

Metabolic Risk Factors for Urolithiasis in a Group of Iraqi Children

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Abstract

Background	Pediatric urolithiasis (UL) should not be underestimated, because it is associated with significant morbidity, particularly because stones tend to recur.
Objective	To study the demographic characteristics, clinical manifestations, metabolic disorders and some risk factors for stone formation in a group of Iraqi children.
Methods	A total of 96 children with UL comprised 66 males and 33 females with an age range 0.1-14 years were studied for the period from 1 st of January 2009 to the end of December 2011.
Results	Positive family history was present in 29 patients (30.2%); all of them had metabolic disorder. Recurrence rate of stone was recorded in 41 (42.7%); of them 28 (68.3%) had metabolic disorder. The commonest clinical presentation was urinary tract infection in 40 (41.7%). Urine culture was positive in 57 (59.3%) children predominated by E.Coli in 23 (40.3%). Twenty four hour urine collection were positive for metabolic disorders in 84 patients (87.5%) and mainly hypercalciurea in 53 (63 %), hyperoxalurea in 31 (36.9%), hyperuricosurea in 23 (27.3%), and cystinurea in 15 (17.8%). Staghorn calculi were detected in 6 patients (6.2%), all are associated with infection. Chemical analysis show calcium salt as major component in 22 out of 33 stones (66.6%). Predisposing risk factors for stone formation was established in 91 patients (94.8%) while no etiology could be found in 5 (5.2%). Metabolic disorders were the major risk for stone formation in 54 (56.3%), infection in 21(21.8%) and renal anomalies in 16 (16.7%).
Conclusion	Metabolic disorders were found to be the major predisposing factors to stone formation among this group of Iraqi children. Early presentation, family history of stone disease, high recurrence rate of UL, bilateral and multiple stones are all indicators for metabolic disorders which mandate complete metabolic evaluation in pediatric stone formers.
Keywords	Urolithiasis, stones, metabolic, children

Introduction

Pediatric Urolithiasis (UL) should not be underestimated, because it is associated with significant morbidity, particularly because stones tend to recur. As compared with the adult population, a far higher proportion of pediatric patients have a well-defined underlying condition that favors stone formation (e.g., metabolic disorders, infections, urinary tract anomalies). For these reasons, it is imperative to

evaluate carefully all pediatric stone patients as soon as stone disease is recognized and to pay great attention to the prevention of further stone formation^(1,2).

The two mechanisms by which metabolic factors enhance stone formation include: 1. Solute excess: high urinary concentrations of calcium, oxalate, uric acid, and cystine due to increased renal excretion and/or low urine volume cause solute excess. 2. Decrease levels of inhibitors of