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Short reports

Severe handicap in spina bifida: no bar to intermittent self catheterisation

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SUMMARY The practicability of introducing clean intermittent self catheterisation to 24 severely handicapped children with spina bifida was studied. Twenty one children achieved complete or nearly complete continence, which was sustained successfully in 14. The difficulties they overcame and the reasons for failure are analysed.

Intermittent self catheterisation represents a major advance towards the acquisition of continence in a child with a neuropathic bladder. In a recent controlled study 60% of children using this technique became totally continent.[1] The predominant cause of childhood neuropathic bladder is myelomeningocele. Many children with neuropathic bladder are severely physically handicapped, some are also severely mentally handicapped. Whether intermittent self catheterisation is a useful or realistic method of management in the more severely handicapped child has not been discussed. We report our experience with 24 children with spina bifida who had appreciable physical and, in some cases mental, handicap.

Subjects and methods

Thirteen boys and 11 girls with spina bifida were studied. Their ages ranged from 5 to 17 (mean 15·1 years). All started intermittent self catheterisation after the technique had been explained and urodynamic studies performed (Dr H Saxton, Guy's Hospital); their cooperation had been offered willingly. Three other children did not start intermittent self catheterisation due to the results of urodynamic studies. One child, who was difficult to catheterise, had a urethrovaginal fistula; one boy with urethral sensation declined to go further; and the third child had sufficiently severe incontinence due to weakness of the sphincter to preclude catheterisation. These three children are not included in our analysis.

In addition to the children who had already undergone urinary diversion 10 children were not submitted for urodynamic studies. Four had already had extensive transurethral resection of the neck of the bladder, two were of very low intelligence, two had had severe hydronephrosis with renal failure and were managed satisfactorily with an indwelling catheter, one was managing well using a sheath, and one had a severe spinal deformity.

Most of the children in the study had high spina bifida lesions. Only two had hip and quadriceps function that allowed unaided walking. Thirteen had flaccid paraplegia, and the remainder had reduced hip power in one or both hips. Nine boys and four girls were ambulant in calipers. The remainder were in wheelchairs, but all were able to transfer on to the toilet. Thirteen children had severe spinal deformity, in most either severe kyphos or kyphoscoliosis. Three had a mild cerebellar ataxia of the hands, and one had mild hemiplegia. Four girls had hip contractures allowing only limited abduction of the hip.

Twelve children had a full scale IQ within the normal range, but 11 had a full scale IQ between 51 and 70. One child had a full scale IQ of 40. Nine children had clinical evidence of poor coordination of eyes and hands, and 11 had a measured performance IQ of less than 70.

The training of the children was largely supervised by a female nursing sister (MC) who also trained several other nursing and care staff to assure continuity of supervision. The boys passed the catheter under direct vision, either in the standing position or sitting on the toilet or in the wheelchair. The girls were trained to use whichever technique seemed most appropriate. For most a touch technique was used whereby the finger of one hand in the vagina was used to direct the catheter held in the other hand towards the urethral orifice. A mirror was used by some to help insertion.

Initially the children were trained to catheterise themselves two hourly; if dryness was then achieved the rate was reduced to not more than three hourly. If dryness was not achieved by catheterisation alone

the child was offered the additional aid of either oxybutynin (5–10 mg three times daily) if the capacity of the bladder was reduced by detrusor hyperreflexia or ephedrine (those less than 12 years given 2·5 mg/kg/day; those older than 12 given 30 mg three times daily) if the capacity of the bladder was reduced by weakness of the sphincter.

At least three times a year specimens of urine (clean catch before and clean catheter specimens after intermittent catheterisation) were taken for microscopy and culture. Children took a two month course of prophylactic Septrin while learning the technique. All but two of the children had been in our care for more than two years before being introduced to the technique. During that time five children had had one symptomatic urinary tract infection each.

Results

The children were followed up for a mean of 2·2 years (range 0·5–4·9 years). Seven children became completely dry with intermittent catheterisation alone. Two children had occasional dampness, which they preferred to manage with a pad inside pants rather than by taking drugs. Complete continence was achieved by addition of drugs in a further five children (three treated with oxybutynin, one with ephedrine, and one with both). Seven were satisfactorily dry with drugs but occasionally damp for various reasons (four treated with oxybutynin, one with ephedrine, and 2 with both). Thus complete or near complete continence was achieved in 21 children (87·5%).

All boys except one acquired the technique within a week. The girls took longer to achieve consistent success, usually three to four weeks, though one girl who persevered despite severe difficulty in abducting her hips needed three months to finally achieve this.

Three children failed to become dry. One boy had had a previous resection of the neck of the bladder. He later became dry with an implant of an artificial sphincter. Another boy who had a tight external sphincter experienced urethral swelling on catheterisation. A third boy was initially successful without drugs but after subsequent dampness became discouraged and declined the offer of drugs, reverting to the use of a sheath.

In the period of follow up only two children had symptomatic urinary tract infections (one of them twice).

Fourteen of the 21 children in whom acceptable continence was achieved continued self catheterising successfully. Technical success was not sustained in the remaining seven for various reasons. One boy who achieved dryness while taking ephedrine subsequently remained dry with self expression alone. Another boy temporarily stopped catheterisation as he underwent spinal fusion (he intends to continue after mobilisation). Catheterisation cannot be regarded as having failed in these two children. Dryness was not sustained in two children with severe kyphoscoliosis despite good motivation because of the physical problem alone. One boy remained dry for a year with additional oxybutynin but then became damp despite an adequate technique and lack of infection. He recently had an artificial sphincter implanted. Two boys lacked motivation to continue. In one, with a full scale IQ of 75, this was associated with an ostensible inability to learn to tell the time and act when his next catheterisation was due. The other boy, with a full scale IQ of 65, came from a disturbed home background, which was thought to be responsible for the lack of motivation.

The 13 children who continued to catheterise successfully overcame several difficulties. Full scale IQ's range from 40 to 92; seven children had a full scale IQ of <70. Nine children had evidence of difficulties with coordination of eyes and hands. Three girls had limited abduction of the hip, one of whom catheterised successfully while wearing full leg calipers with a pelvic band: she had initially acquired the technique using a bar between her knees. Eleven children had major spinal curvature, and two were undergoing spinal fusion. The curvatures, however, were either major kyphosis or lordosis without appreciable scoliotic element. Eight were mobile only in wheelchairs. Menstruation constituted an additional difficulty with the girls but did not cause any girl to stop catheterisation.

Discussion

A technical success rate of 87·5% and a continuing success rate of 58% compares favourably with the experience of others. A low IQ and severe physical or neurological handicap is no bar to achieving continuing success. Failure is associated in some with anatomical difficulty, either of the bladder or spine. Scoliosis sufficiently severe to need propping up with one hand to maintain sitting balance may be difficult to overcome, as may secondary pelvic rotation causing posterior displacement of the female urethra. In others failure may be due to poor motivation rather than low IQ or structural abnormality.

Motivation was acquired mainly as a result of two factors. A desire to achieve maximal independence without the continued need for extraneous apparatus was a powerful factor in some. As all the

children attended the same hospital school, once continence had been acquired by a few a competitive spirit developed in others. In some, particularly those who found the technique difficult to start with, success was due in part to the advice and support of their peers.

Poor motivation was due mainly to the intervention of other factors. One boy could not bring himself to trust fully the technique, having acquired dryness when using a sheath. In the others lack of success was attributable to a continued need to show dependency or, less passively, wetness was used as a weapon in an already disturbed family.

Intermittent catheterisation can therefore be successfully achieved by children with moderate mental handicap even if there is severe physical disability. With the exception of certain specific anatomical deformities the reasons for continued success (or conversely for failure) can generally be found on examination of all circumstances of the child and his reaction to them.

References

[1] Borzyskowski M, Mundy AR, Neville BGR, *et al.* The conservative management of vesico-urethral dysfunction in children: a trial comparing clean intermittent catheterisation with manual expression combined with drug treatment. *Br J Urol* 1982;**54**:641–4.

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Alcohol intoxication, an underdiagnosed problem?

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SUMMARY To show that alcohol intoxication may be underdiagnosed in childhood, we describe four patients in whom it was not suspected until blood alcohol concentrations were measured as part of a toxicology screen.

The true incidence of alcohol intoxication in childhood is uncertain and it has been suggested that published reports may underestimate its frequency.[1] We describe our recent experience with four patients to show that alcohol intoxication may indeed be underdiagnosed in children admitted to hospital.

Patients and method

Between January 1983 and February 1984, eight children aged 12 years or less were admitted to paediatric wards in Aberdeen with acute alcohol intoxication. Serum toxicological screening for barbiturates, benzodiazepines, tricyclates, salicylates, and paracetamol was performed where indicated. Serum alcohol was measured by gas chromatography.[2] In four children alcohol intoxication was suspected from history and examination.

Case reports

Case 1. A 2 year old boy, staying with his grandparents, was referred with an 18 hour history of diarrhoea and vomiting followed by diminished consciousness. He had been given no medication, and the possibility of alcohol ingestion was denied. He was drowsy but responded to verbal commands. No alcohol related smell was detected on his breath. His temperature was 36°C. The serum alcohol concentration was 10·9 mmol/l and plasma glucose was 2·0 mmol/l. The source of the alcohol was not determined.

Case 2. A 10 year old boy was heard calling from the bath. He was found drowsy, confused, and 'frothing at the mouth'. He vomited five times over the next three hours and was admitted to hospital. He was drowsy but responded to commands. The possibility of alcohol or drug ingestion was denied. There was a bruise over his right eye and a 'smell of sweet apples' on his breath. He had generalised hypotonia. His temperature was 36·2°C. His serum alcohol concentration was 23·7 mmol/l and plasma glucose was 3·6 mmol/l. Despite the laboratory result he continued to deny any alcohol ingestion.

Case 3. A 12 year old girl was found unconscious in the street. She was drowsy but responded to verbal commands. There were abrasions on her face and scalp, but no alcohol related smell was detected on her breath. Axillary temperature was 34·8°C. A toxicology screen was negative. Her serum alcohol concentration was 51·0 mmol/l and plasma glucose