Lesson of the Week

Obstructive uropathy without dilatation: a potential diagnostic pitfall

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Obstructive uropathy is a common and reversible cause of acute renal failure. Ultrasonography has replaced retrograde pyelography and high dose intravenous urography as the primary investigation in renal failure and is highly sensitive in detecting dilatation of the urinary tract, the hallmark of obstruction of the urinary tract.[1,2] Not all patients with obstruction develop hydronephrosis, as is shown by the cases described here.

Anuric or oliguric renal failure due to ureteric obstruction may be associated with minimal or no dilatation of the collecting system

Case reports

Case 1—A 73 year old man was diagnosed as having transitional cell carcinoma of the bladder. His left kidney was hydronephrotic and non-functioning owing to a longstanding tumour affecting the lower ureter, but his right kidney appeared normal. He was treated by local resection and radiotherapy. Check cystoscopy two years later resulted in perforation of the bladder, which necessitated laparotomy and operative repair. He became anuric postoperatively. Ultrasonography two days later showed no change in the hydronephrosis on the left side and a normal right kidney. Because of the high probability of obstruction on the right side antegrade pyelography was performed with ultrasound guidance. This showed complete obstruction of the lower ureter without dilatation. Drainage by nephrostomy resulted in diuresis with improvement in renal function as shown by biochemical variables. The nephrostomy tube was removed eight days postoperatively, when renal function was normal and there was free drainage through the ureter.

Case 2—A teenage girl who had had a right nephrectomy for xanthogranulomatous pyelonephritis at the age of 2 underwent open ureterolithotomy for a calculus in the middle third of her left ureter. Postoperatively she became oliguric, but ultrasonography showed no evidence of postrenal obstruction. Acute tubular necrosis after surgery was diagnosed presumptively even though there were no predisposing factors such as haemorrhage or hypotension. Forty eight hours after surgery she was transferred to a nephrology unit. A repeat ultrasound scan showed no evidence of hydronephrosis, but in view of the recent surgery antegrade pyelography guided by ultrasound was performed; it showed almost complete obstruction at the site of surgery and no proximal dilatation. After seven days of drainage by nephrostomy renal function and ureteric drainage had returned to normal, implying that the obstruction had been due to postoperative oedema.

Case 3—A 74 year old man who presented with painless haematuria but normal renal function was shown by urography and cystoscopy to have a large bladder tumour. Transurethral resection of the tumour was successful, but he subsequently became oliguric. Ultrasonography showed no dilatation of the renal collecting systems. Acute tubular necrosis after surgery was diagnosed clinically, and he received peritoneal dialysis. His serum creatinine concentration gradually rose to 1115 μmol/l over the next 14 days. A repeat ultrasound scan showed minimal hydronephrosis on the left side and a normal right kidney. Percutaneous nephrostomy on the left side resulted in improvement in renal function (serum creatinine concentration 859 μmol/l), and he subsequently had a cystectomy with urinary diversion. At operation both ureters were found to be obstructed at the vesicoureteric junction. Histological examination showed a tumour adjacent to but not directly affecting the lower ureters. The obstruction was probably due to oedema resulting from resection around the ureteric orifices. Postoperatively his renal function improved (serum creatinine concentration was 359 μmol/l within four days).

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Discussion

Acute renal failure can be prerenal, renal, or postrenal in origin. Early diagnosis of obstruction is vitally important as prompt intervention may result in improvement in or normalisation of renal function. Ultrasonography, which is sensitive, readily available, and safe, has become the initial investigation of choice in the diagnosis or exclusion of obstruction.[1,2] On ultrasonography the diagnosis of obstruction is based on finding a hypoechoic collecting system, filled with fluid, within the echogenic renal sinus. In a few cases, however, ureteric obstruction may be associated with minimal or no dilatation of the collecting system. This lack of dilatation proximal to an area of complete obstruction has been described previously[3-5]: Maillet *et al* showed ureteric obstruction without dilatation in four of 80 cases[3] and Naidich *et al* in seven of 166 cases,[5] suggesting that this is not an uncommon entity. Although all our patients developed obstruction after surgery, obstructive uropathy without dilatation has been reported in association with retroperitoneal fibrosis, pelvic and retroperitoneal malignancies, and obstruction due to ureteric calculi.[6-8] This absence of dilatation might be related to a small renal pelvis, a non-mechanical obstruction interfering with peristalsis in retroperitoneal fibrosis, an encasing retroperitoneal tumour, or a chronic incomplete obstruction converted into complete obstruction by an acute event.

When obstruction is suspected and ultrasonography does not show hydronephrosis further investigation is necessary. Intravenous urography and nephrotomography will yield a dense nephrogram and delayed pyelogram, but the calices may not be dilated. The level or cause of obstruction may not be evident even after 24-48 hours. Computed tomography will not show obstruction in the absence of dilatation but will show retroperitoneal or pelvic tumours. Retrograde pyelography will make the urinary tract opaque but may be technically difficult or impossible in patients who have recently had surgery. It may introduce infection and usually requires general anaesthesia. The success rate with antegrade pyelography even in non-dilated systems is high, especially when ultrasound guidance is used; complications such as haemorrhage and septicaemia are rare. When obstruction has been diagnosed by this technique drainage by nephrostomy can be carried out immediately.

Thus in patients who present with anuric or oliguric renal failure

and in whom postrenal obstruction is suspected and ultrasonography shows no evidence of dilatation further investigation by direct opacification of the urinary tract is necessary. The investigative pathway will be dictated by the patient's clinical condition and the facilities and skill available, but antegrade pyelography guided by ultrasound, followed if necessary by percutaneous nephrostomy, may allow total and rapid recovery of renal function.

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Green College Lectures

The National Health Service: reflections on a changing service

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I was a short stay patient at the Department of Health and Social Security, unexpectedly admitted to the Elephant and Castle in autumn 1975 after over 25 years elsewhere in Whitehall. The health service was an entirely new experience for me. My reactions to it were a mixture of admiration and concern—particularly concern at the extent to which our finest public service was in difficulties, some of them of its own making.

Launching of the service

The political architect of the NHS, Aneurin Bevan, could not have foreseen all the difficulties; but he forecast their impact. In March 1948 he warned the Institute of Almoners:

> After the new Service is introduced, there will be a cacophony of complaints. The newspapers will be full of them. . . . I am sure that some doctors will make some irate speeches. . . . What the Health Service is actually to do . . . is to put a megaphone in the mouth of every complainant, so that he will be heard all over the country.

In recent months Bevan's "megaphone" has become deafening. And the loudest complaints have come from within the health service, expressing the frustration of professionals convinced that they could do more and better if they had larger resources. It is relevant to recall some more words of Aneurin Bevan, speaking to the National Association of Maternity and Child Welfare Centres on the eve of the birth of the NHS:

> The new Health Service has been having a most uneasy gestation and a very turbulent birth, but all prodigies behave like that. . . . This Service must always be changing, growing, and improving; it must always appear to be inadequate. This is the answer I make to some of the Jeremiahs and defeatists who have said to me: "Why start this Service when we are short of so many things?"

Bevan himself soon learnt the truth of his forecast of "inadequacy" —the initial experience of "infinite demand, finite resources." I am convinced that his assertion that "the Service must always be changing, growing, and improving" represents the challenge and the hope to which the NHS must respond if it is to survive as a public service.

Changing, growing, and improving

But how drastic should change be? There is right wing pressure for a fundamental reassessment of the entire concept of a comprehensive health service free of charge at the point of access. *The Times* has described the health service as "the one great unreformed British institution." The *Sunday Times* insisted last December that ". . . tinkering will not do. Forty years on it is time to create a new health service to meet the needs of the next forty years."

But the radical critics appear to forget that ever since the major reorganisation of 1973-4 the NHS has been subjected to constant changes and to the thorough review of a royal commission. It is doubtful whether it should stand for, or can stand, any further large change of organisational structure. I am also sceptical about the wisdom or practicability of fundamental change where many of the critics are now looking—the health service's tax funded system of financing. As the royal commission on the NHS reported in 1979:

> We were not convinced that the claimed advantages of insurance finance, or substantial increases in revenue from charges, would outweigh their undoubted disadvantages in terms of equity and administrative costs.

The increase since then in the numbers of the unemployed and the elderly reinforce that judgment. The experience of the United States and Western Europe shows the high cost of both medical care and administration in an insurance based system.

A related judgment of the royal commission also remains valid:

> No method of financing a part of national expenditure as large and as

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An abridged version of a lecture delivered on 25 January 1988 at Green College, Oxford. A fuller and slightly different version of this has been given as a Jephcott Lecture by Sir Patrick at the Royal Society of Medicine on 19 April and it will be published in a subsequent issue of the *Journal of the Royal Society of Medicine*.

Before his appointment as Master of St Catherine's College Sir Patrick was Permanent Secretary to the Department of Health and Social Security from 1971 to 1981.