Awareness and Utilisation of an Oral Paracetamol Loading Dose

Guideline in a Day Case Surgery Unit within the North Western Deanery

Keywords: Oral paracetamol, day case

Introduction: A guideline for multimodal analgesia using 2g oral paracetamol and 75mg oral diclofenac for preoperative use in day case procedures was introduced to the Royal Derby Hospital 1 year ago.

Aims: To determine the awareness of the guidelines, explore reasons for non-compliance and explore whether there were consequent additional analgesic requirements intra and post operatively.

Methods: Prospective audit, inclusive of all day case procedures, from February to March 2011. Inclusive of anaesthetists of all grades and procedures included General Surgery, Maxillo-Facial and Ear Nose and Throat operations.

Results: Amongst anaesthetists, there was 100% awareness of our oral loading dose guidelines. Intravenous paracetamol was not given to any patients who had received an oral loading dose. 78% of patients (N = 21) who were given an oral loading dose did not require further analgesia in the theatre recovery. Of the patients who had not been given an oral dose (N = 27), 44% (N = 12) required further analgesia post-operatively, 37% (N = 10) had already received intraoperative intravenous paracetamol, and a further 19% (N = 5) warranted rescue intravenous paracetamol in the recovery ward.

Conclusion: An oral loading dose was associated with lower analgesia requirements both intra and post-operatively. Use of pre-emptive oral paracetamol can eliminate the need for administration by the intravenous route.

Introduction

Postoperative pain in day surgery can be managed effectively with a comprehensive perioperative analgesic regime. One year ago, our Acute Pain Team introduced a guideline for administration of an oral paracetamol 2g loading dose as an alternative to using the intravenous (IV) preparation. Our Day Case Unit guidelines also include diclofenac MR 75mg preoperatively.

1g of oral paracetamol has a bioavailability of less than 10 micrograms/ml and therapeutic levels are thought to be between 10 and 20 micrograms/ml. These therapeutic levels can be achieved with 2g of oral paracetamol and peak levels are reached at 45 minutes. IV paracetamol reaches peak levels in 20 minutes but the action is not as sustained as the oral route. There are several advantages of using the oral preparation over intravenous. These include cost, ease of administration and low side effect profile. It costs 3 pence per day for oral medication compared with £7.16 for the intravenous infusion. Intravenous paracetamol, however, is very effective for rescue analgesia and when patients cannot manage to take oral preparations.

The aims of this audit were to:

1. Demonstrate the level of awareness of our guidelines
2. Determine reasons for non-compliance with the regime by individual anaesthetists
3. Determine subsequent analgesia requirements in theatre and post-operatively in our Day Case Unit.

Methods

A prospective cohort review of all day case patients from the 21st February 2011 until 21st March 2011 was carried out. 54 forms were completed. We sent out a second form which focused on the practice of individual anaesthetists and whether or not they were aware of the guidelines of the oral pre-operative loading dose. The data was obtained from anaesthetists of all grades. The patients were undergoing an array of day case procedures from Ear Nose and Throat, Maxillo-Facial and General Surgery. Data on preoperative, intraoperative and postoperative analgesia was recorded as well as the reason for any non-compliance with our guidelines.

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**Results**

During the study 54 forms were completed. 100% of the anaesthetists who were subsequently surveyed about their practice were aware of the trust acute pain guidelines on the 2g oral paracetamol loading dose. 71% of the latter forms were completed by consultants.

From the primary study, 50% [N=27] of patients were prescribed a full loading dose of paracetamol, 2% [N=1] were given oral diclofenac only. 39% [N=21] were not given any oral loading medication because of one or more of the following reasons:

1. The anaesthetist did not believe in the loading dose.
2. The anaesthetist felt the patient would not need analgesia.
3. The anaesthetist preferred to use IV paracetamol instead.
4. The anaesthetist believed there was insufficient time for the effects of oral analgesia to take effect.
5. Patient contraindications.
6. The patient refused.

Of patients who received a loading dose, 78% [N=21] did not need further analgesia in recovery, all having also received a short acting opioid intraoperatively. Of those who were not given an oral loading dose, 44% [N=12] required further analgesia post operatively, 37% [N=10] had already received intraoperative IV paracetamol and a further 19% [N=6] needed IV rescue paracetamol. No intravenous paracetamol was administered if oral analgesia had been given pre-operatively.

**Discussion**

This was a relatively small data collection but as we can see clearly from the results the average age, gender and ethnicity did not vary a great deal in either group. The average weight, on the other hand varied by 17kg and this suggests that the larger patients were prescribed the full loading dose of 2g oral paracetamol. There are many factors contributing to these results and this makes speculation and absolute interpretation difficult. Conducting a larger audit is warranted and these areas could be explored further. Our data shows that fewer Ear Nose and Throat and Maxillo-Facial patients received the oral loading dose and this could be related to patients being unable or unwilling to accept medication by mouth due to the site of their surgery. The responses from anaesthetists showed a preference towards intravenous paracetamol. This may be due to habit or the fact that the patient could not tolerate the oral pre-dose. The oral loading dose appears to be associated with less analgesia requirement both intra and post-operatively. It is interesting to note that none of the patients who had the oral loading dose appeared to require further IV paracetamol but this may be secondary to practitioners worried about giving an overdose of paracetamol by administering both oral and intravenous preparations in different phases of the care pathway. There has been a reduction in expenditure on IV paracetamol in the Day Case Unit at Derby since the acute pain guidelines were introduced.

In the midst of the current financial crisis, it is crucial that we consider cost-cutting measures whilst still maintaining safety and quality of care for our patients.

**Table 1 Patient characteristics comparing those patients who had the oral loading and those who did not**

<table>
<thead>
<tr>
<th></th>
<th>Those who had oral loading dose</th>
<th>Those who did NOT have oral loading dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Age</td>
<td>47</td>
<td>40</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Male</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>2. Female</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. White</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>2. Black African/Caribbean</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>3. Asian/Asian British</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4. Mixed</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5. Other</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Average weight</td>
<td>85.3kg</td>
<td>68.3kg</td>
</tr>
<tr>
<td>Procedure Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Ear Nose &amp; Throat/Maxillo-Facial Surgery</td>
<td>7 (26%)</td>
<td>17 (63%)</td>
</tr>
<tr>
<td>2. General Surgery</td>
<td>20 (74%)</td>
<td>10 (37%)</td>
</tr>
</tbody>
</table>

**Conclusion:**

We have demonstrated 100% awareness of our oral paracetamol loading dose guidelines in our day case anaesthetists. The data on differing attitudes of anaesthetists and on subsequent requirement for analgesia in a significant number of patients will form a useful basis for further debate in our department. We are putting up posters in the department to highlight the audit results and are introducing drug cards with the oral loading dose already pre-printed on it. We will explore the effect of these added measures this with a prospective re-audit.

**References**

5. Woo A. *Anaesthesia UK – Intravenous paracetamol, UCL Hospitals.*