Seventy three fractures were examined at the time of primary treatment under anaesthesia in the first 24 hours after admission to hospital. This group included the 8 fractures with bruising evident at initial presentation. Thirteen other fractures in this group (without evidence of bruising at initial presentation) had developed overt bruising by the time of definitive treatment within 24 hours of hospital admission. Sixteen fractures were reviewed later in the first week for various reasons (for example, change of plaster casts, remanipulations); 4 of these had developed local bruising. Four fractures were reviewed at three weeks when a plaster cast was removed. They were all undisplaced distal radial fractures that had not required manipulative treatment, and bruising was not evident in any of them. Thus 25 fractures (28%) developed bruising during the first week after trauma.

**Comment**

The absence of bruising in children with fractures has been cited as supporting evidence that the force required to fracture the bone was minimal, which implies weakness of the underlying bone—perhaps due to a temporary abnormality such as copper deficiency or subtle forms of osteogenesis imperfecta. In our study of normal children most fractures (91%) were not associated with bruising at the time of presentation. Most (72%) remained without evident bruising in the first week after injury. We therefore suggest that the absence of bruising cannot be taken to imply either underlying bone disease or an increased possibility of non-accidental injury.

Local bruising in acute fractures in childhood is perhaps less common than might be expected. When present it implies that any underlying fracture is likely to be displaced. Its absence is an unreliable sign on which to base a diagnosis of non-accidental injury.

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**Prevalence of congenital anterior abdominal wall defects in the United Kingdom: comparison of regional registers**

D H Stone, Shahnaz Rimaz, W H Gilmour

Recent reports from England and Wales and Scotland imply that a gradient of increasing risk of congenital abdominal wall defects may exist from the south to the north of the United Kingdom. We tested this hypothesis by comparing data from a validated public health surveillance system in the west of Scotland with other registers in the United Kingdom.

**Subjects, methods, and results**

The Glasgow Register of Congenital Anomalies is a computerised epidemiological database run by the Greater Glasgow Health Board since 1974. A member of the transnational network of EUROCAT (European Registration of Congenital Anomalies) since 1980, it uses multiple sources of ascertainment and subjects all notified anomalies to systematic diagnostic validation. Completed registration forms are transmitted electronically to the EUROCAT central registry in Brussels, where they are checked for completeness and accuracy of coding.

There is no formal time limit for notification. All births and induced abortions following prenatal diagnosis are included in the surveillance. Diagnostic coding is based on the British Paediatric Association’s extension to the ninth revision of the International Classification of Diseases.

The numerators were all registered cases of omphalocele (code 75670) and gastroschisis (code 75671) in mothers resident within the area covered by the Greater Glasgow Health Board at the time of delivery; cases were included that occurred in live births, still births, and induced abortions for 1980-93 inclusive. Induced abortions were counted in the year of the expected date of delivery had the pregnancy continued. The denominators were the total births to mothers in the area in the relevant time period. Prevalence was calculated by dividing the numbers for each defect by total births. Prevalences were compared using \( \chi^2 \) tests, and ratios of omphalocele to gastroschisis using a \( \chi^2 \) test for heterogeneity of odds ratios.

During the study there were 73 cases of omphalocele (4.08 per 10 000 births), of which 34 (47%) were induced abortions, and 24 cases of gastroschisis (1.34 per 10 000 births), of which 5 (21%) were induced abortions. The apparently high prevalence of abdominal wall defects in Glasgow relative to other parts of the United Kingdom was due to its exceptionally high rate of omphalocele (table).

**Comment**

Our data support the hypothesis of an increasing gradient in the prevalence of congenital anterior abdominal wall defects from the south to the north of the United Kingdom. Whether the phenomenon is real or artefactual (due to varying ascertainment) remains uncertain. In Glasgow the risk of omphalocele seems especially high. The prevalence of omphalocele...
Prevalence of abdominal wall defects in the United Kingdom. Rates are cases per 10 000 total births

<table>
<thead>
<tr>
<th>Geographical coverage (reference)</th>
<th>Years</th>
<th>Total No of births</th>
<th>Induced abortions included?</th>
<th>Omphalocele</th>
<th>Gastrochisis</th>
<th>Ratio of omphalocele to gastroschisis</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Rate (95% CI)</td>
<td>No</td>
<td>Rate (95% CI)</td>
<td>Rate (95% CI)</td>
<td>Rate (95% CI)</td>
<td>No</td>
</tr>
<tr>
<td>Glasgow (current study)</td>
<td>1980-93</td>
<td>179 067</td>
<td>Yes</td>
<td>73</td>
<td>41 (3.1 to 5.0)</td>
<td>24 (1.3 to 1.9)</td>
<td>3.0 (1.9 to 4.8)</td>
</tr>
<tr>
<td>Northern region¹</td>
<td>1988-92</td>
<td>201 973</td>
<td>Yes</td>
<td>43</td>
<td>21 (1.5 to 2.8)</td>
<td>56 (2.3 to 3.5)</td>
<td>0.6 (0.6 to 1.2)</td>
</tr>
<tr>
<td>Liverpool²</td>
<td>1980-8</td>
<td>184 530</td>
<td>Yes</td>
<td>60</td>
<td>3.3 (2.4 to 4.1)</td>
<td>28 (1.5 to 2.1)</td>
<td>2.1 (1.4 to 3.4)</td>
</tr>
<tr>
<td>Belfast²</td>
<td>1980-92</td>
<td>355 875</td>
<td>Yes</td>
<td>105</td>
<td>3.0 (2.4 to 3.5)</td>
<td>29 (1.8 to 1.1)</td>
<td>3.6 (2.4 to 5.5)</td>
</tr>
<tr>
<td>England and Wales³</td>
<td>1987-93</td>
<td>4 859 221</td>
<td>No</td>
<td>448</td>
<td>0.8 (0.8 to 1.0)</td>
<td>539 (1.0 to 1.2)</td>
<td>0.8 (0.8 to 1.0)</td>
</tr>
</tbody>
</table>

¹ Prevalence of all abdominal wall defects ranged from 1.2 per 10 000 births in South West Thames region to 3.71 per 10 000 births in Northern region.

in our study is about four times higher than that reported by the Office for National Statistics for England and Wales. However, this striking discrepancy may reflect substantial underascertainment by the Office for National Statistics of cases of omphalocele.¹ In particular, these national data excluded terminations of pregnancy following prenatal diagnosis, in our study is about four times higher than that reported by the Office for National Statistics for England and Wales. However, this striking discrepancy may reflect substantial underascertainment by the Office for National Statistics of cases of omphalocele.¹ In particular, these national data excluded terminations of pregnancy following prenatal diagnosis, whereas in our series were terminated. Data from EUROCAT for 1980-92 indicate that the ratio of omphalocele to gastroschisis was 2.5,³ a value much closer to that of Glasgow (3.0) than that of the Office for National Statistics (0.8). By contrast, the prevalence of gastroschisis in Glasgow is comparable with that of the area covered by the Office for National Statistics, particularly its northern and western regions.

The reported gradient from south to north in the prevalence of abdominal wall defects (especially omphalocele) in the United Kingdom and in Europe as a whole⁶ is similar to that observed for neural tube defects.⁴ In particular, these national data excluded terminations of pregnancy following prenatal diagnosis, whereas in our series were terminated. Data from EUROCAT for 1980-92 indicate that the ratio of omphalocele to gastroschisis was 2.5,³ a value much closer to that of Glasgow (3.0) than that of the Office for National Statistics (0.8). By contrast, the prevalence of gastroschisis in Glasgow is comparable with that of the area covered by the Office for National Statistics, particularly its northern and western regions.

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