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DIAGNOSIS AND TREATMENT OF PRIMARY URETERAL CARCINOMA --A REPORT OF 15 CASES

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Fifteen cases with primary ureteral carcinomas are reported with a review of the literature. We concludeL Excretory urography is the main method of diagnosis; retrograde uretero-pyelography is more helpful in diagnosis; cystoscopy is also necessary before operation; CT is useful in diagnosing and staging; ureteroscopy could be performed if necessary; the traditional total nephroureterectomy with a cuff excision of the urinary bladder remains the basic treatment of choice; cystoscopy, excretory urography and adjuvant intravesical therapy should be carried out regularly after operation.

Key words: Ureteral carcinoma; Diagnosis; Surgical treatment

Primary ureteral carcinomas is rare. fifteen patients with primary ureteral carcinomas seen in our hospital from 1984 to 1995 are reported with a review of the literature as follows.

PATIENTS AND RESUTS

Between 1984 and 1995, 13 men and 2 women, 52 to 80 years old (mean age 59.2 years), with primary ureteral carcinomas were admitted to our hospital. Of the 15 patients, tumors located on the right side in 12, on the left side in 3, in the upper ureter in 4, in middleor lower ureter in 11. Bilateral tumors were not present in any patient at the time of diagnosis. Hematuria occured in all the 15 patients, flank pain in 9, upper abdominal masses in 6, and irritative voiding symptoms in 7. Historic duration ranged from 1 to 96 months. the intravenous pyelogram (IVP) showed hydronephrosis in 5 patients, nonvisualization of the kidney in 8, and intraluminal filling defects in 2. During cystoscopy, bleeding from upper urinary tract was seen in 4 patients, several papillary tumors around the ureteral orifice in 5, and intrusive mas from the ureteral orifice into the vesica in 3. Retrograde ureteropyelography was performed in 12 patients, ureteral stricture and obstruction were shown in 9, and local filling defects in 3. Ultrasonography and computed tomography scan (CT) were carried out on 13 and 10 patients, respectively, ureterohydronephrosis or atrophied renal parenchyma was revealed in all of them, and ureteral masses were found by means of CT in 7. One patient underwent ureteroscopy and a papillary mass was seen in the lower segment of the ureter. Before operation, 8 patients were confirmed of primary ureteral carcinomas, 6 patients were diagnosed as urerteral strickkture, ureteral obstruction or nephrohydrosis, and 1 as recurrence of bladder cancer. Twelve patients received the total nephroureterectomy with a cuff removal of the bladder, and 3 received the nephrectomy with partial ureterectomy. Histologically, all of the 15 patients had transitional cell carcinomas in the ureter, 2 of them were associated with transitional cell carcinomas in the pelvis. Lesions of grade I were present in 1 patient,

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grade II in 10, and grade III in 4. Of the 15 patients, 3 were in stage T1, 10 in stage T2, and 2 in stage T3. All the patients had been followed up for 3 to 120 months. Transitional cell carcinomas reccured in the bladder of 7 patients and in the contralateral ureter and posteriorurethra of one patient. three patients died of cancer.

DISCUSSION

Of the patients with primary ureteral carcinomas, most have gross hematuria, and one-third have flank pain. But the symptoms are not specific and difficult to lead to a correct diagnosis. In our series, 8 (53.3%) could be confirmed as primary ureteral carcinoma preoperatively, 6 (40%) were diagnosed as ureteral obstruction and nephohydrosis, 1 (6.7%) as recurrence of bladder cancer. Nevertheless, hematuria remains a signal of this disease. When the intermittent hematuria is associated with ureteral obstruction without clear cause or bladder tumor occurs around the ureteral orifice, the possibility of the ureteral carcinoma is suggested, and further systematic examiations are required. It is thought that transitional cell carcinoma usually is a field change disease with tumors arising at different times and sites in the urotherlium and that ureteral tumors are located most commonly in the lower ureter.[1] Our results (11 of the 15 tumors located in the lower ureter) accord with above conclusion. The tendency for transitional cell carcinoma cells to implant is also demonstrated, and the most implant downwards. Two patients in our series were associated with transitional cell carcinoma s in the renal pelvis, but it was difficult to distinguish multifocal carcinogenesis from implantation in those two patients.

To diagnose primary ureteral carcinoma, many examinations can be used.

Intravenous Pyelography (IVP)

IVP has still been the main method for diagnosing the ureteral carcinoma. In 10 to 30 per cent of patients, the tumor causes obstruction or nonvisualization of the collecting system. this finding usually is associated with a greater degree of malignancy.[2] There were positive findings on IVP in all of our 15 patients. Of 8 (53.3) patients with nonvisualizatiuon of the kidney, 4 were in grade II, and 4 in grade III. However, the site and size of the tumor can not often be visualized satisfactorily on IVP. Retrograde urography provides better visualization of the upper tract tumor than IVP. Overall, retrograde urography is assurate in establishing the diagnosis of the urothelial cancer with greater than 75 per cent accuracy.[3] Contrast material in retrograde urography should be diluted by one third to one half to avoid obscuring subtle filling defects. Ideally, retrograde ureteropyelography should be performed under fluoroscopic control to ensure adequate filling and to avoid overdistention with rupture of the renal fornices and intravasation and extravasation of contrast material. In our series, one patient developed rupture of the renal fornices and extravasation of urine due to overdistention in retrograde urography. Following retrograde urography, a ureteral catheter should be passed into the upper urinary tract to collect urine for cytologic studies and to obtain saline barbotage specimens or to perform brush biopsy of the lesion Antegrade pyelography is not advisable in the patients suspected of having upper tract transitional cell carcinoma because of the risk of seeding tumor cells along the needle tract. However, in the exceptional clinical circumstances when the patient has a nonvisualizing kidney and it is not possible to perform a retrograde study, antiegrade pyolography may be required to determine the cause of obstruction. More than one half of patients with upper tract urothelial tumors are associated with bladder tumor at preoperatively or postopertively.[4] Therefore, cystourethroscopy should be performed preoperatively. It is performed best in the period of hematuria, because the bleeding from the ipsilateral ureteral orifice can be seen at this time. In addition, protrusive papillary mass from the ureteral orifice or bladder tumors can also be discovered by cystourethroscopy. Of the 15 patients undergoing cystourethroscopy in our series, 12 had positvel findings. Moreover, bladder tumor biopsy, retrograde urography or ureteroscopy can also be performed during cystourethroscopy.

Brush Biopsy

In 1973, Gill introduced the concept of brush biopsy to establish the diagnosis of upper tract urothelial tumors. With this technique, a fine brush mounted on the end of a guide wire is passed through a ureteral catheter into the collecting system and,

under fluoroscopic guidance, is manipulated adjacent to the filling defect. The lesion is then sampled by moving the brush back and forth within the ureteral catheter. The brush is removed through the catheter, and the sample is sent for cytologic examination. sheline reported that brush biopsy has a sensitivity of 91 per cent, a specificity of 88 per cent, and an accuracy of 89 per cent.[5] In general, brush biipsy is well tolerated with minimal complications; however, severe complications, including massive hemorrhage from the upper urinary tracts and ureteral perforation, have been reported. The risks of spreading tumor cells to areas of ureteral mucosa denuded by the manipulations associated with brush biopsy also must be borne in mind. Gittes reported that brush biopsy is not indicated in the patients with radiographically obvious lesions; in those with a solitary kidney with a single, well-defined lesion; and in those with positive upper tract cytology findings.[6]

Cytopathology

A voided urine specimen for cytopathology is the most convenient, least invasive means of establishing the diagnosis of upper tract urothelial tumors. There is a positive correlation between tumor grades and cytology results. Ureteral catheterization for collection of urine directly from the upper urinary tract provides more accurate cytologic results, but it is still associated with substantial false-negative (22 to 35 per cent) and false-positive findings.[7] Saline barbotage provides better cell yields and improves the accuracy of cytology results.

Ultrasonography and Computerized Tomography (CT)

Ultrasonography may be helpful in distinguishing between a urothelial tumor and a radiolucent calculus, but it is generally of little value in diagnosing and staging of upper tract urothelial tumors. Of the 15 patients we reported, 13 received ultrasound examinations, but only ureterohydronephrosis was revealed. Milestone reported that CT is useful both in the diagnosis and staging of upper tract urothelial tumors, and that MRI can not offer any advantage over CT scanning in those.[8] Of 10 patients receiving CT scanning in our series, 7 had filling defect in the ureter, increasing diameter of the ureter and thicking of the ureter wall, indicating the present of the mass in the ureter. additional thin layer CT scanning of the ureter distal to obstruction, especially of the iliopelvis, and reading the photograms with care can improve the diagnostic rate of the ureteral carcinoma.

Ureteroscopy

In current years, with the development of rigid and flexible ureteroscopes, ureteroscopy has been used increasingly in establishing the diagnosis of upper tract urothelial tumors. Blute reported that the diagnosis of ureteral tumors was made correctly in 90 per cent of ureteral tumors by ureteropyeloscopy.[9] In our series, one patient underwent ureteroscopy and the diagnosis of ureteral tumor was confirmed preoperatively. The major concern about performing ureteroscopy in patients with upper tract urothelial tumors is the risk of ureteral perforation with extravasation of tumor cells, denudation of the ureteral muscosa for implantation of tumor cells, or development of complete ureteral disruption or stricuture formation. Therefore, diagnostic ureteroscopy should be reserved for patients in whom the diagnosis remains in doubt after utilizing conventional diagnostic techniques.

In summary, the patient suspected of ureteral tumor should receive the above examinations selectively and individually according to differnt situations. IVP usually is the first method of choice. after it, cystoscopy should be performed, and retrograde urography should be considcered. Ureteral catheterization for collection of urine and brush biopsy directly from upper urinary tracts can be carried out to provide more accurate cytologic results during the period of cystoscopy and retrograde urography. Because CT is noninvasive and useful both in the diagnosing and staging of the ureteral tumor, it should be performed on the patients suspected of ureteral tumor as far as possible. Diagnostic ureteroscopy should be performed for patients in whom the diagnosis remains in doubt asfter utilizing conventional diagnostic techniques.

The traditional treatment for upper tract urothelial tumors is total nephroureterectomy with a cuff excision of the bladder. This is based on that upper tract urothelial tumors can occur at different sites and that there is a high recurrence rate (30 to 75 per cent) of tumor in the ureteral stump or around the

ipsilateral ureteral orifice in patients treated with more conservation operations. In our series, 2 patients with the tumor of grade II to grade III invading 8 to 12 cm of the right middle-lower ureter had secondary small tumor of grade I to II in the renal pelvis confirmed pathologically. All of the five patients associated with bladder tumors around the ipsilateral ureteral orifice preoperatively and the 3 patients receiving conservative operation developed bladder tumor within 3 years aftere operation. These support the above viewpoint. We consider that the traditional radical excision is still a basic treatement of choice for upper tract urothelial tumors, especially for those with multiplicity or high grade and high stage. Johsansson (1979) and Zheng (1994) recommended parafascial nephroureterectomy with adrenalectomy and retroperitoneal lymphadenectomy for treatment upper tract trasitional cell carcinoma, with a 5-year survival of 84 per cent as compared with that of 51 per cent following conventional nephroureterectomy.[10] This operation may prevent recurrence of retroperitoneal tumor, especially for patients with high stage tumor. The patients reveiving even radical operation may have a possibility of secondary bladder tumor, and a few of patients may be associated with urothelial tumor in contralateral upper tract. Of the patients we followed up, 7 had recurrent tumors, with a recurrence rate of 46.7 per cent. In one of them, the recurrent carcinoma located in the contralteral lower ureter and posterior urethra. In our opinion, cystourethroscopy, IVP and intravesical instillation should be carried out regularlly and peridically after opertion on patients with upper tract urothelial tumor as on those with bladder cancers after the treatment of bladder salvage.

Though there are reprots in which some patents with ureteral carcinoma recived more conservative operative procedures and got good results as those of radical operation, most authors revommend that conservative procedure is fit only for treatment of the patients with possibility of renal failure, especially when the patient has solitary kidney and a single ureteral tumor of low grade and low stage.[11]

REFERENCES

1. 顾方六。尿路上皮性肿瘤临床。见：吴阶平主编。泌尿外科。济南：山东科学技术出版社，1993; 453.
2. Babaian RJ, Johnson DE. Primary Carcinoma of The Ureter. J Urol 1980; 123:357.
3. Murphy DM, zincke H, furlow WL. Management of High Grade Transitional Cell Cancer Of The Upper Urinary Tract. J Urol 1981; 135: 25.
4. 吉名显，欧阳乾。原发性输尿管癌的诊断。中华泌尿外科杂志 1982; 3: 283.
5. Sheline M, Amendola Ma, Pollack HM, et al. Fluoroscopically Guided Retrograde Brush biopsy in The diagnosis of Transitional Cell Carcinoma of The Upper Urinary Tract: results in 45 Patients. Am J Roentgenol 1989; 153: 313.
6. Gittes RF. Retrograde Brushing and Nephroscopy in The diagnosis of Upper-Tract Urothelial Cancer. Urol Clin North Am 1984; 11: 617.
7. Hawtrey CE. fifty-two Cases of Primary Ureteral Carcinoma: A Clinical-Pathologic Study. J Urol 1971; 105: 188.
8. Milestone B, friedman AC, seidmon EJ, et al. Staging of Ureteral Transitional Cell Carcinoma by CT and MRI. Urology 1990; 36: 346.
9. Blute ML, degura JW, Patterson DE, et al. Impact of Endourology on Diagnosis And Management of Upper Urinary Tract Urothelial Cancer. J Urol 1989; 141: 1298.
10. 郑世广，周志耀，陈承志，等。根治性切除治疗上尿路移行上皮癌。中华泌尿外科杂志 1994; 15: 56.
11. Anderstrom C, Johansson SL, Pettersson S, et al. Carcinoma of The Ureter: A Clinicopathologic Study of 49 Cases. J Urol 1989; 142: 280