Twenty-four hours urine results were positive for metabolic disorders in most cases 84 (87.5%). Hypercalciurea was the commonest detected in 53 patients (63%), 46 out of 84 patients with metabolic disorder had single metabolic urine disorder while the other 38 had multiple urine metabolic disorders (Table 1).

Table 1. Single and multiple urine metabolic disorder in patients with urolithiasis

Single urine metabolic disorder in 46 patients with UL		
Disorder	**No.**	**%**
Hypercalciurea	17	36.9
Hperuricosurea	18	39.1
Cystinurea	9	19.6
Hyperoxalurea	2	4.4
Multiple urine metabolic disorder in 38 patients with UL		
Disorder	**No.**	**%**
Hypercalciurea-hperoxalurea	29	76.3
Hypercalciurea-cystinurea	4	10.5
Hypercalciurea-hyperuricosurea	3	7.9
Hyperuricosurea-cystinurea	2	5.3

Stone data reflect that 36 patients (37.5%) had multiple stones, 26 (72.2%) of the multiple calculi were related to metabolic disorders. Most patients 40 (41.6%) had small size stones (<1 cm) as calculated by US, Staghrn calculi were detected in 6 patients (6.2%), all were associated with infection (Table 2).

Forty-five patients (46.8%) had stones in more than one site. Right kidney was the commonest site for stone location, involved in 58 patients (60.4%), while urinary bladder was involved in 6 patients (6.2%). Bilateral stones found in 41 (42.7%) of whom 23 (56%) had metabolic disorders, and 5 out of 6 bladder stones were proved as infection stone. Chemical stone analysis was done for 33 patients as shown in Table 2. Calcium oxalates is the most common mixture identified in 13(39.4%) patients as pure or mixed.

Risk factors for stone formation were established in 91 (94.8%) while no predisposing factor 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%) as shown in Fig. 3.

Table 2. Stone Data in patients with urolithisis

Feature		No	%
No. of stones	1 stone	33	34.3
	2 stones	27	28.1
	>2 stones	36	37.5
Size of stones	<1cm	40	41.6
	1-2cm	32	33.3
	>2cm	18	18.7
	Staghorn	6	6.2
Composition of stones	Ca+Oxalate	8	24.2
	Ca+Phosphate (ph)	3	9
	Ca+UA	4	12.1
	Ca+UA+Ph+Mg	1	3
	Ca+UA+Ph+oxalate	1	3
	Ca+Oxalate+UA	2	6
	Uric Acid	2	9
	UA+Ammonium +Ph	1	3
	Ca+oxalate+carbonate	2	6
	Cystine	7	21.2
	Ca+Cystine+Ph	1	3
	UA+Ph+Carbonate	1	3

As described from above results, metabolic disorders were detected in 84 patients; as a pure metabolic disorder in 54 patients (56.3%), and in other 30 as mixed metabolic disorder with other factor.

Although UTI was documented in 57patients at presentation, only 21 out of 57 of those patients (21.8%) fulfill the criteria of infection stones; from those 21 patients; 16 patients were associated with metabolic disorders, one patient with anomalies and 4 patients had metabolic infectious and anomalies.

Sixteen (16.7%) patients with UL were due to anatomical renal anomalies; 10 out of these 16 were associated with metabolic disorders and the other 6 patients had pure renal anomalies; the associated renal anomalies were described in (Table 3).