MORBIDITY IN MINOR GYNAECOLOGICAL SURGERY: A COMPARISON OF HALOTHANE, ENFLURANE AND ISOFLURANE

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SUMMARY

A comparison was made between halothane, enflurane and isoflurane with regard to their suitability for minor gynaecological procedures in patients who would be leaving the hospital within 24 h of the anaesthetic. Seventy-five healthy patients were randomly allotted to one of three groups which received one of these anaesthetics. In respect of patient acceptance and postoperative morbidity there were no significant differences between halothane and enflurane, but after isoflurane there was a significantly greater frequency of minor sequelae (headache, nausea, dizziness and coughing) and its pungent odour made it unacceptable to some patients.

The past 2 years have seen the introduction of isoflurane to clinical practice in North American hospitals. The present study was designed to investigate postoperative morbidity in minor gynaecological surgery and to compare the influence of halothane, enflurane and isoflurane. Minor gynaecological procedures were chosen for comparison because the patient usually does not stay in the hospital for more than 24 h and therefore minor sequelae are a specially important consideration.

PATIENTS AND METHODS

Seventy-five patients undergoing either dilatation and curettage (D&C) or laparoscopy were studied. They were assessed the night before by the anaesthetist and any patient with a medical disorder or who was taking medication was excluded from study. The remainder were then randomly allocated to one of three groups.

Anaesthetic technique

No premedication was given. The anaesthetics were all given by one of the authors (J. T. or A. J. H.). In all patients anaesthesia was induced with thiopentone. If tracheal intubation was required, tubocurarine 3 mg was given to precurarize and suxamethonium 1 mg kg\(^{-1}\) for muscle relaxation. If continuous muscle relaxation was required a suxamethonium drip (1 mg ml\(^{-1}\)) was used. A twitch monitor was used in all such cases. Anaesthesia was maintained with nitrous oxide in oxygen in a ratio of 2:1 and the inhalation agent allotted to the patient. The duration of each procedure was noted.

Assessment after operation

Each patient was assessed on two occasions. The first assessment was made 1 h after being returned to the recovery room, immediately before discharge to the wards. The nursing staff noted the occurrence of nausea or vomiting and also any analgesics given.

The second assessment was made on the following morning just before discharge home and the patient completed a questionnaire at that time, in which she was asked about any symptoms she may have developed after operation. The interviewer on this occasion was not the anaesthetist and did not know to which group the patient belonged.

RESULTS

Questionnaires were completed by a total of 75 patients. The Chi-squared test with Yates' correction was used to evaluate the significance of difference between the groups.

The three groups were similar in respect of age, weight and duration of operation as well as in numbers having D&C alone or laparoscopy (table I).

The most frequent symptoms after operation were sore throat (65%) and abdominal pain (61%), followed by shoulder tip pain (52%), feeling low in energy (38%), dizziness (33%), drowsiness (30%) and headache (25%) (table II).

There was no statistically significant difference

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TABLE I. Comparison of age, weight, duration of operation (mean ± SD) and numbers in each group

<table>
<thead>
<tr>
<th>Group</th>
<th>Age (yr)</th>
<th>Weight (kg)</th>
<th>Duration of operation (min)</th>
<th>D&amp;C alone</th>
<th>Laparoscopy + D&amp;C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halothane</td>
<td>34.5 ± 6.9</td>
<td>62.7 ± 10.9</td>
<td>40.2 ± 9.7</td>
<td>4(16%)</td>
<td>21(84%)</td>
</tr>
<tr>
<td>Enflurane</td>
<td>33 ± 3 ± 6.0</td>
<td>61 ± 9 ± 12.7</td>
<td>36 ± 3 ± 11.2</td>
<td>5(20%)</td>
<td>20(80%)</td>
</tr>
<tr>
<td>Isoflurane</td>
<td>34.3 ± 1 ± 2</td>
<td>56.3 ± 8 ± 0</td>
<td>35 ± 6 ± 11.2</td>
<td>5(20%)</td>
<td>20(80%)</td>
</tr>
</tbody>
</table>

The number of patients complaining of sore throat and abdominal pain was found to be greater than in other recent studies (Hunt, Plantevin and Gilbert, 1979; Towey et al., 1979). However, 80% of patients in our study were undergoing laparoscopy and the trachea was intubated. If we analyse the figures for this group the frequency of sore throat is 73% and of abdominal pain 67%. Lignocaine jelly, which was used to lubricate the tubes, has recently been implicated as a cause of sore throat after operation (Loeser, Stanley and Jordan, 1980).

Although shoulder tip pain is recognized as being associated with laparoscopy we were surprised at the large percentage of patients who had this complaint (57% of the laparoscopy group).

Our findings are similar to those of Stanford, Plantevin and Gilbert (1979) in that we found no significant difference when comparing the halothane and enflurane groups.

The most interesting finding was the statistically significant greater frequency of a number of sequelae in the isoflurane group. The increased analgesic requirement of this group is probably a result of the more rapid excretion of anaesthetic and a subsequent shorter recovery period.

Increased cerebral blood flow has been postulated as the cause of headache after halothane anaesthesia (Tyrrell and Feldman, 1968). Isoflurane also causes cerebral vasodilatation (Cucchiara, Theije and Michenfelder, 1974; Adams et al., 1981) and this might explain the greater frequency of headache found in this group of patients.

The pungent smell of isoflurane makes it unsuitable for use as an induction agent. Despite an i.v. induction, 10 of the patients who received isoflurane remembered the smell and most described it as unpleasant. Only one patient complained of “your mind going blank” although an earlier study (Davison et al., 1975) had associated this symptom with isoflurane.
The present study confirms that there is a high morbidity rate after minor gynaecological surgery. It concludes that there is a greater frequency of minor sequelae (in particular headache, nausea, dizziness and cough) when isoflurane is used, thus making this a less suitable drug for this type of surgery than halothane or enflurane.

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REFERENCES


