Introduction

Although most head injuries in children are minor, it is the commonest cause of mortality and disability in children and young adults. Computed tomography (CT) of the head is the usual primary investigation for assessing clinically important head and intracranial injury following trauma. The National Institute of Health and Care Excellence (NICE) issued new guidance regarding the clinical criteria for performing CT following head injury in January 2014. We wanted to assess our local adherence to this guidance; one important requirement being the provision of a written radiology report within 60 minutes. Additionally we wanted to establish what the common discrepancies were between provisional and verified reports and the time taken for consultant verification.

Methods

A retrospective review and computerised search was conducted in a University Teaching Hospital to identify all emergency department CT head scans over a 12 month period (Oct 2014-Sept 2015) in patients aged less than 16 years. Scans that were not performed following a head injury or trauma were excluded. The clinical criteria were identified through the examination request card, as well as the clinical notes where necessary. A major discrepancy was considered one which would affect management or acute decision making.

Results

During the 12 month period investigated 84 CT head scans were performed in children. 61 of these scans were performed following head injury in 60 children and 59% of the patients were male (male to female ratio of 1.4:1). There were 16 discrepancies (26%), which were all considered minor following review by two consultants (JJ and TW). The majority of the scans were verified by a consultant within 12 hours (64%) and only 3 scans (5%) were not verified within 24 hours. Compliance with NICE criteria for scanning was good (90%). In the 6 instances where the criteria were not clearly met, there were no clinically important positive findings, indicating that the NICE criteria are a valid discriminator for performing CT head following trauma.

Reporting Discrepancies

13 scans (21%) had an abnormality picked up by the consultant that had not been reported correctly.

- All discrepancies considered minor (i.e. did not impact on management or acute decision making)

<table>
<thead>
<tr>
<th>Discrepancy</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missed fracture</td>
<td>5</td>
</tr>
<tr>
<td>Over-reporting</td>
<td>4</td>
</tr>
<tr>
<td>Wrong side/wording</td>
<td>2</td>
</tr>
<tr>
<td>Tiny subdural bleed</td>
<td>1</td>
</tr>
<tr>
<td>Missed foreign body</td>
<td>1</td>
</tr>
</tbody>
</table>

Criteria for performing CT

- 90% of scans met the NICE criteria for performing CT following head injury.
- There were 6 cases were it was considered the NICE criteria were not met:
  - There were no positive findings in the 10% of cases were the NICE criteria were not met.
  - No skull radiographs were performed indicating good compliance with current recommended practice.

Summary

- Overall our compliance with the NICE guidance was high and a provisional written report was provided within 60 minutes for the vast majority of patients. No major discrepancies were identified and there were no acute intracranial pathologic findings in the few cases where criteria for scanning were not met.
- Adherence to NICE clinical criteria is important to avoid unnecessary radiation to paediatric patients. Highlighting the need to provide written reports promptly, as well as review areas to reduce the minor discrepancy rate will help improve the performance of the radiologist in training.