Self-assessment corner

Ureteric filling defect

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A 52-year-old Caucasian woman presented with a 10-year history of recurrent proven urinary tract infections. The only current urological symptom was of vague right loin discomfort during an episode of urinary tract infection and physical examination was unremarkable. Urine culture confirmed current infection with coliform species. Early morning collections of urine were negative for tuberculosis. Following treatment of her infection, urine cytology revealed benign squamous cells with no inflammatory cells or malignant cells. An intravenous urogram demonstrated a filling defect of uncertain cause in the upper third of the right ureter (figure 1).

Figure 1 Intravenous urogram showing a filling defect in the upper third of the right ureter

Questions

- 1 What other investigations are indicated in this patient?
- 2 How should this patient be managed?

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Figure 2 Histological examination of biopsy from abnormal area seen on intravenous urogram (figure 1) illustrating extensive squamous metaplasia of the ureteral mucosa with formation of a granular layer and desquamation of hyperkeratotic debris (right $\times 200$). The prominent keratohyalin granules of the granular layer can be seen above ($\times 400$)

Answers

QUESTION 1

Most ureteric filling defects result from transitional cell carcinoma, other less common causes include squamous cell carcinoma, cystitis cystica, benign epithelial polyp and inverted papilloma of the ureter. Cystoscopy and ureteroscopy under general anaesthesia are indicated. Cannulation and/or endoscopic examination allow collection of urine from the affected ureter for cytology analysis as well as direct visualisation of the lesion and biopsy.

Cystoscopy in this patient revealed a normal bladder. Ureteroscopy of the right ureter revealed an irregular area covered by white amorphous material in the position corresponding to the level of the filling defect noted on the intravenous urogram. No active inflammation was seen in the right ureter. Multiple biopsies from the abnormal area were performed. Histological examination showed squamous metaplasia with marked hyperkeratosis with a prominent granular layer and keratotic debris, without any evidence of dysplasia or malignant changes (figure 2).

QUESTION 2

Squamous metaplasia may affect any part of the urothelium. It occurs more commonly in the bladder, particularly in the bladder neck and trigone area. It is rare in the renal pelvis and the ureter.¹ Squamous metaplasia, particularly in the trigone, is seen commonly in females and is responsive to oestrogen. Early changes include the formation of large clear polygonal cells with numerous intercellular

Summary points

- keratinising squamous metaplasia of the urinary tract in the absence of dysplasia is a benign condition associated with recurrent urinary tract infection, urinary calculi and chronic inflammation
- ureteroscopy allows direct visualisation and biopsy of suspicious abnormalities identified on intravenous urogram as filling defects in the ureter, avoiding the need for open surgery

bridges. This type of squamous metaplasia lacks keratinisation and is similar histologically to vaginal or cervical squamous epithelium. Under certain conditions there is accentuation of the granular layer, superficial keratinisation and hyperkeratosis, as in our patient (figure 2). Development of keratinising squamous metaplasia of the urinary tract is associated with chronic urinary tract infection, urinary calculi, chronic inflammation, hydronephrosis and irradiation.² No other active intervention was indicated in our case and at follow-up 12 months later she remained asymptomatic and culture of mid-stream sample of urine revealed no further infection.

Discussion

Concern over the risk of the precancerous nature of squamous metaplasia has been raised in the past.³ Nevertheless, squamous metaplasia in the absence of cellular atypia is believed to be of benign nature and does not represent any increase in malignant potential. In an autopsy study of an unselected group of patients, squamous metaplasia of the bladder was found in up to half of all the females but in under 10% of the males.⁴ The higher incidence in females may be related to the action of female hormones.⁵

Final diagnosis

Keratinising squamous metaplasia resulting in ureteric filling defect.

Keywords: keratinising squamous metaplasia, ureteroscopy

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