

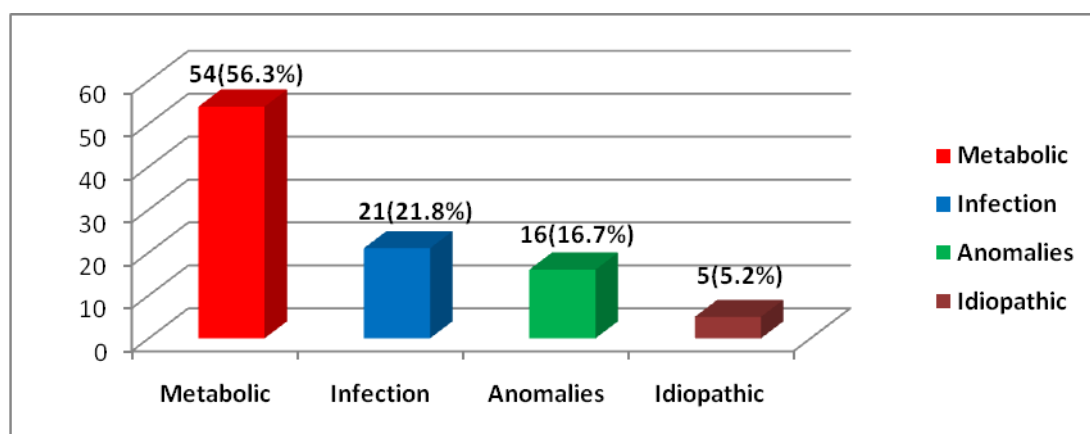
## Discussion

Many studies have reported a male predominance in childhood UL<sup>(4,14,15,18-20)</sup>. In agreement with many studies<sup>(14,15,18,19,21-23)</sup>, nearly half of our patients were below 5 years of age. Early evaluation by ultrasonography in addition to high rate of metabolic disorders among our cases, which led to early presentation, was a leading cause of early identification of stone disease.

A family history of UL was reported in wide range of 7.3-78.7% in previous studies<sup>(3,4,14,15,18,19, 22-24)</sup>. In this study, all patients with family history of UL had metabolic disorder for UL. This finding was highlighted by 3 previous studies<sup>(4,15,18)</sup>. This finding reflects the genetic basis of metabolic disorders for stone formation.

Recurrence risk in this study was 42.7% and 68% of them had metabolic disorders. Recent Turkish study found nearly similar rate of recurrence (44%) and that children with at least one identifiable metabolic abnormality tended to have higher recurrence rates than the others<sup>(25)</sup>. Recurrence of UL is a consequence of most metabolic disorders<sup>(8)</sup>.

Most common reported clinical presentation of UL in children are abdominal pain and hematuria<sup>(3-5,14,15,18,19,23,24,26)</sup>. Not so like our results, which showed predominance of UTI (41.7%)? Several studies have noted a strong association between UL and UTI<sup>(3,5,14,18,19,21-24,27)</sup>. We believe that UTI was a complication of stones rather than predisposing factor, as infection stones were detected in only 21 patients out from 57 patients with documented UTI among our cases.



**Fig. 3. Predisposing risk factors of patients with urolithiasis**

Similar to Al Rasheed et al study<sup>(28)</sup>, *Escherichia coli* was the most frequent bacteria isolated while *Proteus* dominated in others<sup>(18,23)</sup>.

Metabolic disorders were detected with variable rates in children with UL ranging from 10.6% to 92% from different regions<sup>(3-5,14,15,18,28)</sup>.

In a previous Iraqi series, metabolic disorders were detected in 72% of children with UL<sup>(15)</sup>, compared with 87.5% in this study. This increase in metabolic disorders among Iraqi children with UL reflects changing environment and dietary habits both as important risk factors for UL, which need to be further studied.

In agreement with most studies from different regions<sup>(3-5,15,18,19,23,27)</sup>, we detected hypercalciuria as commonest metabolic disorder.

Interestingly, cystinuria was detected in 15 of our patients (17.8%). Lower results came from other studies<sup>(4,14,18,19,23,24,27)</sup>. Our cultural habits with high rate of first-degree cousin marriages might explain our results as cystinuria is known autosomal recessive inherited disorder.

Multiple and bilateral stones were recorded in variable rates in many studies<sup>(4,14,18,19,24,28)</sup>. In this study, 72.2% of the multiple stones and 67.6% of the bilateral stones were related to metabolic disorders. This relation between