Inverted papilloma of the upper urinary tract

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KEY WORDS

inverted papilloma ◗ urinary tract ◗ urothelium

ABSTRACT

Inverted papilloma (IP) is an uncommon tumor of the urinary tract and the mean age of the patients was 60.25 ±3.25 years. In general, IP is considered a benign lesion and the clinical symptoms are similar to the urothelial neoplasias. IP can be treated successfully by a local transurethral resection, but although it is a benign tumor, this lesion must be followed up closely for recurrence and rare malignant transformation. Due to the possibility of transformation into a malignant tumor, a radical treatment of nephroureterectomy was performed in some cases. In this study, we evaluated a case of local vaporization of IP by "Green Light Laser".

INTRODUCTION

Inverted papilloma (IP) is an uncommon tumor that was first described in the urinary bladder by Poots and Hirst in 1963 [1]. It is characterized by a proliferating urothelium arranged as inverted cords and nests with an intact overlying urothelium [2].

IP accounts for about 2.2% of tumors of the urinary system and the majority (80-90%) of IP cases occur in the bladder, while inverted papillomas (IPs) of the upper urinary tract and prostatic urethra are very rare [3, 4].

IP of the urinary tract usually occurs as a solitary lesion, but 3.6-6.0% appear to be multicentric; in general, IP is considered to be a benign lesion [4].

We report a case of IP of the upper urinary tract treated by "Green Light Laser Vaporization".

CASE REPORT

A 69-year-old woman with negative smoking history presented right lumbar pain and acute renal failure.

One year earlier, the patient presented to an outside hospital with similar symptoms and acute renal failure secondary to left ureteral obstruction. On that occasion the patient underwent endoscopic biopsy of the left ureteral lumbar tract with a rigid ureteroscope; the histologic examination demonstrated only a moderate inflammation of the *lamina propria*.

One year later, the patient was admitted to our clinic and we made a complete evaluation.

The urinalysis and the urine culture were negative. The renal function was altered: nitrogen and creatinine were 118 mg/dL (normal range 10 to 50) and 15.7 mg/dL (normal range to 0.5 to 1.5) respectively. The other hematologic exams were normal.

The computed tomography (CT) scan revealed right hydroureteronephrosis and ureteral dilation in correspondence to S1 with hyperdense material in the lumen.

Urinary cytology of three different days showed atypical hyperplastic urothelial cells, transitional cells with inflammatory abnormalities, urothelial cells with regressive aspects, many granulocytes, and rare erythrocytes.

Bilateral ureteroscopy demonstrated a polypoid lesion on the middle tract of the right ureter.

The lesion was 3 cm in diameter and it was biopsied: histologic exam confirmed diagnosis of IP with atypical cells of moderate grade (Fig. 1). Microscopically, the polypoid structure was covered with transitional epithelium, numerous Brunn's nests, and glandular metaplasia (Fig. 2).

The lesion was removed with "Green Light Laser Vaporization" and we applied a Double-J ureteral stent after we had controlled that the urothelium did not show atypical signs above the lesion.

Three months after surgery follow-up was performed: the patient was in otherwise good health; urinalysis, hematologic and biochemical analyses were normal; the creatinine was 1.5 mg/dL. The double J catheter was removed. At ureteroscopy both bilateral ureteral lumens lacked atypical lesions and the lumens were free of tumor. Wash-out cytology showed many granulocytes and some transitional cells with inflammatory abnormalities.

Eight months after surgery, CT scan showed left hydronephrosis and ureteral dilation in correspondence to iliac vessels, and moderate right hydronephrosis with ureteral dilation in correspondence to gonadic vessels, but no ureteral calculi or masses were identified (Fig. 3). The hematologic and biochemical analyses were normal: the creatinine was 1.48 mg/dL. The urinary cytology was negative for atypical cells. These findings suggested that the bilateral hydronephrosis be interpreted as a sclerotic lesion, with stricture. However a new bilateral ureteroscopy was planned.

DISCUSSION

The development of IP in the urinary tract has been reported in about 1,000 cases since it was reported by Potts and Hirst in 1963 [4]. An IP of the urinary tract is usually seen in the 5th or 6th (60.25 ±3.25 years) decade of life, it is more common in males than females [4, 5].

IPs are rare benign lesions of the urinary tract, defined by their distinctive benign clinical course.

By definition they are nonpapillary, noninvasive, smooth surfaced, pedunculated, or sessile polypoid lesions of the urothelium; they typically measure less than 3 cm in length [6].

Microscopically the polypoid structure consists of anastomosed cords and is covered with urothelium that often invaginates in inverted nests, that continue with a normal urothelium [6, 7].

Its benign clinical course is based on its histologic appearance, low incidence of multiple tumors, low incidence of local recurrence (1-7%), and lack of invasive growth and metastases [2, 4].

Preoperative diagnosis of IP is difficult: there are no specific radiologic characteristics to support the diagnosis of IP. Hematuria, flank pain, and urinary obstruction are the usual presenting symptoms [4, 6]. Our case is the first one of acute renal failure secondary to obstruction caused by an IP, occurring in a female.

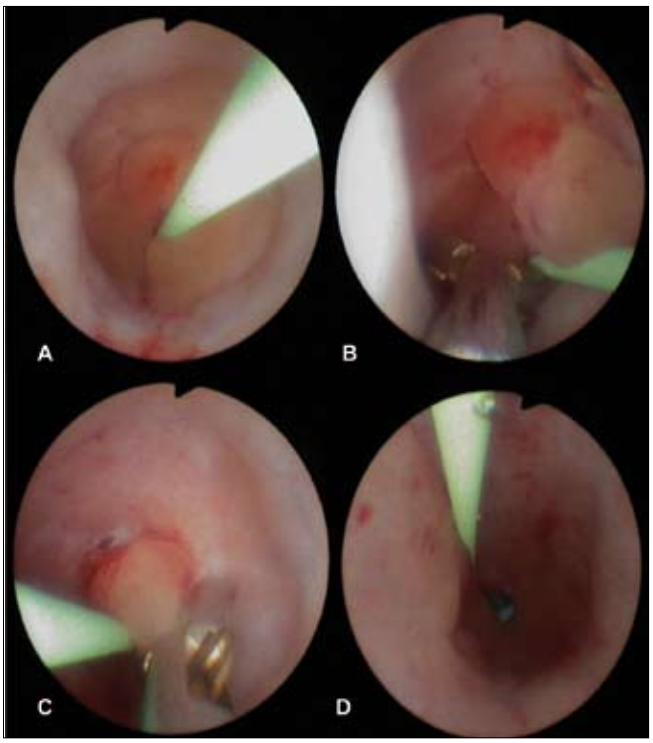

Fig. 1. A. Ureteroscopic image of the Inverted Papilloma of the left low lumbar ureteral tract. B-C. Excision of Inverted Papilloma during biopsy. D. Image of the upper urinary tract, showing a normal mucosa above stenotic tract.

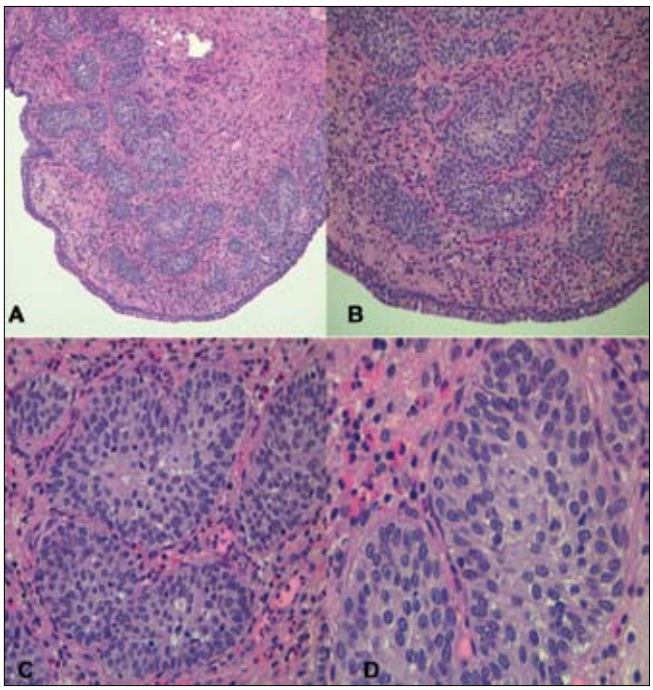

Fig. 2. Inverted Papilloma of the low lumbar ureter at histologic exam. The polypoid structure is covered with urothelium that invaginates in inverted nests, its structure consists of anastomed cords, with numerous Brunn's nests, covered with transitional epithelium; glandularis metaplasia, 10x in A, 20x in B, 40x in C and 63x in D.

Most investigators agree that the IP is a true neoplastic growth, however its etiology is still unclear; Carlo and Tessler suggested that the IP is probably generated by a reaction to inflammation [7, 8]. The stimulus for this inflammation and subsequent transformation of urothelium into an IP may also be carcinogenic because there is a high coexistence of malignant urothelial tumors [6, 8]. In addition, Brunn's nests are often found in surrounding areas and some have argued that an IP represents an exaggerated form of a Brunn's nest, a kind of hyperplastic reaction to chronic inflammation or irritative agents [8, 9]. Today, most authors believe that IP of the urinary tract is a true neoplasm, although the precise tissue of origin and the causative agents or processes are still not known [4].

Accurate diagnosis of IP requires visualization and biopsy: with the flexible ureteropyeloscope, examination of the entire upper urinary tract and local vaporization of the lesion is possible. Naito et al. in 1983 commented on the difficulty of distinguishing IP from transitional cell carcinoma in the upper urinary tract [6, 7, 10]. Treatment has generally consisted of nephroureterectomy, but endoscopic vaporization is certainly a better option.

Improvements in endoscopic equipment and technique have allowed this modality to be used in the diagnosis, management, and surveillance of these lesions. Our patient was treated with local vaporization of the IP using a "Green Light Laser" with rigid ureteroscope.

In conclusion, the IP of the upper urinary tract is a benign tumor that can be treated successfully by transurethral vaporization of the tumor, but long-term endoscopic follow-up is essential considering the recurrence and malignant transformation. Moreover, during follow-up, the absence of proliferative lesions should underline the hypothesis that IP is an evolution of an inflammatory process of the urothelium, which can be responsible for obstruction of the ureteral lumen as well as hydronephrosis.

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