9]. Some other medical induced lithiases are also described but less frequently found in children population [3]. Our patient displayed all the four criteria of symptoms as described by Campbell [1]. Those include: a prolonged fever, a repeated urinary infection, a urolithiasis and a height and weight growth delay.

Plain urinary tract radiograph is the principal examen indetecting 90% of urolithiasis. Ultrasound enables to confirm the stone location but its accuracy in detecting lombar's ureter stones is still limited [4,9]. Urinalysis (pH, pellet, gram, culture) are also required in the investigational processes. Diagnosis approach also includes a scan, an intravenous urography, and a retrograde ureterocystography. Regarding our patient case, all the etiological investigations needed to help us figure out any specific and isolated cause were basically restricted due to the limited technical scale and the family economical status. Nevertheless, multifactorial origin is not excluded in our case.

In low-income based population, the nature of stones is different and may be either a phosphatic or uric (uratic) calculi [8]. The stone that had been extracted was not analyzed because of lack of a well- equipped laboratory possessing an infrared spectophotometer within our area of practice.

The ultimate treatment of urolithiasis in infant must target the specific cause; nevertheless general and medical measures are important. These measures integrate a well-balanced hydration, a diet reduced calcium, nut, spinach, tea, and cocoa-based drinks and foods [9]. Anextracorporeal shock-wave lithotripsy and a removal surgery can also be considered [3, 9]. Surgery is the appropriate optional treatment required if vesical stones reach over 5mm of height [4]. In our case, an open surgery was done in order to remove the vesical stone.

CONCLUSION

Though urinary lithiasis is an unusual condition among infants, it's found in our area of practice however. Its diagnosis should be considered whenever we are facing recurrent urinary tract infections. Its discovery always ought to lead to a rigorous and deep etiological investigations, considering the high potential risk of recurrency and the kidney function alteration that underlie this pathology. It's absolutely required to plan a long medical assesment for children with urolithiasis in order to find out any reccurency. A balanced liquid and adjusted diet food intake, as well as a strict control of infections are a key point helping reduce the rate of reccurency.

Conflicts of interests

All authors of this study do not claim any conflict of interests.

Authors contribution

All the authors involved in this manuscript copyright have read and came to the same agreeement of the final version of the article.

Dr Bilali Guylain realized the echography and the surgical procedure; Dr Mavuta Zalula Carrel typed and wrote the manuscript. Dr Alexis Mupepe and Dr Olivier Mukuku were also participant in the manuscript writings. The final version of the article were read and consented by all the authors .

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