If one’s desire to uproot family and home is strong enough, and one is patient enough to cope with the bureaucratic maze, compulsive enough to fill out a mountain of forms, and industrious enough to swot up the basic sciences and all for three lengthy examinations, then it only takes a few hours to cross the Atlantic. Negotiating the red tape is good practice and will ease one’s acclimatisation to the American way of life. Could that be why it’s done this way?

References
3 British Medical Journal, 19 March 1977, 1, 11.

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Today’s Treatment

Diseases of the Urinary System

Haematuria

P J R BOYD

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"The discharge of blood or of bloody fluid from the urinary passages is almost always observed as a sign and sequence of some disease."

Robert Willis, MD, 1838.

Frank haematuria can be produced by mixing less than half a ml of blood with 500 ml of urine. The resulting colour will be dark or light depending on whether the urine is acid or alkaline but, regardless of whether the urine is "smoky" or "red," patients will usually surmise correctly that there is blood in their urine. Haematuria, therefore, represents an almost unique early warning system for urinary tract disease. A similar volume of blood may be lost without notice from the gastrointestinal tract. Unfortunately, the importance of haematuria as a symptom is not always recognised either by patients or doctors. The quotation above, which is taken from a medical textbook of the early nineteenth century, needs even more emphasis today for we have now the knowledge and techniques to cure some of the diseases that 140 years ago could be treated only palliatively.

Diagnosis

The management of a patient with haematuria depends firstly on confirming the symptom. Acute porphyria should be excluded. Dietary factors and drugs may produce changes in the colour of the urine that excite the patient’s alarm. Red urine from eating too much beetroot is relatively common and phenindione, phenazopyridine, and nitrofurantoin are among the drugs that cause urinary discoloration. Haemoglobinuria may also be misleading, for the urine will be positive for blood on chemical testing as well as being frankly blood-stained. The diagnosis is made when this urine specimen fails to disclose red blood cells on microscopy.

Once haematuria has been confirmed, attention should be directed towards establishing a diagnosis. There is no substitute for a carefully taken history and a thorough examination. The final diagnosis may not be reached without special and at times complicated investigations but a careful history is essential in deciding priorities and will soon serve to demolish the often-quoted and much-believed principle that painful haematuria is due to infection and may therefore be discounted, while painless haematuria results from a renal tract neoplasm. Haematuria of any nature must be regarded as a warning of neoplasia, and many a patient has been hurried towards an early and unnecessary grave with repeated courses of antibiotics prescribed for painful haematuria.

The doctor should record the duration, frequency, and severity of the haematuria and ask about any relation to other symptoms, such as loin or suprapubic pain. He should ask the patient whether the haematuria is initial, mixed, or terminal. Initial haematuria will suggest a urethral source for the bleeding, mixed haematuria a renal or ureteric origin, while terminal haematuria implies that a bladder lesion is responsible. The passage of worm-like ureteric clots shows the bleeding to originate from the upper urinary tract. A history of time spent in other countries may be important, as schistosomiasis can easily be contracted where the disease is endemic. In patients of African or, rarely, Indian extraction sickle-cell disease may be responsible—in the homozygous form or as the trait. Excess ingestion of phenacetin may cause papillary necrosis. A family history of renal troubles may help, as a tendency to renal calculus formation may be hereditary, and tuberculosis may be transmitted within a family. A clear-cut diagnosis may emerge from the history alone. An example is the young woman on honeymoon who neglects to seek treatment for a cystitis that rapidly becomes haemorrhagic and who is soon cured by antibiotics. If the result of the examination is normal such a patient can be assured with some confidence that her haematuria is of no great significance and that she may safely forgo radiological examination and cystoscopy.

Examination of the patient with haematuria must include a general examination and a detailed urological examination. The doctor should record the temperature, pulse and blood pressure; auscultate the chest and heart, identify any lymphadenopathy, and note any petechiae or abnormal bruising. He should then carefully palpate the abdomen, examine the external genitalia, and perform digital examination of the rectum. Particular attention should be paid to enlarged kidneys, liver, or spleen, and a palpable bladder will probably denote bladder outflow obstruction. Carcinoma of the prostate may be suggested on rectal examination.

Causes

The causes of haematuria are numerous, particularly with regard to non-neoplastic renal parenchymal disease. The exact nature of
the lesion may be identified only after a renal biopsy specimen has been investigated with immunofluorescent staining techniques and possibly electron microscopy. The non-specialist clinician, however, may wonder what is behind these esoteric matters obscure his concern with the commoner causes of haematuria. Renal and urethral malignancy, infection, and calculus disease together account for most diagnoses. Glomerulonephritis, renal cystic disease, trauma, and infarction or embolisation will explain most of the remaining cases of haematuria. There are rare and fascinating situations that should be familiar to all doctors who are consulted directly by a patient. Haematuria may occur in any bleeding disorder including the leukaemias, thrombocytopenia, or haemophilia. Anticoagulant drugs may also cause haematuria, but in these cases it is unusual to assume that the patient is unaffected; it may be a sign of a subtle lesion of a renal tract calculus or tumour. Loin pain with haematuria may be sharp or dull, continuous or intermittent. Acute colicky pain suggests ureteric obstruction, possibly caused by a blood clot, renal calculi, or irritant of the bladder. A polycystic kidney may give rise to a sharp continuous pain, while pyelonephritis or a renal tumour is more commonly associated with a dull continuous pain. Occasionally a hydroureter which produces intermittent severe loin pain may be associated with haematuria, and this is more likely if the hydroureteric kidney becomes infected. Suprapubic pain is usually evidence of inflammation affecting the bladder mucosa and muscle wall. This may be infective, chemical, mechanical, or occur after irradiation. The organism responsible for infection may be bacterial (including the tubercle bacillus) or parasitic. A haemorrhagic kidney cyst is attributable to cyclophosphamide, is being increasingly recognised.

The presence of a foreign body within the bladder, whether it is a calculus or an object that has been introduced into the bladder, can give rise to severe pain and haematuria. Carcinoma of the bladder wall may give rise to pain and this is more commonly seen when the base of the bladder is affected. Pain is referred from the trigone into the urethra, so that patients with trigonal involvement in malignant or inflammatory disease may complain of urethral pain, sometimes referred only to the tip of the penis. Painless haematuria is regarded as a more sinister complaint with some justification as bleeding from renal tract tumours is more commonly painless than painful. It is not uncommon, however, to find painless haematuria resulting from a small renal calculus, a renal cyst, or renal tuberculosis. A patient who presents with painless haematuria and no history of symptoms, and it is essential that these patients are referred without delay to centres where facilities for these investigations are available at short notice. The responsibility rests with the doctor to whom the patient presents to find where these facilities are most accessible. This will often mean finding which hospital or specialist has the shortest waiting list for outpatient and for admission. Many urologists recognise haematuria as an emergency needing immediate cystoscopy. The sight of a bloody efflux from a ureteric orifice lateralises the source of the bleeding absolutely.

Investigations

The four preliminary investigations that are likely to be most useful in managing the patient with haematuria are: (a) Microscopy and culture of a “clean” urine specimen (usually a midstream sample); (b) urine cytology; (c) intravenous urography; and (d) cystoscopy. Urine microscopy and culture is an invaluable investigation that is now available to most general practitioners. Not only may haematuria be confirmed and infection identified but renal casts or pus cells will be apparent on microscopy. Persistent sterile pyuria is of considerable interest, for this may occur in the presence of a urethelial tumour—an association that is less well recognised than the sterile pyuria of renal tract tuberculosis and calculus disease. Urine cytology is unfortunately not an investigation that is universally available in Britain. This relatively inexpensive and simple test for which three full-voided urine samples are needed is diagnostic in 70% of urethral malignancies. Unfortunately the isolated investigation. The value of urine cytology, however, depends on its importance as “contributory evidence” when the results of other investigations are equivocal and in following up patients who are known to be at risk from urethral malignancy change by virtue of their occupation or social history. In these circumstances cytology has no equal.

Intravenous urography is an investigation that has been part of the radiological armament for many years. The increased use of tomography and infusion or high-dose urography in recent years has increased the amount of information that is available from the intravenous urogram, and retrograde ureteropyelography is rarely necessary.

Cystoscopy is the final arbiter when a bladder lesion is suspected, and, although urologists differ in their opinions about the merits of outpatient cystoscopy using urethral haematuria alone, the value of cystoscopy as an investigative procedure is unquestioned. For the assessment of a bladder tumour general anaesthesia and abdominal relaxation are essential. The application of fibreoptics to cystoscopy and allied endoscopic manoeuvres has provided the urologist with a more consistent and clear light source. This, together with the development of the “rod lens” cystoscope by Professor Hopkins of Reading University, has improved the quality of the image transmitted to the cystoscopist. These improvements have made possible cystoscopic teaching attachments and cystoscopic photography, which undoubtedly makes urological training a much more controlled affair.

Further specialised investigations including renal biopsy, selective renal arteriography, and ultrasound examination of the kidneys may prove necessary after the preliminary screening are obtained. The more carefully the patient is investigated the more likely is the cause of his haematuria to be discovered. There is likely, however, to be from 5 to 10% of patients in whom no cause can be found at the first investigation. It is of the utmost importance to these patients that further investigation is begun immediately on the return of bleeding or with the onset of any other urological symptoms. In older patients in whom malignant disease of the renal tract is strongly suspected further investigation should not await a further development of symptoms, and it is wise to repeat the preliminary screening tests at regular intervals. Furthermore, not uncommonly two lesions coincide, and all patients must undergo cystoscopy even if a benign cause for the haematuria has been discovered.

One of the rewards of rapid and thorough investigation of the patient with haematuria is the discovery of a small and localised malignant tumour and stage when the patient can be cured of his disease. This is an end that is achieved only through the combined efforts of several doctors. Such co-operation is one of the hallmarks of good medical practice, and in this instance it is essential that each doctor recognises the importance of haematuria as a symptom. Possibly there is something to be gained by having a “haematuria clinic” where an “open door” policy keeps delay to a minimum and where the number of patients treated ensures an established routine. Nevertheless, there is no reason why an equally prompt and efficient service for patients should not be forthcoming wherever the facilities are available.

Is carcinoma of the prostate diagnosed on the unsupported evidence of a high serum phosphatase concentration? What is the minimal evidence on which a cancer of the prostate can be diagnosed?

The minimal evidence on which a diagnosis of carcinoma of the prostate can be made must remain histological. Today, we have available two methods of obtaining histological proof: a drill-needle biopsy and aspiration cytology. In the hands of the skilled urologist the latter can be 80% accurate, while at the same time drill-needle biopsy localised into the indurated area palpable by rectum can give as much as 90% accuracy. As regards the serum acid phosphatase estimation, this may be a misleading test for various reasons: firstly, the concentration may be raised after simple rectal examination on a benign gland; secondly, it may indicate in carcinoma of prostate only bony metastases; and, thirdly, many cases have been reported where histologically confirmed carcinoma of prostate has shown a normal serum acid phosphatase concentration, even with radiologically recognisable metastases.