

	Response		
	Yes	No	Equivocal
(1) Do you have a rigid policy for managing all urinary tract infections?	36	42	2
(2) Does your hospital have a clinic dedicated to urinary tract infection?	17	63	
(3) In your opinion should all children with urinary tract infections be referred to hospital for radiology and management:			
While acutely ill?	21	55	4
For subsequent management?	68	11	1
(4) Do you accept as evidence of infection a positive urine culture that has been obtained in the community?	37	35	8
(5) In your hospital, apart from conventional radiology, do you have access to:			
Ultrasonography?	80		
Radioisotope investigations?	61	19	

be managed differently from girls, and 38 investigated a second infection more thoroughly than the first in one or both sexes. Twenty five stated that they would adopt different diagnostic pathways in young patients, and 35 stated the age at which they considered it safe to stop antibiotic treatment in a child with vesicoureteric reflux: in both cases there was no unanimity about the critical age. When asked whether any investigations were routine before prophylactic antibiotic treatment was stopped 40 replied yes, 33 replied no, and seven replies were equivocal. Those who answered yes were then asked which investigations they performed. Among the 40 replies there were 24 different schemes, which were not analysed further.

Comment

Our results show an alarming conflict of practice, with recent reports equally confusing. The practices

used by many of the respondents were certainly at variance with the current understanding of the natural course of urinary tract infections in children. Two recent review articles published in the same journal presented quite different schemes of investigation.^{1,2} Nuclear medicine studies are integral to many of the proposed pathways of treatment,^{3,4} but as almost a quarter of our respondents had no access to such facilities these schemes had little relevance to them. The sensitivity of imaging techniques, in particular ultrasonography, depends on local skill. We question, as others have,⁵ whether the experience of well equipped teaching centres is relevant in district hospitals, where most children are investigated.

We conclude, firstly, that the management of urinary tract infection is in disarray and that experts should suggest a common approach, which would ensure rational, safe, and consistent management throughout the United Kingdom; and, secondly, that any investigative protocol should be realistic and suitable for implementation by all paediatricians.

We thank all the paediatricians who completed the questionnaires.

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 2 White RHR. Management of urinary tract infection. *Arch Dis Child* 1987;62:421-7.
 3 Whitaker RH, Sherwood T. Another look at diagnostic pathways in children with urinary tract infection. *Br Med J* 1984;288:839-41.
 4 Gordon I. Imaging children with urinary tract infection. *Hospital Update* 1985;11:773-9.
 5 Pilling DW. Urinary tract infection in children. *Br Med J* 1984;288:1159.

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Repeated aspiration of breast abscesses in lactating women

J M Dixon

Department of Surgery,
 Royal Infirmary, Edinburgh
 EH3 9YW
 J M Dixon, FRCS, lecturer

The standard treatment for breast abscesses in lactating women is incision and drainage.^{1,2} This requires a general anaesthetic, usually at least an overnight stay in hospital, and regular postoperative dressings. This may cause considerable distress to both mother and baby during what is already a difficult time, and the final cosmetic result is often unsatisfactory. The aim of this study was to determine whether breast abscesses can be treated without an operation or admission to hospital.

Patients, methods, and results

Six women aged 24-32 (mean age 27) presented three to eight weeks post partum with a breast abscess (table). All were breast feeding and had had at least 48 hours' treatment with flucloxacillin before being seen. Initial treatment consisted of aspirating as much pus as possible from the abscess with a 19 gauge needle and syringe and a seven day course of oral flucloxacillin, 500 mg four times daily. Samples of pus from all six women were sent to the bacteriology department for culturing and testing for sensitivity to antibiotics. The women were given the option of continuing to breast feed from either breast; none were given drugs to suppress lactation. Aspiration was performed three times weekly until no more pus was aspirated, and all of the patients were reviewed after three weeks and three months.

Volumes of pus of 15-40 ml (mean 26 ml) were

aspirated at the initial visit. *Staphylococcus aureus* (sensitive to flucloxacillin) was the only organism isolated from all six samples. Three of the women had pus aspirated on three occasions, two had pus aspirated on four occasions, and one required five aspirations (table). Redness of the overlying skin and tenderness had reduced in all of the women by the third visit. The volumes of pus aspirated fell with each successive aspiration in all six women.

Data on six lactating women with breast abscesses treated by repeated operation

Case No	Age (years)	No of weeks post partum	Initial volume aspirated (ml)	No of aspirations of pus
1	24	3	30	4
2	25	8	15	3
3	26	3	26	5
4	26	4	40	4
5	28	3	24	3
6	32	6	18	3

At review three weeks after the last aspiration all of the women were well with no symptoms, and by three months no clinical abnormality was palpable at the site of the previous abscess. Four women stopped breast feeding after the initial visit, but two continued to breast feed throughout the period of treatment. All six women were pleased that they had avoided an operation, an admission to hospital, and separation from their babies and family.

Comment

Breast abscesses in lactating women are now uncommon.² This is probably because many women with sepsis of the breast are treated successfully with

antibiotics.³ For those whose sepsis fails to respond to antibiotics incision and drainage is recommended.^{1,2} The theoretical advantages of this approach are that it allows the loculi within the cavity of the abscess to be broken down and that it allows dependent drainage, usually with a corrugated drain, to be established.¹ This treatment causes problems for some families because it results in the absence of the mother from home, sometimes for two or three days. Even if primary closure of the abscess is performed this still requires a general anaesthetic and an overnight stay in hospital.³

Treating breast abscesses in lactating women by aspiration is not new. Florey *et al* successfully treated 10 small abscesses (<10 ml of pus) by daily aspiration and administration of large doses of penicillin into the cavity of the abscess.⁴ Large abscesses (which would

have included all those treated in this study) were, however, treated by surgical drainage.

This study has shown that even large breast abscesses can be effectively treated by repeated aspiration and oral antibiotics. This suggests that breaking down loculi and dependent drainage may not be as important as has been suggested,¹ and treatment by aspiration may prove more convenient for at least some lactating mothers.

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2 Scholefield JH, Duncan JL, Rogers K. Review of hospital experience of breast abscesses. *Br J Surg* 1987;74:469-70.

3 Benson EA. Breast abscesses and breast cysts. *Practitioner* 1982;226:1397-1401.

4 Florey ME, Macvane JS, Bigby MAM. Treatment of breast abscesses with penicillin. *Br Med J* 1946;ii:846-8.

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Sprinting can seriously damage your health

P E Stevens, C D Pusey, D J Rainford

Department of Renal
Medicine, Princess Mary's
RAF Hospital, Aylesbury,
Buckinghamshire
HP22 5PS
P E Stevens, MRCP, senior
specialist
D J Rainford, FRCP,
consultant

Sustained violent exercise may lead to rhabdomyolysis even in normal muscle cells, usually in the presence of precipitating factors such as fasting, fever, alcohol, or viral infection.¹ We describe a fit young man who developed acute renal failure after exertion on two occasions separated by two years.

Case report

A 23 year old physical training instructor ran two 400 m sprints on a cool afternoon. Soon afterwards he felt unwell with tenderness in the abdominal muscles, buttocks, and flanks. He passed little urine over the next four days. On admission to hospital six days after the sprints his serum concentration of creatinine was 1160 $\mu\text{mol/l}$, potassium 4.8 mmol/l, creatine kinase 90 IU/l, aspartate transaminase 12 IU/l, urate 0.59 mmol/l, calcium 2.17 mmol/l, and phosphate 2.0 mmol/l. He made a spontaneous recovery from acute renal failure and 14 days later the results of a renal biopsy were consistent with acute tubular necrosis secondary to rhabdomyolysis. His renal function returned to normal, and he resumed a full sporting programme. There was no relevant drug, personal, or family medical history, and he had previously undergone two general anaesthetics without event. He had been a schoolboy football international and started competitive athletics at the age of 20. He regularly noticed pain and tenderness in the buttocks after 400 m and 800 m races but never after longer or shorter distances.

Two years later he again ran two 400 m sprints on a cool afternoon. He had avoided alcohol for several days and ensured adequate hydration and nutrition. Again he developed pain and tenderness in the buttocks and flanks and was admitted to hospital 24 hours later. Urine dipstick testing showed protein (4+) and blood (3+); myoglobin was not looked for at that stage. Investigations on admission showed a serum concentration of creatinine of 380 $\mu\text{mol/l}$, potassium 4.4 mmol/l, and creatine kinase 107 $\mu\text{mol/l}$. His renal function deteriorated, and he was referred to the renal

unit, where he required haemodialysis for one week before recovering function. Results of subsequent investigations were all normal and included measurements of calcium, phosphate, and urate concentration, thyroid function, and activity of muscle enzymes including debrancher enzymes and carnitine palmityl transferase; ischaemic lactate tests; electromyography and nerve conduction studies; and a phosphate nuclear magnetic resonance scan. The results of muscle biopsy were compatible with rhabdomyolysis; phosphorylase was present in normal amounts, there was no excess of glycogen, and his mitochondria seemed normal. Two months after recovery creatine kinase activities before and after a 2.4 km jog were 97 IU/l and 115 IU/l respectively and rose to 183 IU/l after 24 hours. No myoglobinuria was detected after exercise, though he was tender over the erector spinae and hamstring muscles and feverish (38.7°C) 16 hours after exercise.

Comment

The unusual feature of this case was the development of acute renal failure on two separate occasions after two 400 m sprints. The presumed cause on each occasion was rhabdomyolysis, as suggested histologically by renal and muscle biopsies. The creatine kinase activity was, however, normal six days later on the first occasion and only one day after exertion on the second. He developed a small but definite rise in creatine kinase activity after exercise, but this is well described in normal individuals. We could not find any of the known causes of rhabdomyolysis, neither could we show any abnormality of muscle function despite extensive investigation, including enzyme assays, biopsies, and phosphate nuclear magnetic resonance scanning. No precipitating factors such as fasting, fever, alcohol, or viral infection were present on either occasion. The precise cause of his acute renal failure remains unknown; he might have an unrecognised metabolic defect or may be capable of exerting himself beyond normal limits.

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