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SHORT REPORTS

Are families of diabetic children adequately taught?

Education is an integral part of caring for patients with diabetes. We report a study of the knowledge of the families of children with diabetes attending five clinics in the north of England.

Subjects, methods, and results

All parents and patients over 11 years of age attending five children's diabetic clinics were invited to complete a multiple choice questionnaire that had 83 correct answers and to take a practical test of drawing up an insulin mixture and testing blood and urine. The children's haemoglobin A₁ and C peptide concentrations were measured and their dietary intakes estimated from a three day diary.¹ The data were analysed using SPSSX to calculate Pearson's r correlation coefficients, partial correlation coefficients, t test, and analysis of variance.²

Multiple choice questionnaires were completed by 96 children, 152 mothers, and 62 fathers from 170 families (75% of those asked). Those who declined tended to have older children and to come from lower socioeconomic groups.

There was a significant relation between parents' scores in the multiple choice questionnaire and the children's haemoglobin A₁ concentrations after controlling for C peptide values (r = -0.28; p < 0.01). The scores also were related to socioeconomic group, father's employment state, and the age at which the child's diabetes had been diagnosed (table). The mothers', but not the fathers', scores

Multiple choice questionnaire scores in children and mothers

	Children			Mothers		
	Mean	SD	No	Mean	SD	No
Socioeconomic group:						
1+2	40	13.0	43	53	12.2	63
3+4	33	13.1	37	44	12.5	60
5+6	34	12.7	9	43	15.2	19
7, 8, 9	29	6.6	7	43	11.6	10
Employed	38	13.1	80	49	12.9	131
Unemployed	28	11.1	13	37	13.2	18
Age at diagnosis (years)						
<3.8	38	10.4	12	53	12.1	31
3.8-10	36	13.3	54	48	13.3	91
>10	36	13.8	30	42	13.6	30

*p<0.05. **p<0.01.

correlated with some aspects of the children's dietary intake: compliance with carbohydrate prescription (r = 0.27; p < 0.01), fibre expressed as g/MJ (r = 0.34; p < 0.01), and proportion of energy from sugars (r = 0.16; p < 0.05) but not from fat. There was no relation between questionnaire score and duration of diabetes.

Ninety four children showed fat hypertrophy at injection sites and 91 used only one or two sites; 15% of subjects made errors when performing the blood test and 21% made errors in the urine test; none of these faults were related to scores in the questionnaire. A total of 14% of subjects, however, made an error in drawing up the insulin, and mothers in these families had lower scores in the questionnaire (mean (SD) 40 (12) compared with 49 (13); p < 0.05). Similarly, 37% of children left 10 minutes or less between the time of injection and meal, and their mothers scored lower than those who left more than 10 minutes (44 (15) and 50 (12) respectively; p < 0.05). The mean scores in families who were active members of the British Diabetic Association were higher than those of non-members (53 (11.4) and 39 (12.7); p < 0.05); the mean score of inactive members of the association was intermediate.

Comment

Although a multiple choice questionnaire has limitations as a tool for assessing knowledge, we found scores related to several outcome variables: diet, technique and timing of insulin injections, and haemoglobin A₁ values. This supports studies showing benefits of improved education.^{3,4} Large gaps in knowledge about diabetes and poor performance of routine tasks, apparently sometimes despite knowledge, were detected. Furthermore, knowledge did not seem to improve with duration of the disease even in this study of regular clinic attenders. At the time of the study the only educational method used was individual teaching at diagnosis and in the clinic, though parents were encouraged to join the British Diabetic Association. The relation between membership and scores may reflect motivation but suggests that the association is an effective source of information.

Objective tests of knowledge should be part of regular review procedures, and teaching methods complementary to clinic visits should be introduced.

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Localised intratesticular abscess complicating epididymo-orchitis: the use of scrotal ultrasonography in diagnosis and management

Although epididymo-orchitis usually responds satisfactorily to antibiotic treatment, it may progress to suppurative necrosis of the testis in about 5.5%.¹ This complication, preceded by the imminent discharge of pus through the scrotal wall, inevitably results in orchidectomy. Non-resolution of epididymo-orchitis may also manifest as recurrent scrotal pain with swelling and cause considerable morbidity. Under these circumstances management may be difficult. The presence of an indurated intrascrotal mass may mimic the signs of a testicular tumour,² which in the absence of

reliable non-invasive diagnostic methods may be excluded with certainty only by undertaking scrotal exploration through an inguinal incision. This approach, though justifiable, does result in a high rate of orchidectomy for benign disease that exceeds 50%, of which epididymal and testicular inflammation account for about 26%.³ On the other hand, a "wait and see" policy with the administration of more antibiotics often serves only to prolong the patient's misery.

We report on a patient who presented with this dilemma after receiving treatment from his general practitioner, ostensibly for epididymo-orchitis, and in whom the application of scrotal ultrasonography proved to be of value in determining further management that subsequently led to testicular salvage.

Case report

A man aged 35 was referred for urological assessment after complaining of a painful swelling in his scrotum. Two months previously he had been prescribed a week's course of erythromycin by his doctor for suspected epididymo-orchitis. He denied any urinary symptoms. Examination showed a hard mass in the left hemiscrotum from which the testis could not be delineated confidently. A midstream specimen of urine showed sterile pyuria. Serum testicular tumour markers for α fetoprotein and human chorionic gonadotrophin were negative. Scrotal ultrasound imaging using a sector scanner incorporating a 7.5 MHz short focus transducer showed a rounded anechoic area in the upper pole of the testis, which otherwise showed normal echogenicity. The epididymis was thickened (10 mm) and hyperechoic (figure). The features were interpreted as epididymo-

Longitudinal ultrasound scan showing thickened hyperechoic epididymis (e), testis (T), and an intratesticular abscess (arrow).

orchitis with a localised intratesticular abscess. This diagnosis was confirmed at scrotal exploration by the operative findings of inflammatory adhesions between the tunica vaginalis and testis, a thickened epididymis, and a fluctuant area in the upper part of the testis, the remainder of which felt normal. The abscess was aspirated with a needle, yielding 4 ml of pus from which *Escherichia coli* was later cultured. Cytological examination of the purulent fluid showed no evidence of malignant cells.

The patient made a rapid recovery and reported no symptoms two months later, at which time the testis was palpably normal, though slightly smaller. A repeat ultrasound examination showed a normal testicular echo pattern.

Comment

Ultrasonography is becoming increasingly popular as a non-invasive technique for the accurate imaging of intrascrotal contents.⁴⁻⁵ Apart from its obvious ability to differentiate solid from cystic swellings ultrasonography is useful in discriminating between testicular and extratesticular lesions and therefore is of practical importance when clinical examination proves inadequate. In our case ultrasonography was useful not only in elucidating the nature of an indurated scrotal mass but also in detecting the presence of an intratesticular abscess that would otherwise not have been clinically apparent. Treatment based on these findings ensured prompt symptomatic relief and prevented an unnecessary orchidectomy.

An intratesticular abscess should be considered as a possible cause of non-resolving epididymo-orchitis. Its presence can be readily identified by scrotal ultrasonography. The radiological findings, however, must be interpreted in the light of the clinical background. Suspected intratesticular abnormalities should be explored or closely watched by further scanning until resolution occurs. Even though exploration may finally be necessary,

the information gained from ultrasonography can guide the surgeon in deciding how he should operate.

We believe that this is the first documented case of testicular salvage after aspiration of an intratesticular abscess diagnosed by ultrasonography in an adult.

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Occupational asthma due to methyl methacrylate in an orthopaedic theatre sister

Acrylates are widely used in the production of polymers such as surface coated resins, plastics, and ion exchange resins. In medicine they are used for dental implants and as bone cement.^{1,2} In industry occupational asthma associated with cyanoacrylate based adhesives, including methyl methacrylate, has been described³; we describe such a case in a sister who worked in an orthopaedic operating theatre. Two types of bone cement are used in these operating theatres—namely, CMW cement, in which polymethyl methacrylate powder is mixed with monomethyl methacrylate liquid, and Palacos R, in which copolymer methyl acrylate and gentamicin are mixed with methyl methacrylate.

Case report

A 56 year old theatre sister had worked in an orthopaedic operating theatre for 11 years. During this period she had regularly handled CMW bone cement, over the last seven years making about 12 mixes weekly. Before presentation she had handled a new cement, Palacos R with gentamicin. In April 1983 she developed respiratory symptoms characterised by a persistent cough with wheezing and breathlessness. At first there was no clear connection between her asthma and work. She worked on alternate weekends and had two consecutive days off only once every fortnight. In retrospect her asthmatic symptoms were probably better on the evening of the second day away from work. In July she went on holiday, when all her symptoms resolved. When she returned to work they recurred immediately. In December the operating theatre was closed for eight weeks, and again her symptoms resolved. The association between her symptoms and work became apparent to her when her problems again recurred on her return to orthopaedic work. Subsequently she developed wheezing and breathlessness within minutes of mixing bone cement. She was mildly breathless on exertion between these attacks.

She smoked 10-20 cigarettes daily but did not have any history of childhood respiratory illness. Pulmonary function tests when she was not working yielded normal results. Results of skin tests to common environmental allergens were negative. Total serum IgE concentration was 218 U/ml. Bronchial provocation

Environmental methyl methacrylate vapour concentrations (ppm) resulting from mixing of polymeric cement on open trolley and in fume cabinet

Time (s)	Procedure	Cement mixed on open trolley	Cement mixed in fume cabinet
0	Breakage of phial	0	0
15	Addition of liquid cement	126	0
30	Mixing	274	0
45	Mixing	374	0
60	Mixing	164	0
75	Spoonful of cement removed from bowl	126	36*
90	Lid removed from cabinet and bowl extracted		25*
105	Bowl cleaned out	80	76

*Cement removed from fume cabinet.