Evaluation of urolithiasis in Crohn's disease in Tunisian patients

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Évaluation de la lithiase urinaire chez les patients tunisiens porteurs de maladie de Crohn

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R É S U M É

But : Etudier les caractéristiques des lithiases urinaires dans un échantillon de population tunisienne atteinte de la maladie de Crohn (MC).
Méthodes: Nous avons étudié rétrospectivement 184 patients connus porteurs de MC à la recherche d'une complication urinaire lithiasique survenue au cours de son évolution.
La confirmation diagnostique de la présence de lithiase urinaire a été obtenue sur les données de l'imagerie médicale: l'arbre urinaire sans préparation, l'échographie ou l'urographie intraveineuse et la tomodensitométrie.
Résultats: Des lithiases rénales ont été trouvés chez seulement 3 patientes atteintes de MC.
Le délai moyen entre le diagnostic de MC et celui des lithiases était de 22 mois (6 - 48 mois). La symptomatologie clinique n'était pas spécifique. Ces lithiases étaient bilatérales dans deux cas.
Conclusions: La prévalence de lithiase urinaire était très faible dans la présente série de patients tunisiens porteurs de MC. Bien que rare, le traitement efficace et la prévention de la formation de lithiases urinaires s'imposent chez ces patients.

M o t s - c l é s

Maladies inflammatoires chroniques de l'intestin, Maladie de Crohn, Complication, lithiase, traitement, Tunisie

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S U M M A R Y

Aim: To investigate the characteristics of urolithiasis associated with Crohn's disease (CD) in a sample of Tunisian population.
Methods: We retrospectively studied 184 patients with CD to reveal any urolithiasis during evolution. Evidence for the presence of renal calculi was obtained from plain films, ultrasonography or intravenous urography and computed tomography.
Results: Renal calculi were found in only three patients with CD. All patients were woman.
Mean time from diagnosis of CD to diagnosis of calculi was 22 months (range 6 to 48 months). Clinical features were not specific. Calculi were bilateral in two cases.
Conclusions: The rate of concurrent urolithiasis was very low in the present series of Tunisian patients. Although rare, efficient treatment and prevention of calculi formation are mandatory in CD patients'.

K e y - w o r d s

Inflammatory bowel disease, Crohn's disease, urinary complication, urolithiasis, treatment, Tunisia.

Crohn's disease (CD) is an intractable inflammatory bowel disease that frequently affects young adults. During its long course CD is often associated with extraintesinal complications, such as cutaneous, hepatobiliary, arthritic, and urological disorders (1). It is well known that urinary complications are not so rare in CD, but they are usually misdiagnosed. The most frequently observed urinary complications are urolithiasis (1, 2) which are reportedly higher in patients with CD than in the general population (2). Their diagnosis is often difficult and their management still remains controversial (3).
In the present study, we presented our experience treating patients with CD who presented urolithiasis.

PATIENTS AND METHODS

All data were based on a review of the records of 184 consecutive patients (95 males and 89 females) with CD followed in the department of Gastro-enterology in Charles Nicolle Hospital- University between January 2000 and December 2010. The diagnosis of CD was confirmed on the clinical, endoscopic and histological data. The definitive diagnosis of urinary stones was obtained from kidney, ureter, and bladder X-ray (KUB); ultrasonography; intravenous urography (IVU) or computed tomography (CT). The absence of concurrent calculi was confirmed by KUB and ultrasonography in non-calculus patients. The patients with urinary stones were examined and treated at the department of Urology in Charles Nicolle Hospital-University. Sex, age, duration of CD treatment, extent and activity of disease, the number of bowel resections and ileostomy status were examined. We determined also CD behaviour and location according to Montreal CD classification (4). In addition, the duration between CD and urinary stones diagnosis was calculated, findings leading to diagnosis of calculi (renal colic, passage of stones, hematuria, urinary infection, fortuitous..), site of calculi and management options were examined.

RESULTS

We examined the records of three CD patients with urolithiasis. Thus, the incidence of this complication was only 1.63% in the present series. The three patients with urinary stones were females with a median age of 34.7 ys (Table 1). The sites of disease were ileocolitis (L3) in 1 and colitis (L2) in 2 patients. CD behaviour was non-stricturing, non-penetrating (B1) in all patients. One patient has a history of cortico-resistant CD necessitating a total colectomy with ileorectal anastomosis 4 years before stone diagnosis. None of the patients had a history of recent urinary tract infection or renal insufficiency. The main symptoms in urolithiasis were back and flank pains (2 cases) and the diagnosis was fortuitous in one case. The mean duration between the onset of CD and urinary stone diagnosis was 1.83 years. Diagnosis was confirmed by ultrasound and CT Scan in all cases: lower renal pole stone (two cases) and Staghorn stone in one case. At the moment of stone diagnosis, two patients presented an acute, severe ulcerative colitis necessitating intensive treatment. Urinary stone was the only urological complication. Two patients had osteoporosis with arthropathy. Calcium and phosphate level were normal in the 3 patients but unfortunately, stone analysis was not performed. Medication for urolithiasis, with hydration and alkalinization of the urine, was effective in one patient, extracorporeal wave lithotripsy (ESWL) in one case and the patient with staghorn bilateral stone was treated by open surgery (Table 1). With a median follow-up of 70 months (1/2 -16 years), all patients remain stone-free.

Table 1: Characteristics of patients (cases 1-3) with Crohn's disease associated with urolithiasis

	Patient 1	Patient 2	Patients 3
Age/Sex	21 / F	33/ F	49 / F
Symptoms	Colic	None	Colic
History	-	-	Acute colitis corticotherapy Colectomy / 4 ys
Extra-intestinal manifestation of C D	Osteoporosis	Osteoporosis arthropathy	Osteoporosis arthropathy
Location / Size	Renal pelvis calyx / 5 mm unilat	Lower pole / 2 mm bilat	Staghorn calculi 25 mm bilat
Urinary dilation	+	-	+
Period between onset of CD and urolithiasis diagnosis (Mo)	12	6	48
Montreal classification for CD	A2L2B1	AL2B1	A3L3B1
Treatment of urolithiasis	ESWL	Medication	Open surgery
Recurrence of urolithiasis / follow-up (Mo)	- / 12	- / 12	+ / 198

DISCUSSION

The incidence of calculi during the lifetime of CD patients (25%) is believed to be higher than that of healthy people (approximately 10%)(5). Therefore, the prevention and treatment of calculi in CD patients are important aspects of their clinical management. There are few epidemiological studies on urolithiasis associated with CD in Tunisian people. In the present study stones were found in only 3 of 184 patients with CD. This is a low incidence compared to those reported previously in other series (6, 7). This prevalence can be explained by genetic and environmental factors which are specific to our population and can interfere with lithogenesis. In

CD, stones occur preferentially on the right side (8) as in all our patients. They are more frequent in ileocolonic disease (9-17%) than in ileal (6-8%) or colonic disease (3-5%) alone (7, 9). Calcium oxalate stones are the most common in the presence of extensive ileal CD (8, 10). Hyperoxaluria may be observed but recent studies suggested that hyperoxaluria is not prevalent in CD (6,7) and elevated urinary oxalate does not inevitably give rise to stones (7). The causes of lithogenesis in CD are believed to be dehydration associated with chronic diarrhea, decreased urine volume, aciduria, bowel resection, abnormal metabolism of oxalic acid, and oral administration of steroid or Salazopyrin (salazosulfapyridine) (11). Urine pH measurement and the number of bowel resections are valuable in estimating the probability of concurrent calculi. The probability of developing calculi was approximately 8 times higher for patients with a urine pH of ≤ 6.0 than for those with a urine pH of ≤ 6.5 (1). The rate of concurrent calculi was significantly higher in ileostomates and in patients who had undergone 2 or more bowel resections than in those who had undergone one or none (1). In our study, calculi recurred after ileostomy, and bowel resection in one case. Fukushima et al. reported a higher incidence of urolithiasis in patients with large bowel resection (12). Moreover, destruction of intestinal bacterial flora by the massive use of antibiotics and other drugs (13) is also believed to be associated with the development of calculi. Recently, oxalate-decomposing bacteria involved in the development of calculi have been confirmed (14, 15). Low levels of urinary citrate and magnesium have been also proposed as an important lithogenic factor in CD patients (6). There was no independent relationship between any clinical symptom and the presence of stones (7) and patients are often asymptomatic (one case in our series) regarding the urinary tract (3). Because urolithiasis is relatively common in CD, we should take this complication into consideration whenever a patient complains of abdominal pain (3). Increasing patient awareness of urinary complications in CD is very important in the prevention and early identification of urinary complications, and close collaboration between gastro-enterologist and urologist is mandatory. The prophylaxis of diarrhoea and dehydration is considered essential in preventing recurrent calculi in CD patients. In view of the fact that calcium oxalate calculi were the most frequently observed, a diet that includes an adequate intake of calcium, is low in fat and oxalates, and includes a liberal amount of water, can be expected to prevent lithogenesis by preventing absorption of excess oxalic acid in the bowel (1). Other measures including oral cholestyramine administration and pyridoxine, which decreases oxalate synthesis, may be helpful (16, 17). For patients with hyperoxaluria,liberal water intake and meals low in fat (or replacement with medium chain triglycerides, increasing dietary calcium) and oxalic acid should be recommended (1, 18). Besides increased water intake, prevention of recurrent uric acid stones requires alkalinization of the urine by potassium citrate or bicarbonate intake to aid in solubilizing uric acid. If urine uric acid excretion remained elevated, dietary protein restriction and allopurinol administration are advised (19). The control of ostomy loss is imperative, because dehydration can cause a high urinary urate condition, which thus becomes a risk factor for urate stones (3). Prevention of calculi should begin at the early stages of CD and not when complication occurs. Although these conservative treatments are effective in most cases, we should also consider urological therapy including endoscopic mechanical lithotripsy or per cutaneous nephroureterolithotomy (3). Limitations of the present study were its retrospective aspect and the low number of CD patients with urolithiasis. Thus general recommendations and conclusions can't be suggested.

CONCLUSION

Based on the above findings, the rate of concurrent urolithiasis was very low in Tunisian CD patients. Early diagnosis and prevention of calculi formation require regular urological examination including urinalysis and ultrasonography. CD patients with urolithiasis should be treated conservatively, if possible, in the same way as non-inflammatory bowed disease patients.

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