MEDICAL PRACTICE

Contemporary Themes

Detection of abnormality of fetal urinary tract as a predictor of renal tract disease

D SMITH, J A EGGINTON, D S K BROOKFIELD

Abstract

Over three years all infants in this hospital found to have an abnormality of the urinary tract on antenatal scanning were followed up after delivery with contrast radiography. Disease of the renal tract was confirmed in 17 of 20 infants. Of the 15 survivors, 12 underwent surgery in the first year of life.

Abnormality of the fetal urinary tract detected by ultrasound scanning seems to be an important indicator of disease of the renal tract. Before its use is extended, however, further assessment of the benefit of antenatal diagnosis and of the best time to scan is required.

Introduction

With the increasing use of antenatal ultrasound scanning the detection of abnormalities of the fetal urinary tract has also increased. Turnock and Shawis, reporting on infants referred to a paediatric surgical centre, found abnormality of the fetal urinary tract detected by ultrasound scanning to be a reliable indicator of urinary tract disease.[1] This finding, however, may have been influenced by the selection of the patients by the referring hospitals, who may have selected out false positives as well as any lethal abnormalities. We assessed the importance of ultrasound findings by following up all infants who were found to have abnormality of the urinary tract on antenatal scanning over three years.

Departments of Paediatrics and Radiology, North Staffordshire Hospital Centre, Stoke on Trent ST4 6SD
D SMITH, MB, MRCP, paediatric registrar
J A EGGINTON, MB, FRCR, consultant radiologist
D S K BROOKFIELD, MB, MRCP, consultant paediatrician

Correspondence to: Dr Brookfield.

Patients, methods, and results

All pregnant mothers were scanned routinely at 16 weeks' gestation or on booking, whichever was later. Subsequent ultrasound scans were not performed routinely but were often performed for obstetric reasons—for example, low lying placenta. Over the three years 1982-1984 follow up information was collected on all infants found to have abnormalities of the urinary tract on antenatal scanning. Most of these infants underwent scanning soon after birth, and if an abnormality was confirmed they subsequently underwent intravenous urography and micturating cystourethrography. In a few infants, in whom urinary tract problems were clinically evident at birth, these investigations were carried out immediately.

During the study 16 531 pregnant women underwent scanning. There were 23 fetal abnormalities of the urinary tract. One pregnancy in a woman with considerably increased α fetoprotein concentrations and characteristic appearances on renal scanning was terminated for Finnish type nephrosis. The abnormality in the remaining 22 infants was hydronephrosis. The table

Diagnosis and outcome in 22 infants with hydronephrosis

Diagnosis	No of cases	Deaths	No who underwent surgery in first year
Pelviureteric junction obstruction	4	1: multiple abnormalities	3
Distal ureteric obstruction	1		1
Posterior urethral valves	5	1: hypoplastic lungs	4
Megaureter	3		2
Vesicoureteric reflux	4		2
Extrarenal pelves	2		
Adrenal lesion	1		1
No information	2	1: extreme prematurity (26 weeks)	

shows the final diagnosis and outcome. In 17 of the 20 infants who underwent full investigation antenatal hydronephrosis correctly predicted disease of the renal tract but was mistaken for an adrenal lesion in one and, if extrarenal pelves are taken to be a normal variant, was a false positive finding in two. Two infants, both of whom later proved to have vesicoureteric reflux, had had normal postnatal scans and had been discharged from further follow up, as was our practice at that time. Both, however, were further investigated when they presented with urinary tract infections, one seriously ill with concomitant septicaemia.

Discussion

Of 20 infants with antenatally detected abnormality of the urinary tract, 17 had disease of the urinary tract and 80% of those who survived underwent surgery during the first year. This suggests that abnormality of the fetal urinary tract detected by ultrasound scanning is a reliable indicator of disease.

Before ultrasound scanning for obstetric purposes is extended to include examination of the fetal kidneys two issues require clarification. Firstly, clear benefit to the patient of prenatal diagnosis and consequent early intervention must be established and, secondly, the timing of scanning to achieve maximum pick up must be considered. With regard to the first issue, early surgical intervention in infants with diagnoses of anything other than posterior urethral valves (when surgical intervention is unquestionably necessary) is of controversial benefit. Long term studies comparing the renal outcome in infants with urinary tract abnormalities detected antenatally and subjected to early intervention with that in infants who present more traditionally (often many years after birth) are clearly needed to establish the worth, if any, of antenatal diagnosis.

Regarding the timing of scanning, only the more severe hydronephrosis may be detectable at 16 weeks' gestation, which is an optimum time for scanning for obstetric purposes. In our study the gestation at pick up varied from 19 to 37 weeks. In most of these cases scanning was performed later than 16 weeks simply because of late booking. In a few cases, however, a normal scan had actually been obtained at 16 weeks, but a later scan had been conducted for obstetric reasons. The pick up rate for fetal urinary tract abnormality might thus be increased by scanning after 16 weeks' gestation. Thus if antenatal detection of urinary tract abnormality proves to be of long term benefit a case might be made for including examination of the fetal kidneys and urinary tract in all ultrasound examinations after 16 weeks' gestation. More controversially, a case might be made for screening all pregnant women at 28 weeks' gestation, which might also be obstetrically beneficial as it facilitates screening for intrauterine growth retardation.

At present, it remains our practice to investigate all infants found, albeit fortuitously, to have abnormality of the urinary tract antenatally by intravenous urography and micturating cystography and to prescribe prophylaxis with trimethoprim until these investigations have been completed.

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Reference

1 Turnock RR, Shawis R. Management of foetal urinary tract anomalies detected by prenatal ultrasonography. *Arch Dis Child* 1984;59:962-5.

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What treatment is advised for Loeffler's syndrome?

In Loeffler's syndrome transient radiological shadows in the lungs are associated with respiratory symptoms of variable severity. There is an associated eosinophilia. The syndrome may be produced by the migration of larval worms through lungs, most especially *Ascaris*, or may be entirely idiopathic. Symptoms usually do not warrant treatment of any sort, because one essential feature about Loeffler's syndrome is that it is self limiting. If respiratory symptoms are severe corticosteroid treatment should be given and if *Ascaris* is a possibility a suitable ascaricide such as mebendazole or levamisole should be given as well.—DION R BELL, reader in tropical medicine and honorary consultant physician, Liverpool.

A middle aged man has a left sided urostomy draining an ileal conduit for urinary diversion after a cystectomy for carcinoma of the bladder. Is recurring infection inevitable? How should infection be treated? How much fluid should he drink?

The diagnosis of significant bacteriuria in a patient with an ileal conduit urinary diversion requires attention to detail in the collection of the sample of urine. Obviously, a urine sample taken from the collection bag is quite useless for this purpose and great care must be taken to ensure that bacteria from the stoma are not introduced as contaminants. The stoma must be thoroughly cleansed with an antiseptic solution, such as aqueous hibitane, cetrimide (Cetavlon), or povidone-iodine (Betadine) solution. A soft, small calibre catheter (12 Ch or smaller) is then introduced via the stoma into the conduit and the contained urine collected in a sterile universal container. It is important to notify the bacteriologist of the nature of the urine sample in order to allow a meaningful interpretation of the specimen. There are always cells present on microscopy and often an "insignificant" mixed growth of organisms.

Problems with infection usually arise with an ileal conduit urinary diversion when there is stasis in the loop which then acts more like a reservoir than a conduit. This happens if the segment of bowel used is too long and redundant, or if there is stenosis at the peritoneal level or of the stoma itself. It should be possible to introduce a gloved index finger easily via the stoma into the conduit via the abdominal wall with little resistance. The conduit itself can readily be outlined radiologically by introducing a ballooned catheter and undertaking a "Loopogram." It is always feasible to correct a stenosis surgically and to shorten the conduit if stasis and infection prove to be a problem. All patients with a urinary diversion require close urological supervision to monitor progress of the upper urinary tract. Stasis, infection, calculus formation, and deterioration of renal function due to stenosis of the ureteroileal anastomosis or reflux of infected urine from an obstructed conduit must be detected early and appropriate corrective surgery undertaken. Asymptomatic bacteriuria in a well functioning conduit does not require antibiotic treatment, but the presence of urea splitting organisms such as *B Proteus* and *Staphylococci*, which render the urine alkaline, predispose to stomal crusting and stenosis. It is useful under these circumstances to acidify the urine with ascorbic acid (1 g of vitamin C daily) and to swab the stoma with 5% acetic acid which may be added to the urinary drainage bag. A high fluid intake is mandatory in all forms of urinary diversion which may be supplemented by the use of a diuretic, particularly at night, when the appliance should be connected to a free standing large capacity drainage bag by a night extension tube.—J C GINGELL, consultant urologist and lecturer in urology, Bristol.

Why are preschool boosters given when the time of this is usually less than the minimum five years from the previous tetanus immunisation normally recommended?

In some people antibody titres to tetanus after a primary series of three doses may fall below the level normally considered to be protective. In a study of people who had received a basic immunisation course of three spaced doses two to four years previously 13·3% of those immunised with plain tetanus toxoid and 1·25% of those given adsorbed toxoid had less than 0·01 unit of antitoxin per ml of serum.[1] A tetanus booster is therefore recommended with diphtheria and polio before starting school to ensure adequate protection throughout adolescence and early adult life, when the risk of wounding may be greater. The preschool booster also provides an opportunity to immunise those children who did not receive a primary course in infancy. Delaying the booster therefore not only places some children at risk of infection because of waning immunity but also misses the opportunity to immunise a captive population for the first time. A minimum of five years is normally recommended between tetanus boosters; there is no evidence, however, that giving the preschool booster a year early is associated with any increased risk of a severe reaction.—NORMAN BEGG, senior registrar in community medicine (epidemiology), London.

1 White WG, Gall D, Barnes GM, Barker E, Griffith AH, Smith JWG. Duration of immunity after active immunisation against tetanus. *Lancet* 1969;ii:95-6.