CLINICAL CASE

Transitional cell carcinoma associated with lithiasis of the ureteropelvic junction: a case report

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Abstract A report is described herein of a case of transitional cell carcinoma discovered during ureteroscopy indicated for ureteropelvic junction lithiasis. A biopsy of the tumor was taken, after which ureterolithotomy with intraoperative biopsy was performed that identified a transitional cell tumor. Right nephroureterectomy was carried out and the histopathologic study reported a low-grade transitional cell tumor. This case illustrates the potential there is for developing a transitional cell tumor in areas that have been affected by urinary tract lithiasis.

PALABRAS CLAVES
Carcinoma urotelial; Ureter; Lithiasis

Carcinoma de células transicionales asociado con litiasis de la unión ureteropiélica: reporte de un caso

Resumen A continuación se reporta un caso de carcinoma de células transicionales descubierto durante una ureteroscopia indicada por litiasis de la unión ureteropiélica. Se tomó biopsia del tumor y posteriormente se realizó ureterolitotomía con biopsia transquirúrgica, identificando tumor de células transicionales por lo que se realizó nefroureterectomía derecha con resultado histopatológico de tumor de células transicionales de bajo grado. Este caso ilustra el potencial de desarrollar tumors de células transicionales en áreas afectadas por litiasis urinaria.

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Introduction

Transitional cell tumors in the upper urinary tract are rare (10%) in comparison with all the urothelial tumors. There are many factors associated with the development of a transitional cell tumor: it is more frequent in men, in the white race, and inhabitants of the Balkans are at greater risk. Long-term smoking (> 25 years) is associated with a 4.5-fold higher relative risk for developing a malignant upper urinary tract tumor than non-smokers. Active smokers have a higher relative risk (5.2) than ex-smokers, but ex-smokers have twice the risk when compared with nonsmokers.1

Other modifiable risk factors include coffee drinking (> 7 cups/day), chronic use of analgesics, family history, work-related exposure to aromatic amines (beta naphthylamine, aniline, and benzidine), and radiation exposure.2

Chronic mechanical inflammation of the urothelium, induced by stones with or without recurrent urinary tract infection, produces morphologic changes in the transitional cells; among these changes are dysplasias that lead to urinary tract carcinoma, including urothelial carcinoma, adenocarcinoma, small cell carcinoma, and squamous cell carcinoma.1 Chow et al. found that patients with stones in the upper urinary tract had an increased incidence of tumors of the renal pelvis and the ureter; incidence was greater in the distal ureter than in the proximal, but stones in the proximal ureter had a greater risk for malignancy.3,4

Case presentation

A 63-year-old man presented with colicky, non-irradiating pain in the right lumbar area that varied from mild to moderate with no nausea or vomiting. He had intermittent gross hematuria with no clots on 2 occasions. His past history of importance included 40 years of smoking 2 cigarettes a day and ESWL for left renal lithiasis. Physical examination was unremarkable. Serum creatinine levels were normal (1.2 mg/dl), urinalysis was not pathologic, and urine culture was negative. A plain abdominal x-ray and kidney ultrasound both revealed images suggestive of a 5 x 5 mm stone in the right ureteropelvic junction and ipsilateral renal ectasia that was initially managed through expulsive treatment with tamsulosin with no response (figs. 1-3).

The patient was then programmed for right ureterolithotripsy. During the endoscopy a papillary lesion was identified and biopsied. The hydrophilic guidewire could not be passed and the stone could not be seen, so a CT-urography scan was carried out producing an image suggestive of a 10 x 10 mm stone in the ureteropelvic junction and a heterogeneous image below the stone. The histopathologic study reported atypical cells. The patient was programmed for right ureterolithotomy + biopsy and intraoperative study, which stated transitional cell carcinoma with wall invasion; therefore right nephroureterectomy with a double incision bladder cuff was performed. The definitive pathologic analysis reported low-grade transitional cell carcinoma that did not extend past the basal membrane, with a chronic multifocal inflammatory reaction and fibrosis of the wall.
The patient decided to receive adjuvant systemic radiotherapy with mitomycin C. He currently has no metastasis data or lymph node invasion. Control cystoscopy showed no signs of recurrence and urinary cytology was negative.

Discussion

Upper urinary tract stones are a known risk factor for the development of malignant tumors of the collecting system, ureter, and bladder, with a 2.7 to 3.96-fold increased risk. In the present case, diagnosis was an incidental finding during ureteroscopy and the preoperative imaging studies only revealed the stone in the ureteropelvic junction. Stones impede adequate visualization of neoplastic lesions. In 2007, Yeh et al. reported a case series of 47 patients that underwent nephrectomy due to renal exclusion secondary to nephrolithiasis and found malignant lesions in 24 of the 47 patients (51%). These lesions had only been identified in 7 of the 24 patients (29%) in preoperative imaging studies. In 1987, Li demonstrated an association between squamous cell carcinoma and staghorn lithiasis in 2% of the cases, suspecting urothelial carcinoma when there was a history of lithiasis, pain, recurrent urinary infection, and a palpable kidney or one with a greater size with respect to imaging studies such as excretory urography or ultrasound.

The exact mechanism by which stones are related to malignancy has not been confirmed, but the most accepted theory is that the causal agent is chronic inflammation and irritation of the mucosa caused by the stone. Stones associated with recurrent urinary infections have twice the risk for developing malignant upper urinary tract tumors in regard to patients with stones, but not presenting with urinary tract infection. Chronic inflammation and possible urinary tract infection make it difficult to interpret urinary cytology.¹

Transitional cell carcinoma is the most frequent histologic variety related to neoplasias that are associated with urolithiasis.² Due to the difficulty in diagnosing transitional cell carcinoma, Ozdaman suggests that biopsy be taken in all the surgeries indicated for urolithiasis,³,⁴ whereas it is our opinion that biopsy should be taken of any suspicious lesion found during any endourologic procedure, enabling early diagnosis and a greater therapeutic and prognostic timeliness for the patient.

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Conflict of interest

The authors declare that there is no conflict of interest.

Ethical responsibilities

Protection of persons and animals. The authors declare that no experiments were performed on humans or animals for this study.

Data confidentiality. The authors declare that they have followed the protocols of their work center in relation to the publication of patient data.

Right to privacy and informed consent. The authors have obtained the informed consent of the patients and/or subjects referred to in the article. This document is in the possession of the corresponding author.

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