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ROLE OF FLEXIBLE URETERORENOSCOPY IN THE MANAGEMENT OF LATERALIZING ESSENTIAL HAEMATURIA

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Objective: To evaluate the role of flexible ureterorenoscopy in diagnosis and treatment of lateralizing essential haematuria.

Patients and Methods: Twenty-three patients suffering from unilateral haematuria were included in the study and underwent flexible ureterorenoscopy. Their age ranged from 17 to 68 years (mean age: 36 years). Unilateral gross haematuria was demonstrated cystoscopically. The patients were subjected to a careful history taking, full laboratory and radiological investigations which, however, failed to localize the cause of haematuria. We therefore applied flexible ureterorenoscopy on the affected ureterorenal unit.

Results: The collecting system was inspected in 21/23 patients. Discrete lesions were identified in 11 patients (haemangioma on a renal papilla in six, small vascular lesions in three, a small calculus in one and a small papillary growth in one). Non-specific abnormalities (erythema of the infundibulum or abnormal configuration in the renal papilla) were found in six patients. No lesion was detected in 4 patients. Patients with non-specific abnormalities were biopsied and coagulated. The remaining 11 patients with discrete lesions underwent laser fragmentation of the calculus, nephroureterectomy for the papillary transitional cell carcinoma (TCC) and 9 patients underwent fulguration with or without biopsies. The haematuria resolved in all patients with discrete lesions. Patients with non-specific abnormalities had a poor outcome in our series, since all had recurrent or persistent bleeding. Follow-up ranged from 6-18 months (mean 9 months).

Conclusion: Flexible ureterorenoscopy can be of value in the diagnosis and treatment of lateralizing haematuria. Patients with discrete lesions respond well to endoscopic treatment (electrocoagulation).

Keywords: flexible, ureterorenoscopy, unilateral haematuria.

INTRODUCTION

Lateralizing essential haematuria has been defined as gross unilateral haematuria demonstrated cystoscopically with normal radiological findings. Before any invasive procedures are carried out, a thorough medical examination and laboratory investigations are essential to rule out medical renal disease or a systemic condition causing the haematuria[1]. Early attempts to diagnose and treat haematuria included nephroscopy and partial or total nephrectomy[2]; rigid ureteroscopy has also been tried[3]. With the improvement in technology and instrumentation, flexible ureterorenoscopy has started to replace other procedures. The flexible ureteroscope provides the urologist with an easy access to the entire upper urinary tract avoiding the need for an open surgical procedure[4]. Its application has been expanded beyond urolithiasis to include numerous diagnostic and therapeutic procedures, such as the treatment of upper urinary tract obstruction, diagnosis and treatment of superficial upper tract urothelial tumors and diagnosis and therapy for essential lateralizing haematuria[5,6]. This study was carried out to evaluate the role of flexible ureterorenoscopy in the diagnosis and treatment of lateralizing essential haematuria.

PATIENTS AND METHODS

Our study included 23 patients (14 males and 9 females) suffering from intermittent or

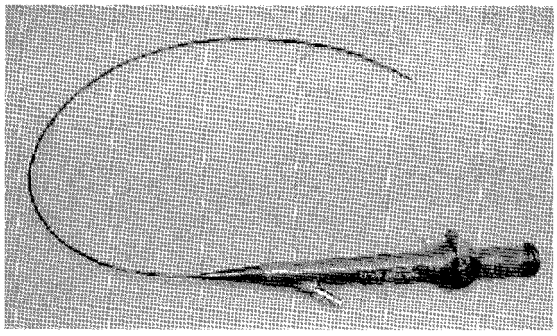

Fig. 1: Flexible ureterorenoscope

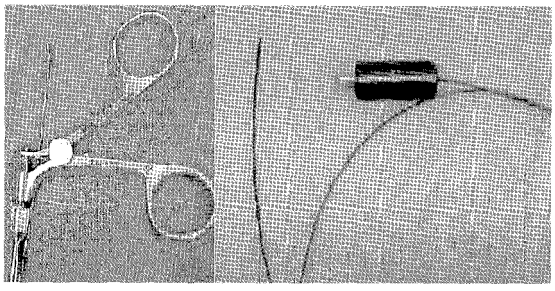

Fig. 2: The biopsy forceps and bugbee electrode used for biopsy and electro-fulguration

continuous unilateral gross haematuria as demonstrated by cystoscopy. Their age ranged from 17 to 68 years (mean age: 36 years).

All patients were subjected to careful history taking with a proper analysis of their haematuria. Routine laboratory investigations included coagulation profiles and urine examination for dysmorphic RBCs to exclude a glomerular cause of haematuria. Urine cytology was negative in all patients. Standard radiological investigations included abdomino-pelvic ultrasound (US), intravenous urography (IVU) and retrograde ureteropyelography (either performed separately or as a part of the flexible ureterorenoscopy procedure). CT scan was done in 6 patients to evaluate suspicious lesions detected by US or IVU.

Since laboratory and radiological evaluation failed to localize the cause of haematuria, we applied flexible ureterorenoscopy on the affected ureterorenal unit.

Endoscopic technique:

The instrument used was the Karl Storz flexible actively deflectable ureterorenoscope, 70 cm in length, 7.5 Fr tip diameter, with a working channel of 3.6 Fr (Fig 1). The procedure started with cystoscopy and retrograde urography to delineate the anatomy of the upper urinary tract with a more accurate definition of the calyces and the ureter. We then passed two floppy-tipped 0.038-inch guide wires into the renal pelvis taking care to avoid any trauma to the collecting system that could lead to false results. The guide wire insertion was performed either using a double lumen ureteric catheter or consecutively through the cystoscope. The safety guide wire was left within the renal pelvis at all times. Fluoroscopic monitoring was used as an integral part of the procedure allowing an exact confirmation of our position at all times.

A ureteral balloon dilator was then passed over the working guide wire. We commonly use a 7 Fr. balloon catheter, 10 cm in length, that dilates the intramural ureter to 15 Fr. The flexible ureterorenoscope was passed directly over the working guide wire. In male patients, a 22 Fr. cystoscopic sheath is quite useful to guide the ureterorenoscope to the ureteral orifice. Using both direct vision through the ureterorenoscope and fluoroscopic monitoring, the flexible ureterorenoscope was passed up to the renal collecting system. Once the renal pelvis had been reached, the working guide wire was removed and the working port was used for the passage of diagnostic and therapeutic instruments (Fig. 2). Systematic screening of the pelvicalyceal system was performed starting from the upper, middle and lower calyceal groups. This was followed by the examination of the renal pelvis and, finally, the ureter during withdrawal of the flexible ureterorenoscope. Suspicious lesions were biopsied and bleeding sites fulgurated. Seven Fr. ureteral catheters were left at the end of the procedure for two to three days.

RESULTS

The study group consisted of 23 patients. Lateralizing essential hematuria was found on the left side in 13 and on the right side in 10 patients. The entire collecting system was inspected in 21 of the 23 patients as in 2 cases the mid-ureter could not be passed with the flexible ureterorenoscope (this occurred early in the series).

On intrarenal endoscopic examination discrete lesions were found in 11 patients; these included haemangioma on a renal papilla in six

Table 1: Endoscopic findings in 21 Cases of Lateralizing Haematuria

Endoscopic Finding	No.
Discrete lesions:	11
- Haemangioma	6
- Minute venous rupture	3
- Papillary tumor	1
- Calculus	1
Non-specific lesions:	6
Erythema of infundibulum	5
Abnormal papillary tip	1
No lesion seen	4

patients, small vascular lesions (minute venous rupture) in three and a small calculus in one patient. The remaining patient had a small papillary growth at the pelvi-ureteric junction which was biopsied and proven to be a grade-2 transitional cell carcinoma (TCC) (Table 1).

Non-specific abnormalities were visualized in six patients; in five of them, the abnormality consisted of erythema of the infundibulum while one patient had an abnormal configuration in the papilla. (Table 1) Fulguration was done for all. Biopsies were taken in four patients and demonstrated a non-specific inflammatory reaction.

No lesion was seen in four patients (Table 1).

The patient with the TCC underwent nephroureterectomy. The 5 mm calculus was laser fragmented through the flexible ureterorenoscope. Out of the remaining 15 patients who underwent fulguration with or without biopsies the haematuria resolved in nine. Six patients had persistent or recurrent bleeding upon follow-up; they belonged to the group of non-specific abnormalities detected on flexible ureterorenoscopy.

Usually bleeding is seen for two to three days postoperatively, and the patients were informed that such bleeding might occur. The follow-up period ranged from 6-18 months (mean 9 months). Follow-up examinations consisted of urine analysis at 4 weeks, 3 and 6 months after the treatment and radiological evaluation by either US or IVU at 3 to 6 months postoperatively.

Complications were minor in our series and occurred in the form of renal colic in two patients and low grade fever in one.

DISCUSSION

Unilateral essential haematuria is described as unilateral bleeding of undetermined origin and can be detected by cystoscopy[7]. Its aetiology remains unknown, even after thorough diagnostic and radiologic evaluation. Haematuria can be very distressing to the patient and represents a diagnostic and therapeutic challenge to the urologist. Some early reports have cited the benign nature of the bleeding in patients with lateralizing haematuria and recommended avoiding extensive evaluation and treatment[8]. With persistent or recurrent bleeding some success has been reported with pharmacological trials using 1% silver nitrate instilled by a retrograde technique or systemic administration of aminocaproic acid[9,10]. Although rigid ureteroscopes have been successful in defining the site of the bleeding in very few patients, the results are generally not encouraging[1,3].

Patterson and associates[11] used percutaneous nephroscopy to identify and treat bleeding. They were able to identify the bleeding site in the kidney in 3 of 4 patients and successfully fulgurated it. They demonstrated that full access to the intra-renal collecting system was essential. With the use of flexible ureterorenoscopes and the maneuvrability the instrument offers, endoscopic diagnosis and treatment of diseases of the ureter and the intra-renal collecting system can be achieved. Significant lesions are visible on direct inspection, and low-grade tumors, calculi and vascular malformations are readily recognized and can be dealt with. However, it is difficult to differentiate between high-grade neoplasms and inflammatory lesions on direct vision[12].

Bagley and Alan[13] studied 32 patients with lateralizing essential haematuria. Discrete lesions were found in 16 patients. The most common findings were haemangioma on a renal papilla (11 patients) and non-specific abnormalities (9 patients). Kumon and associates[7] in their evaluation of 12 patients with uni-

lateral unexplained gross haematuria diagnosed by flexible ureterorenoscopy or percutaneous pyeloscopy found discrete lesions in 9 patients (four haemangiomas, four minute venous ruptures and one TCC). In two patients, no gross lesion was found and diffuse bleeding was seen in another patient. Similar findings were seen in the series of Nakada and associates[14] and in the series of Tawfiek and Bagley[15].

We examined 23 patients with chronic unilateral gross haematuria and were able to reach and screen the collecting system in 21 patients (91.3%). Treatable discrete lesions were found in 52% of our cases, which is similar to the findings of Bagley and Alan[13] and Nakada and associates[14]. Kumon and associates[7] reported a higher rate of discrete lesions (75%) which might be due to the small number of patients (12 patients) included in their series.

We were successful in treating 10 of 11 patients (90.9%) with discrete lesions endoscopically: electrocoagulation was performed in nine patients and laser fragmentation of the calculus in one patient. These results are similar and comparable to Kumon and associates[7], Lano and associates[8] and Aso and associates[12] who successfully electro-coagulated discrete lesions in 89-93% of their patients. However, patients with non-specific abnormalities had a poor outcome in our series and had recurrent or persistent haematuria; this finding is similar to that of other authors[8,9] and may be explained by the diffuse nature of such lesions which are very difficult to treat.

It is noteworthy that in our series as well as in the series of other authors[13-15] no specific treatable lesion was seen in the ureter and that the pathology was limited to the kidney. Taking this finding into consideration and the fact that discrete lesions are endoscopically treatable, it may be justified to use the flexible ureterorenoscope (with its high cost and the fact that it is not repair-exchangeable) in selected cases.

In summary, flexible ureterorenoscopy provides a diagnostic and therapeutic modality for the safe and effective diagnosis and treatment of lateralizing haematuria and can be recommended for the management of patients with discrete lesions that can be successfully electrocoagulated.

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RESUME

Rôle de l'Uretérorénoscopie Souple dans la Prise en Charge de l'Hématurie Essentielle Latéralisée

Objectifs: Evaluer le rôle de l'uretérorénoscopie dans le diagnostic et le traitement de l'hématurie essentielle latéralisée. **Patients et Méthodes**: Vingt trois patients présentant une hématurie unilatérale étaient inclus dans cette étude et ont bénéficié d'une uretérorénoscopie souple. L'age des patients variait de 17 à 68 ans avec une moyenne de 36 ans. L'hématurie macroscopique unilatérale a été mise en évidence par la cystoscopie. Pour tous les patients l'histoire de la maladie a été bien retracée et une exploration biologique et radiologique complète a été réalisée. Cependant la cause de l'hématurie restait toujours inconnue chez les patients de cette étude. Ceci a nécessité la réalisation d'une uretérorénoscopie du coté atteint. **Résultats** : Le pyélon a été examiné chez 21/23 patients. De discrètes lésions ont été identifiées chez 11 patients (un hémangiome de la papille rénale dans 6 cas, des lésions vasculaires minimes dans 3 cas, de petits calculs dans 1 cas et une macro papille dans 1 cas). Des anomalies non spécifiques (érythème infundibulaire ou une configuration anormale des papilles rénales) ont été retrouvées chez 6 patients. Une absence de lésion a été notée chez 4 patients. Les patients qui présentaient des lésions non-spécifiques ont bénéficié d'une biopsie et d'une coagulation. Les 11 patients restant avec des lésions discrètes avaient bénéficié d'une fragmentation de calcul au Laser, une néphro-uretérectomie pour tumeur urothéliale papillaire, et 9 patients avaient bénéficié d'une fulguration avec ou sans biopsie. L'hématurie avait disparu pour tous les patients présentant des lésions discrètes. Pour les patients présentant des anomalies non spécifiques les résultats étaient médiocres dans notre série avec persistance ou reprise du saignement. Le suivi moyen était de 9 mois avec des extrêmes de 6 à 18 mois. **Conclusion**: L'uretérorénoscopie flexible peut être intéressante dans le diagnostic et le traitement des hématuries latéralisées. Les patients avec des lésions discrètes répondent bien au traitement endoscopique (électrocoagulation).

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