Management of minor head injuries by non-specialists

Editor,—The management of patients with a minor head injury (MHI)—that is, a Glasgow coma scale score of 13–15—once the decision has been made to admit them, is relatively simple and straightforward. The value of having neurosurgical specialist input could be looked upon as a luxury. In Nottingham there is a co-located accident and emergency (A&E) department with a regional neurosurgical unit. It is often the case that the A&E beds for observation become full and the local arrange-ments are to ask the regional neurosurgical unit to admit the patient under their care. The case of this resource for this condition has been ques-tioned and a retrospective review of patients with a MHI admitted to this hospital was undertaken to determine the actual involvement of neurosurgery in the management of these cases in a typical teaching hospital.

For the calendar year of 1996, 618 adults (>16 years of age) were admitted with a diagnosis of MHI for observation, of whom 89 (14.4%) were referred to the regional neurosurgical unit (M:F = 63:26; 70.8%:29.2%). Thirty seven (42%) had other injuries, some of which required admission in any case, for example maxillofacial or spinal fracture in eight (9%), their MHI being truly minor.

Of the A&E referral was made because no A&E beds in 47 (53%), was not stated at all on the admission card in 22 (25%), for “social reasons” in four (4%), and in two (2%) was because they had been under a neurosur-gical supervision previously for totally unrelated conditions. Only two of 24 (8%) patients who had a computed tomography during their admission had anything abnormal detected, neither of whom needed any intervention beyond simple observation.

The same survey carried out in the same hospital in 1992 revealed, using a randomly sampled group of patients with MHI, that eight (9%) were referred to the regional neurosurgical unit, none of whom needed any active intervention.

One of the authors (NB) carried out a similar review of patients admitted under general surgeons with MHI for the year 1991 in a different large general hospital with a co-located A&E department (that is, a trial trauma centre) and subregional neuro- surgical unit. Of 53 patients admitted with MHI only four (7.5%) required a neurosurgical opinion and none required active inter-vention.

These three temporally separate studies in two different, but similar, hospitals found a total of 761 patients admitted with MHI, none of whom required neurosurgery. It is our con-tention that no patients with MHI need be admitted under the care of neurosurgeons in this country and that patients who need specialist neurosurgical input can be identified by neurological observations in a non-specialist setting and referred for advice or action accordingly.

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Visual assessment of blood loss by accident and emergency staff

Editor,—Birkinshaw et al have recently demon-strated that in reconstructed scenarios using manikins, 80% of estimates of blood loss by paramedics and technicians were under-estimates, and for a blood loss of 3 litres the mean underestimate was 60%.1 It is also important that staff in the accident and emer-gency (A&E) department can assess blood loss that is continuing within the department and also assess loss in clothing as it is removed, as stressed in Advanced Trauma Life Support courses.2

We undertook a study whereby a measured volume (450 ml) of expired human whole blood was split over some clothing on a non-absorbent surface. After five minutes this scene was photographed. The photograph was shown to staff of the A&E department and they were asked to estimate the volume of blood shown in the photograph.

Forty A&E nurses and six senior house officers (SHOs) were surveyed. Their estimates of blood loss are shown in table 1.

This demonstrates that staff in A&E show a wide variation in the accuracy of their estima-tions of blood loss and it is not reliable for clinical decision making. In contrast the pre-hospital study, A&E staff appear to overestimate blood loss. None of the staff had ever been shown pictures of measured blood loss as part of their training. There is a need to train A&E staff in the assessment of external blood loss.

Table 1 A&E staff’s estimate of volume of a measured 450 ml blood loss

<table>
<thead>
<tr>
<th></th>
<th>No surveyed</th>
<th>Mean</th>
<th>Maximum</th>
<th>Minimum</th>
<th>1st quartile</th>
<th>3rd quartile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse</td>
<td>40</td>
<td>577.6</td>
<td>3000</td>
<td>50</td>
<td>200</td>
<td>681</td>
</tr>
<tr>
<td>SHO</td>
<td>18</td>
<td>633.9</td>
<td>2500</td>
<td>30</td>
<td>250</td>
<td>575</td>
</tr>
</tbody>
</table>

Transtracheal jet ventilation and the completely obstructed airway: incorporating an active expiratory phase

Editor,—Transtracheal jet ventilation is an important technique in emergency airway management. During an audit of equipment available for emergency airway management we had occasion to test various devices for transtracheal jet ventilation in a model trachea and lung (BOC Lung Ventilator Performance Analyser, compliance 50 ml/cm H2O) with an interposed Wright respirometer to measure minute ventilation. Using a 14 gauge cannula and Sender’s injector connected to a 400 kPa oxygen outlet in a model in which the “laryngeal” end of the “trachea” was completely ob-strected, further ventilation following the first insufflation was clearly not possible without hyperinflation of the model lung.

In this situation where expiration via the natural airway is not possible, it is a commonly believed myth that insertion of another 14 gauge cannula will allow the lungs to deflate between insufflations. In our model, when this was performed, a minute ventilation of 2.5 l/min was achieved. This is clearly insufficient for adequate ventilation for any considerable length of time. However, when the expiratory cannula was connected to standard wall suction set at “high” (80 kPa), a minute ventila-tion of 10 l/min was consistently achieved. A similar result was obtained using only one can-nula connected to the Sender’s injector and suction via a three way tap. The balance between the two for inspiration and expiration has not been tried in clinical practice and it is possible that the expiratory phase could become obstructed by transtracheal mucosa, blood, or mucus. However, in the situation of a completely obstructed airway where a satisfactory needle cricothyroidotomy for transtracheal jet ventilation has been performed incorporation of an active expiratory phase may allow a clinically useful minute ventilation and would remove to some degree the time pressure before a more satisfactory definitive airway (for example surgical crico-thyroidotomy) is achieved.

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Transtracheal jet ventilation and the completely obstructed airway: incorporating an active expiratory phase.

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