

# HAEMATURIA

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## INTRODUCTION

It is difficult to think of a disease of the urinary tract which does not produce bleeding in its gross or microscopic form. A comprehensive survey of the causes would require the production of a combined textbook of urology and nephrology. However haematuria is an important topic. Its investigation has been well understood for many years. I hope the following will give some insight into the more unusual aspects of haematuria.

## THE CLINICAL HISTORY

The description of haematuria is very important. Most patients are very reliable and men in particular can often give a clear description of the nature of the bleeding – whether it is initial, terminal or total, and the presence or absence of clots. Obviously women cannot be so precise and even the most observant woman can get mixed up between vaginal bleeding and haematuria. As a result there is a fair amount of exchange between the urology and gynaecology departments.

It is generally stated that painless haematuria is likely to be more serious than painful haematuria. By and large this is true as far as the bladder goes. There is, however, a world of difference between someone who has an acute attack of cystitis with bleeding and someone who has persistent painful frequency of micturition with haematuria. The latter will have some form of serious bladder pathology such as an infiltrating carcinoma, carcinoma in situ, stones, and possibly that now rare condition, tuberculosis of the bladder.

Pain in the kidney in association with haematuria is a cardinal diagnostic feature, possibly a stone but if the bleeding is severe a hypernephroma may well be the cause.

Whilst a drug history is important in gross haematuria it is of vital importance in patients with persistent microscopic or dipstick-positive haematuria. Patients who bleed whilst taking anticoagulants or aspirin should always be investigated.

## PRELIMINARY INVESTIATIONS

A good physical examination should invariably be done but in the vast majority of cases no abnormality is found. In men the prostate may well be enlarged but it is rash to assume that this, even in the presence of prostatic symptoms, is the cause of the patient's bleeding. It is useful to record the patient's blood pressure.

Routine laboratory tests should include the haemoglobin, which is rarely low unless the patient is admitted with clot

retention, or has been continuously bleeding for many weeks. Renal function should be checked; urea, creatinine and electrolytes are usually sufficient. The urine should be looked at carefully by the clinician – not simply to confirm that the patient is talking about blood, but also to note the amount, the presence of clots and, even if the haematuria has apparently ceased, to check the urine by stick-testing for blood and albumen. Urine should be sent to the laboratory for microscopy, culture and sensitivity.

The next essential step is to visualise the urinary tract with radiographs or ultrasound. For many years the intravenous urogram (IVU) has been the mainstay investigation of haematuria. When introduced it was a major breakthrough. Prior to the introduction of the IVU patients with haematuria underwent cystoscopy and in the absence of bladder pathology to account for the bleeding, bilateral retrograde pyelography was carried out. In many clinics the IVU has been superseded by visualisation of the urinary tract with ultrasound which is undoubtedly the investigation of choice in children. Unless forewarned by radiographs it is easy to overlook a stone with ultrasound and it is essential if one is relying on ultrasound to perform a plain film of the urinary tract (KUB).

Urologists, particularly of my vintage, believe that a good quality IVU takes a lot of beating from the diagnostic point of view and, of course, it is essential in planning surgical incision.

In our department it is usual to double check the kidneys with ultrasound unless there is an obvious lesion within the bladder. It is possible to overlook a small solid tumour in a kidney on the IVU and there is a good chance that ultrasound may pick it up. Ultrasound really comes into its own in the investigation of space-occupying renal lesions. The question asked is: is this a cyst or a solid tumour? Ultrasound invariably gives the answer and rarely do we resort to cyst puncture or biopsy for purely diagnostic reasons. In addition to displaying an abnormality of the calyceal pattern which might indicate a solid tumour of the kidney, it will show the calyces and renal pelvis and the presence within the system of the comparatively rare carcinoma of the renal pelvis. More importantly it will give a guide to the function of the kidney(s), whether they are obstructed and at what level any obstruction is situated.

The commonest cause of haematuria in our department is a bladder tumour. Such tumours are very variable in size, shape and number. Commonly the bladder films of the IVU show the presence of such tumours and any associated obstruction to the ureters. Tumours of the back wall of the bladder are often overlooked and of course one would not expect to see very small or flat tumours or carcinoma in situ. In both ultrasound and IVU examinations, the prostate will be

visualised and it is important to recognise the presence of a very large prostate which should have been picked up on rectal examination even in the absence of symptoms.

Urinary cytology is often requested at the first visit. It is a useful test but is often negative in well-differentiated papillary bladder tumours and in necrotic but highly malignant infiltrating tumours. For these reasons it is not to be relied upon. It is virtually always negative in hypernephroma of the kidney and carcinoma of the prostate but it is the diagnostic test of choice for carcinoma in situ of the bladder when the symptoms may be confused with drug-induced cystitis, interstitial cystitis and tuberculosis.

## **CYSTOSCOPY AND BEYOND**

It goes without saying that those patients in whom a definite pathology is demonstrated will be admitted for cystoscopy and treatment. Patients with negative preliminary investigation, with certain exceptions, will be submitted to cystoscopy as an outpatient. Cystoscopy is usually carried out in men under general anaesthetic but women are very suitable for local anaesthetic cystoscopy, being anaesthetised only if treatment is required.

When a patient has been fully investigated, including cystoscopy, but has negative results it is important that the investigations are reviewed including a second or third look at the IVV. If all is well and the haematuria has not recurred no further tests are needed but if repeated bleeding occurs then the case should be taken further. Basically, further tests are to establish whether the patient has a small hypernephroma or vascular abnormality of a kidney. Most hypernephromas are easily diagnosed but small lesions can be difficult. Selective renal angiography is the best technique. Angiography of the kidney in which there is any clinical, radiological or ultrasound hint of a problem will usually suffice but on occasions bilateral selective angiography may be needed. Hypernephromas are usually very vascular and they have an abnormal blood supply which shows up reasonably easily on angiography. There is some conflict in radiological circles whether CT scanning is of value in this situation.

It would seem that if a good quality IVV and ultrasound scan are equivocal then angiography is best. Angiography is useful in large lesions, even when the diagnosis is not in doubt, because techniques of introducing emboli to occlude the renal artery are available and can stop life-threatening haemorrhage arising on occasions from hypernephromas or angiomas. The technique also helps to facilitate surgery if the tumour is huge.

## **SPECIFIC PROBLEMS NOT DUE TO TUMOURS**

### **The prostate**

Bleeding from the prostate occasionally occurs. Clinically the patient may report blood-staining of his underwear or notice that the bleeding occurs only at the beginning or end of the stream and occasionally notice pure blood issuing from the urethra after micturition has ceased (urethrorrhagia). I have only once seen such spontaneous bleeding from the prostate to be life-threatening, requiring emergency prostatectomy.

Prostates which bleed may be associated with very little trouble in the way of prostatic symptoms but can be very large clinically and radiologically, and cystoscopy is best avoided unless the likelihood of an associated bladder tumour is high. Cystoscopy at best may produce an acute retention of urine requiring a later prostatectomy or severe haemorrhage and an emergency prostatectomy.

### **Aspirin and prostatectomy**

Regular aspirin takers have posed problems for urologists in recent years. Prostatectomy is hazardous due to blood loss unless aspirin is stopped for two weeks prior to surgery. We, or more precisely the patients, found out the hard way several years ago when the fashion for regular small-dose aspirin was introduced. We have a regular number of patients referred with haematuria years after prostatectomy, often on aspirin, who bleed from abnormal vessels in the prostatic cavity. Aspirin should be stopped in such cases unless the indications for its continuance are great. Such cases cause a considerable workload for any urology department as it would be brave indeed to dismiss haematuria as coming from the prostatic cavity even if the patient was taking regular aspirin without the usual routine investigations.

### **Microscopic haematuria**

In respect of microscopic or dipstick-positive haematuria the cases referred are invariably worked up along the lines suggested above, although a glomerular cause may be strongly suspected if the haematuria is accompanied by significant albuminuria. It is possible, after negative investigations, to examine the red cells with sophisticated Coulter counter analysis to determine whether the haematuria is glomerular or not, as erythrocytes which have passed through the glomerular membrane are misshapen and smaller than normal erythrocytes. This, however, is not done in Lancaster. After negative surgical investigations, patients with persistent heavy dipstick haematuria are referred for a nephrological opinion, the commonest cause of glomerular haematuria being IgA nephropathy.

## **LOCAL ARRANGEMENTS**

In Lancaster we are fortunate in our secretarial and administrative backup and as a consequence we have introduced a system of arranging investigations on receipt of a referral letter from a GP concerning a patient with haematuria. These letters invariably carry sufficient information for us to act on and the urological office informs the patient of what happening. Clearly we can arrange admission or cystoscopy directly with the patient once the test results have been seen but we do rely on the GP sending a signal if he feels that a particular patient is not up to day-case cystoscopy.

It must be remembered that although urological clinics throughout the UK are very busy, an isolated episode of haematuria should still be investigated. The patient may not bleed again for a long time, during which time a treatable lesion may have silently advanced.