ORIGINAL ARTICLE

Importance of red patches diagnosed in cystoscopy for haematuria and lower urinary tract symptoms

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Background: Biopsy of the red patches in the bladder, when found at cystoscopy, is routinely performed in urological practice. This is done to establish the sinister diagnosis of carcinoma-in-situ among other causes. **Objective:** To analyse the pathology of the red patches and to determine if routine biopsy of these patches is warranted.

Patients and methods: This was a retrospective study conducted over a period of 36 months, in which 50 patients were identified, who underwent biopsies of their red patches. All patients with a history of bladder carcinoma and obvious bladder tumours were excluded from this study.

Results: The mean age of the patients was 60.8 years. 25 patients had cystoscopy for lower urinary tract symptoms, 21 for haematuria and 4 for recurrent urinary tract infection. Carcinoma in situ was found in 4 (8%) patients, of whom only 2 had positive urine cytology.

Conclusion: It is prudent to perform a biopsy of all incidentally diagnosed red patches because of a major yield rate of carcinoma in situ. This procedure also picks up other important pathologies, which help in further management.

One of the more common indications for cystourethroscopy today is the evaluation of microscopic or gross haematuria. Other indications for cystourethroscopy include an evaluation of lower urinary tract symptoms (LUTS—obstructive and irritative), which may be the result of neurological, inflammatory, neoplastic or congenital abnormalities.¹ During the procedure, we often encounter erythematous patches in the bladder mucosa. Biopsies of these patches are routinely performed. The reason for performing the biopsy is to exclude carcinoma in situ, which classically presents as a “velvety patch of erythematous mucosa”. The aim of this study was to analyse the histology of the biopsy specimens of these red patches and ascertain their importance.

MATERIALS AND METHODS

This was a retrospective study in which biopsies performed of all red patches seen at flexible and rigid cystoscopy over a 36-month period from January 2002 to December 2005 were analysed. A total of 2702 patients underwent flexible cystoscopy; 840 of these procedures were performed for LUTS and haematuria. The rest were performed as a follow-up for carcinoma of the bladder. A total of 50 of the 840 flexi-cystoscopies had red patches without obvious bladder tumour, biopsies of which were performed under general anaesthesia using a rigid cystoscope.

RESULTS

Of the 50 patients, 18 had LUTS with microscopic haematuria, 7 had LUTS alone, 10 had microscopic haematuria, 11 presented with gross haematuria and 4 had cystoscopy performed for recurrent urinary tract infection. Seventeen (34%) of the patients were women. The mean age at biopsy was 60.8 years (range 24–80 years). Urine cytology was only performed in 42 of these patients; 4 (8%) of the patients had carcinoma in situ (CIS). Of these, two had positive and two had negative urine cytology for malignant urothelial cells. In all, 28 patients showed evidence of chronic inflammatory infiltration and 8 had features consistent with inflamed congested mucosa. No organisms were grown from urine samples cultured at the time

of initial presentation. Five patients showed evidence of vascular ectasia in the bladder mucosa. Two patients had normal tissue in the biopsy specimen of the red patch. Table 1 summarises the results of this study.

DISCUSSION

Cystoscopic biopsy of de novo red patches gave a pathological diagnosis in 96% of the patients. Only two patients with LUTS had a red patch which showed no abnormality. Carcinoma in situ may be asymptomatic or may produce severe symptoms of urinary frequency, urgency and dysuria.^{2,3} Patients with marked urinary symptoms generally have a shorter interval preceding the development of muscle-invasive cancer. About 20% of patients treated with cystectomy for diffuse carcinoma in situ are found to have microscopic muscle-invading cancer.² Hence, it is necessary to perform biopsy of the symptomatic de novo red patch to diagnose any sinister pathology. In this study, 4 of 25 (16%) patients with LUTS had a red patch which proved to be CIS on histological examination. Three of the patients had microscopic haematuria. The mean age of these patients at diagnosis of CIS was 65.5 years (range 60–70 years). Urine cytology was positive for malignant cells only in two of these four patients. Hence, positive urine cytology in the presence of a red patch gives a 100% diagnosis of CIS in our limited study. However, one can get a negative cytology result and yet have a CIS (50%). Therefore, it is necessary to perform biopsy of a red patch at cystoscopy, especially in elderly patients with LUTS, even if the urine cytology is negative for malignant cells, because of the higher pick-up rate of CIS.

The most common cause for a symptomatic red patch, however, is a chronic inflammatory infiltration as in other studies.⁴ Six patients had >1 red patch; biopsies were performed and all had features of chronic inflammation. Benign-appearing urothelium in the lamina propria (Von Brunn's nest) was reported in 18 (54.54%) patients with chronic inflammatory changes, whereas 2 (6%) reported cystitis cystica in this condition.

Abbreviations: CIS, carcinoma in situ; LUTS, lower urinary tract symptoms

Table 1 Demographics and the findings of this study

Indication for cystoscopy	Sex		Chronic inflammatory changes	Acute inflammatory changes	CIS	Vascular ectasia	Others	Normal
	F	M						
LUTS with microscopic haematuria	3	15	10	3	3	1	1	0
LUTS alone	3	4	5	1	1	0	0	0
Microscopic haematuria	3	7	4	2	0	0	2	2
Gross haematuria	4	7	5	2	0	4	0	0
Recurrent UTI	4	0	4	0	0	0	0	0
Total	17	33	28	8	4	5	3	2

CIS, carcinoma in situ; LUTS, lower urinary tract symptoms; UTI, urinary tract infection.

In all, 8 (16%) patients who underwent cystoscopy biopsy of the red patch had features of acute inflammation in the specimen. It is interesting to note that no organisms were grown in cultures from any of these 8 patients at the time of presentation.

One patient was of Nigerian origin and had presented with microscopic haematuria. The biopsy of his red patch showed a submucosal deposition of ova of *Schistosoma*. Retrospectively, his urine sediment showed the presence of terminally spined eggs of *Schistosoma hematobium*. One patient with microscopic haematuria, who was known to have autoimmune arteritis, had a biopsy report of features of vasculitis with eosinophilic infiltrates consistent with his medical condition. Yet another patient with LUTS of about 14 months' duration and microscopic haematuria had features suggestive of interstitial cystitis, as evidenced by the presence of inflammatory granulation tissue and mast cells in the submucosa.

Five patients had features of vascular ectasia in their red patch. Interestingly, all 5 (100%) had haematuria as their initial presentation. As their symptoms were self-limiting, they required no active treatment. No organisms were grown from the urine cultures of these five patients at the time of presentation.

Cina *et al*⁵ in their review showed a 100% correlation between cystoscopic impression and the histological diagnoses for 17 flat urothelial lesions. However, in this study, we could not detect CIS by cystoscopic appearance or symptoms alone. Although arguments against the routine use of cystoscopy as part of the evaluation for microscopic haematuria are being raised,⁶ there are still no strict guidelines for indications to perform cystoscopy in a patient with LUTS.

After initial optimism about the use of fluorescence cystoscopy in the detection of CIS in coexisting bladder tumours,⁷ its use as a screening test for evaluation of LUTS or microscopic haematuria has been found to be disappointing. In their study of 262 men with LUTS or microscopic haematuria, Jichlinski *et al*⁸ found that no patient had a bladder tumour detected using this modality that was not seen with white-light cystoscopy.

It is therefore prudent to conclude, at the moment, that biopsy of de novo red patches is necessary to exclude the

diagnosis of malignancy as urine cytology, cystoscopic impression of the lesion or fluorescence cystoscopy alone are not conclusive.

CONCLUSION

As the rate of diagnosis of CIS in a de novo red patch is 8%, this warrants performing a biopsy even if the urine cytology is negative (50%), especially in elderly people (>60 years).

Biopsy is also necessary for diagnosing the rarer conditions, which can help in the treatment of same.

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