

Short reports

Childhood accidents—an endemic of epidemic proportions

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SUMMARY Information about accidental injury to children was obtained by studying children who presented at hospitals in South Glamorgan during a 6-month period. Just under 10 000 children who lived in the area presented at hospital, which, if extrapolated, means that 20% of children each year might be expected to attend hospital after an accident. The majority (71%) of children needed only simple investigation, treatment, or reassurance. The distance between the site of the accident and the hospital was directly related to the number of children presenting. The most common cause of injury was a fall, but dog bites also caused concern. Bicycle injuries were more common than police statistics indicate. We conclude that accident and emergency departments should give special attention to children.

Accidental injury is a major cause of death in children aged over 1 year,¹ and it also leads to many children being admitted to hospital. However, the number of children who present to accident and emergency departments each year is unknown and so, too, is the nature or cause of such injury. Therefore, for a 6-month period, we studied children who presented at hospitals in South Glamorgan after an accident. We examined the morbidity of accidental injury in childhood and looked at possible methods of prevention, and we investigated the implications for the NHS.

Methods

Basic descriptive data were collected for each child aged 15 years or less who presented for hospital care in South Glamorgan as a result of an accident during the 6-month period May to October 1977. Information was collected from the accident and emergency department records, and a random sample of 3000 children were interviewed. Four people employed on the job creation scheme carried out the interviewing and collected the data.

Most of the children had attended the accident and emergency department at the Cardiff Royal Infirmary, but some children who had presented to the University Hospital of Wales and Llandough Hospital, and some who had presented to the Bridgend General Hospital were included too. The information was coded and then analysed by the computer of the South Glamorgan Area Health Authority.

Results

Nearly 10 000 (9989) children (<15 years) who lived in South Glamorgan attended in a 6-month period (61% boys and 39% girls). 964 children lived outside the area. The age distribution of children in South Glamorgan (0-14 years) related to the child population is shown in Table 1.

If the 6-month figures are extrapolated to a year 19.8%, or nearly 1 child in 5, resident in the area might be expected to attend hospital because of injury.

Most (71%) children needed simple investigation, treatment, or reassurance. Outpatient surgical treatment was needed for 23% of the children. Admission was needed for observation in 4.5% (mainly for injuries to the head), and for treatment in 1.5%. There were 6 deaths in the area of South Glamorgan during the period. Four of these deaths were due to road traffic accidents, 1 to a fall from a horse, and 1 to a fall at home. Only one of these deaths took place in hospital.

Table 1 *Numbers of South Glamorgan children presenting in a 6-month period*

Age group (years)	Children who presented in a 6-month period (n = 9132)	
	No	% of child population
0-4	2335	8.7
5-9	2825	9.1
10-14	3972	11.7

Table 2 *Type of injury sustained by the children*

<i>Injury</i>	<i>%</i>
Lacerations	31
Superficial injury and concussion	18
Head injury	15.5
Sprains	13.5
Fractures	13.5
Foreign body	2.5
Poisoning	2
Burns and scalds	2
Others	1

Table 3 *Place of injury*

<i>Place</i>	<i>%</i>
At school	18
At home	20
Out of doors	49
Sports areas	2
Other buildings	4
In a vehicle	1
Unknown	6

The type of injuries sustained by the children is shown in Table 2. The most common (35%) cause of injury was a fall. Of particular concern were falls downstairs (2.6%), falls from playground equipment (2.7%), sports tackles (2.7%), and falls from buildings (1%). Dog bites were also common (5.5%). About 93 children each month in the South Glamorgan area were bitten by dogs seriously enough for the children to be brought to hospital. Bicycle injuries were also frequent (4.8%), but collision with cars (1.9%) less so.

The place of injury for May 1977 is shown in Table 3.

The number of children who attended the Cardiff Royal Infirmary was directly related to the distance the children had to travel. For instance, 25% of the child population of Adamsdown (the local government ward where the Cardiff Royal Infirmary is situated) presented to the accident and emergency department during the 6 months, compared with between 5 and 8% of children who lived four or five miles away.

There was often a long delay before the child presented at hospital. 39% of children attended in the first hour, 15% waited between 12 and 24 hours before attending, and 13% waited longer than 24 hours. Many children (about 212 a month, or 2.6% in a year) attended the hospital because they were ill. Such children had such general paediatric problems as gastroenteritis, febrile convulsions, or respiratory infections, and some had skin infections.

Discussion

We were surprised at the large number of children who attended hospital after accidental injury. In

South Glamorgan (a mixed urban and rural area in many ways typical of the UK as a whole) 1 child in 5 presented to hospital in a year. Similar figures have been found by Illingworth in Sheffield² and by us in a pilot study in 1976.³ It is likely that these figures are applicable elsewhere in Great Britain. Our results showed that attendance was related to the area of residence, those children living nearest the accident and emergency department being the most likely to attend; such a relationship is probably multifactorial.

These numbers by themselves show the need for special attention for children in accident and emergency departments. As the Court report⁴ stressed, the first consideration must be appropriate accommodation. Children should not be expected to wait in the proximity of ill and sometimes violent adults, nor should they receive treatment in close proximity to them. The results showed a wide variety of problems, so it is important that staff should have the experience necessary to handle children and their diseases. As accidents to young children are sometimes symptoms of social stress⁵⁻⁶ the children and their families need experienced handling. The recognition of non-accidental injury is also clearly important.

Many of the children who presented to hospital had suffered minor injuries which perhaps could have been better treated away from the area accident unit. There are many reasons for bringing the general practitioner into the area of care, but the difficulties are well known.

Prevention of this huge cause of childhood morbidity must be a high priority. Jackson and Wilkinson⁷ stressed that it was important for medical staff to look at each accident to make sure that any preventable factor was not repeated. Many of our children were injured by a fall and many falls probably are not preventable. However, falls from buildings or from playground equipment indicate the need for better design standards. Many children had swallowed poisons. This might be reduced if child-resistant containers and packaging were used.

Bicycle injuries are clearly more common than police road traffic accident notification statistics suggest.⁸ Previous work has shown that many of these occur on new or borrowed bicycles,⁹ and safety education may well be paramount here.

We were shocked, as other authors have been,¹⁰⁻¹¹ by the number of children who presented after a dog bite. This would be a major problem if rabies were introduced here, as 10% of children from Cardiff could be expected to attend hospital each year after dog bites. There is the need for better control of our dogs.

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HLA-DR antigens in insulin-dependent diabetes

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SUMMARY HLA-A, B, C, and DR-typing was performed in 51 children with insulin-dependent diabetes. A close association between childhood diabetes and HLA-DR3 and DR4 was established. DR3 was found in 55% and DR4 in 75% of the diabetic children, compared with 20% and 26% respectively in healthy controls. The combination of DR3 and DR4 was present in 37% of the diabetic children compared with only 4% of the controls. This investigation provides strong evidence that the susceptibility genes for insulin-dependent diabetes are in close linkage disequilibrium with the HLA-DR locus. In diabetic children DR4 seems to be a more important susceptibility factor than in patients with manifestation of insulin-dependent diabetes after 15 years.

In recent years it has been accepted that diabetes mellitus is made up of a heterogeneous group of diseases, which can be distinguished by clinical, biochemical, and pathogenetic factors. There are at least two main entities: the insulin-dependent juvenile onset (type 1), and the insulin-independent adult onset (type 2) form of diabetes.

During the last few years the inherited susceptibility to develop type 1 diabetes has been linked with particular genetic markers of the HLA system (B8, B15, B18; Cw3, DR3, DR4).¹ The intention of our

investigation was to determine the frequencies of the HLA-antigens of the A, B, C, and DR locus in diabetic children who had manifestations of the disease before age 15.

Subjects and methods

HLA-A, B, C, and DR antigens were determined in 51 (17 girls and 34 boys) insulin-dependent diabetic children. Mean chronological age 12·1 (range 4·3–18), mean age at onset 7·9 (range 1·75–14·5) years.

HLA-antigens of the A, B, C locus were evaluated in 3000, and HLA-DR antigens in 160 healthy controls. HLA-A, B, and C typing was performed by means of the standard NIH-microlymphotoxicity technique, DR-locus typing by the 2-colour fluorescence technique.² The relative risk was calculated by the formula of Woolf.³

Results

Table 1 shows the distribution of HLA-DR antigens of the diabetic children compared with controls. Children positive for DR3 showed a 4·9-fold and children positive for DR4 an 8·2-fold risk of developing insulin-dependent diabetes compared with individuals who were negative for these antigens. 37% of the diabetic children presented both DR3 and DR4, and in them the risk of developing juvenile