URETERIC STRICTURES AN ANALYTICAL STUDY OF AETIOLOGY, PATHOLOGY AND MANAGEMENT

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ABSTRACT

BACKGROUND

Ureteric strictures are common diseases of India due to tuberculosis, instrumentation, congenital and other reasons. In this study we found that tuberculosis (27%) and instrumentation (27%) were the leading causes of ureteric stricture.

MATERIALS AND METHODS

This is a prospective study conducted in the Department of Urology, Government Medical College, Thiruvananthapuram. Cases diagnosed as ureteric strictures by IVP and CT scan were taken up for this study. Their clinical features, investigations, treatment and surgical options were studied.

RESULTS

The total number of cases studied were 11 (5 males and 6 females). We found that three patients had tuberculous strictures and two patients had lower ureteric strictures with obstructive megaureter like presentation. Three cases had upper ureteric strictures with unknown aetiology. Three cases had iatrogenic ureteric strictures secondary to instrumentation.

CONCLUSION

We concluded from our study that Tuberculosis is a common cause of ureteric stricture. Prior history of instrumentation is the second most common cause of ureteric stricture. Lower ureteric stricture with obstructive megaureter like presentation was also not uncommon and an equally significant group of ureteric strictures had unknown aetiology.

KEYWORDS

Ureteric Stricture, Tuberculosis, Iatrogenic Stricture, Obstructive Megaureter, Instrumentation.

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BACKGROUND

The ureter is 22 to 30 cm in length depending on the individual's height and is divided into upper, middle and lower third. Ureteric strictures can occur in all the three regions with equal incidence.

Patients having ureteric strictures may be asymptomatic or may present with symptoms like flank pain, fever, infection etc. The symptoms usually poorly correlate with the degree of ureteric obstruction. Some patients have urinary tract infections as the only presenting symptom. Some patients present with pyelonephritis or back pressure changes. Bilateral stricture or stricture in a solitary kidney ureter can lead to ESRD (End Stage Renal Disease).

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Histopathological analysis of the stricture segment revealed disordered collagen deposition, fibrosis and varying levels of inflammation or even signs of tuberculosis. Partial ureteric stricture may produce mild proximal ureteric dilatation and complete ureteric obstruction may cause impaired renal function.

There may be various causes of ureteric obstruction including tuberculosis, iatrogenic causes like instrumentation and congenital causes like obstructive megaureter, secondary to impacted calculus, ureteric perforations or ischemia from previous surgeries or due to extrinsic causes like tumours, pelvic masses, gynaecologic malignancies or retroperitoneal fibrosis.

Ureteric strictures can also be caused by inflammatory abdominal aortic aneurysms, retrocaval ureter, urinary diversions, post renal transplant and rare causes like schistosomiasis or sarcoidosis. Strictures can occur secondary to abdominal lymphadenopathy from malignancies like lymphomas, testicular malignancies, breast cancer or colonic carcinoma. Ureteric stricture can also occur secondary to radiation treatment for various pelvic malignancies.

In our study we have analysed the aetiology, pathology and management of ureteric strictures at a tertiary care health centre in India.

MATERIALS AND METHODS

This is a prospective study conducted in Department of Urology, Government Medical College, Thiruvananthapuram. Period of study was three years. Total of eleven patients suspected of ureteric strictures were studied. Basic investigations, abdominal ultrasound, intravenous pyelogram, abdominal and pelvic CT with CT urogram, MR urogram, and endoscopic procedures like ureteroscopy were done to confirm the diagnosis. A detailed history was taken from all patients including history of previous endourological procedures, surgeries, previous history of tuberculosis and history of stone diseases.

The diagnosed cases of ureteric stricture were treated either by endoscopic, laparoscopic or open methods. Ureteric continuity was maintained by ureteroureterostomy or ureteroneocystostomy over a double J stent. The excised ureteric stricture segments were sent for histopathology. Histopathology slides were studied to arrive at a diagnosis and aetiology. All the cases were followed up for a period of three years.

Inclusion Criteria

All the patients presenting to the Urology OPD with radiological evidence of stricture were included in the study. We used ultrasound and CT for evidence of stricture for inclusion.

Exclusion Criteria

1. Patients who underwent some surgical treatment for ureteric stricture elsewhere
2. Patients coming with a recurrence which were treated in our Hospital.
3. Strictures due to extrinsic compression, uretero-vaginal fistula, retroperitoneal fibrosis, and pelvic malignancies like carcinoma of cervix.

RESULTS

In our study eleven cases of ureteric stricture were studied, managed and followed up over a period of three years. Out of the eleven cases, three cases (27%) were diagnosed as tuberculous strictures based on other findings in IVP, CT urogram and urine culture for AFB preoperatively and histopathology study of excised segment postoperatively. All the cases were given anti-tubercular drugs. These patients were surgically corrected once active infection was subsided.

There were 3 cases (27%) of lower ureteric strictures; stricture segment excision with ureteric reimplantation in 2 cases and psoas hitch in 1 case was performed. Out of the eleven cases, two cases (18%) presented with grossly dilated ureters with lower ureteric strictures. These cases were appearing like obstructive megaureters. No etiological cause could be identified for these 2 cases except the congenital cause. Both these cases were females in their middle age. These two cases were managed by laparoscopic ureteric reimplantation.

Out of eleven cases three cases (27%) were upper ureteric strictures. In these three cases, we were not able to find any etiological reason for the stricture disease. All the three cases underwent open ureteroureterostomy over DJ stent. Histopathology revealed fibrosis and anti-inflammatory cells in all the three cases. No definite clue for the aetiology could be reached in these three cases.

Three cases (27%) were secondary to endourological procedures like instrumentation. These three cases were managed endoscopically. One case was managed by endoscopic ureteric dilatation using serial ureteric dilators. Second case was managed by endoscopic ureteric balloon dilatation. Third case was managed with Holmium laser. There was no recurrence in follow up in all the three cases.

Figure 1. Endoscopic View of Stricture

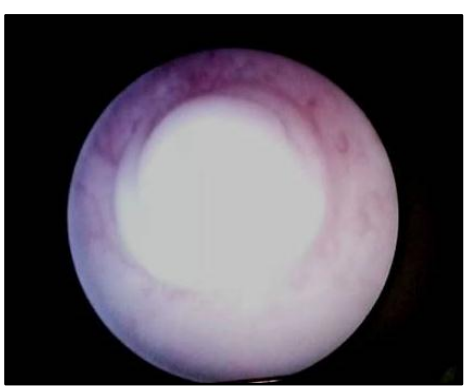

Figure 2. Endoscopic View of Stricture

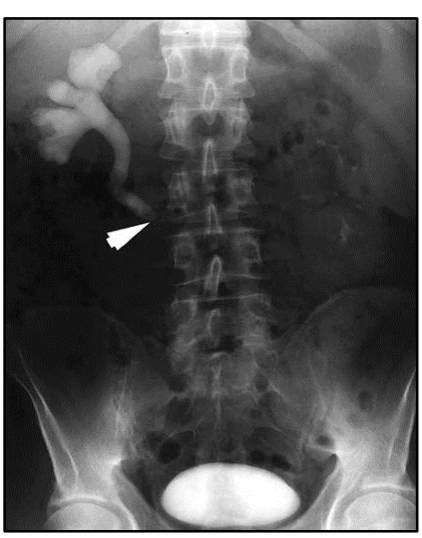

Figure 3. IVP Showing Upper Ureteric Stricture

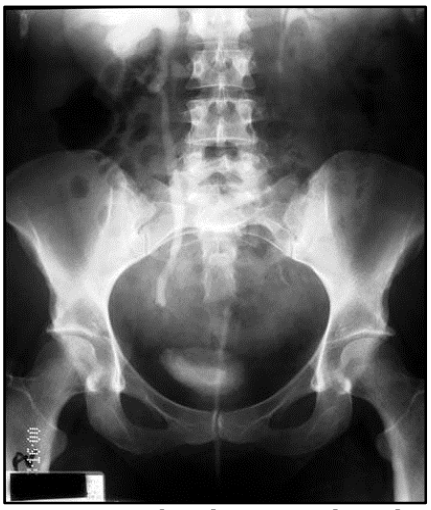

Figure 4. IVP Showing Ureteric Stricture

DISCUSSION

A ureteral stricture is characterized by a narrowing of the ureteric lumen, causing functional obstruction. Ureteric strictures may be classified as extrinsic or intrinsic, benign or malignant, iatrogenic or noniatrogenic.

Extrinsic malignant strictures may be due to primary or metastatic cancer. Primary pelvic malignancies include cancers of the cervix, prostate, bladder, and colon. Retroperitoneal lymphadenopathy due to lymphoma, testicular carcinoma, breast cancer, or prostate cancer may cause proximal to midureteral obstruction. Bilateral ureteric strictures can lead to renal failure.

Ureteral TCC may manifest as ureteral obstruction. Ureteral TCCs show an irregular mucosal pattern associated with dilatation of the ureter below the lesion (goblet sign). Benign strictures are usually smooth, without distal dilatation. In some cases, biopsy may be required to differentiate benign from malignant strictures which may be collected ureteroscopically or with a fluoroscopically directed ureteral brush.

The main centre of our study are benign intrinsic strictures, causes of which may be congenital (congenital obstructing megaureter), iatrogenic, or noniatrogenic (after passage of calculi) or chronic inflammatory ureteral involvement (tuberculosis and schistosomiasis).

Ureteral strictures may complicate urinary diversion (3%-5%). Gynaecologic surgery is responsible for up to 75% of iatrogenic ureteral injuries. The widespread use of upper tract endoscopy has led to an increased frequency of iatrogenic ureteral strictures (3-11%). Ureteral perforation during these procedures has also been identified as a risk factor for stricture disease.[1,2] Large scope size, prolonged case duration, stone impaction, size, proximal location, perforation, use of intracorporeal lithotripsy are some of the factors causing post ureteroscopy strictures.

According to Vakili et al[3], a prospective analysis of 479 patients undergoing hysterectomy for benign disease, iatrogenic ureteral injury occurred in 8 patients. Risk factors for urinary tract injury during hysterectomy include malignancy, pelvic radiation, endometriosis, prior surgery, and surgery for prolapse, although at least half of all ureteral injuries have no identifiable risk factors. Ureteral injuries or injury repairs may also result in strictures, although strictures of these aetiologies are less common than strictures caused during endoscopy or anastomosis.

Patients having ureteric strictures may be asymptomatic or may present with symptoms like flank pain, fever, infection etc. The symptoms usually poorly correlate with the degree of ureteric obstruction. Some patients have urinary tract infections as the only presenting symptom. Less frequently, patients may present with pyelonephritis or back pressure changes. Bilateral stricture or stricture in a solitary kidney ureter can lead to ESRD (End Stage Renal Disease).

This study was conducted to find out the aetiology of ureteric stricture, the pathological process at the stricture segment, and the suitable management of these ureteric strictures. In all these cases we tried to find out the etiological cause of the stricture. Many earlier studies have tried to find out the different aetiologies for the ureteric stricture.

Robert et al[4] in 1998 proved that impacted calculus was a reason for ureteric stricture. Patel et al[5] in 1992 showed that endometriosis was a cause for ureteric stricture. Murphy et al[6] studied tuberculosis as a cause of ureteric stricture. Lacquet et al[7] in 1997 showed that inflammatory abdominal aortic aneurysm can be a cause for ureteric strictures.

Goodman M et al[8] in 1982 proved that the radiation given to the pelvic malignancies is a common cause of ureteric stricture. Wolf J S et al[9] in 1997 classified benign ureteric strictures into ischemic and non-ischemic strictures. In our study we have managed three cases by endoscopic procedures achieving a near hundred percentage success in those three (27%) cases.

Study by Periera et al[10] in 2010 showed that stricture length less than 2 cm had a success of 84%. The success rate was less than 50% if the stricture segment was more than 2 cm. In our study all the cases managed endoscopically had stricture segment less than 2 cm.

In our study there were three cases of tuberculous strictures which were managed by open surgical techniques. But Murphy.[6] et al in 1982 claimed that transurethral dilatation of ureteric strictures was useful in 64% of cases of tuberculous stricture.

CONCLUSION

Ureteric strictures are not uncommon in urological practice. Tuberculosis is still a major cause of ureteric stricture in India. Instrumentation of ureter is another important reason for the ureteric stricture. Congenital causes like obstructive megaureter is also a common cause of ureteric stricture. In a good percentage of cases the aetiology of ureteric stricture cannot be fixed. Histopathological studies are useful in tuberculous strictures. Open surgical methods, laparoscopic reimplantation and endoscopic management are the treatment options in ureteric strictures.

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