THE PREVENTION OF POSTOPERATIVE VOMITING AFTER ABORTION:
METOCLOPRAMIDE

BY
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SUMMARY

The anti-emetic properties of metoclopramide were investigated by means of a double-blind trial in patients after evacuation of the uterus following incomplete abortion. Vomiting occurred in only 6 of 50 patients who were given metoclopramide 20 mg by intramuscular injection immediately after operation, compared with 24 in a group of 50 in whom normal saline was injected. This difference is significant. There was a reduction in other postoperative side effects although all the differences were not statistically significant.

Metoclopramide (Maxolon) is an anti-emetic pharmacologically unrelated to other compounds in therapeutic use. It is described chemically as \(N\) (diethylaminoethyl) 2-methoxy-4-amino-5-chlorobenzamide monohydrochloride. It has been found to be an effective treatment for nausea and vomiting in a wide variety of conditions. Bauer (1966) found 20 mg to be the optimum effective therapeutic dose. This may be given intramuscularly or intravenously and acts within 15 minutes or 5 minutes respectively. The maximum dose recommended in 24 hours is 1 mg/kg in adults and 0.25 mg/kg in children. There are few reports, however, of its value in the prevention of vomiting after operation. Bauer (1966), using a 20 mg dose, in addition to a conventional premedication, reported that postoperative vomiting was less in the treated than in the non-treated patients. However, many different anaesthetic agents and techniques were used in this series. Klein, Militello and Ballinger (1968) found a significant anti-emetic action to apomorphine challenge when metoclopramide 0.15–0.3 mg/kg was administered intramuscularly to human volunteers.

Handley (1967) showed that metoclopramide 20 mg was significantly superior to a placebo in preventing nausea and vomiting postoperatively when given intramuscularly at the end of surgery. Metoclopramide inhibits both the vomiting centre and the chemoreceptor trigger zone so that vomiting of both reflex and central origin is diminished (Bauer, 1966). Jacoby and Brodie (1967), working with dogs, monkeys and rats, found that it relieves spasm of the stomach and pyloric sphincter, possibly from effects on intramural cholinergic neurones responsible for modifying gastric motility. Gastric stasis is thus prevented.

The aim of the present investigation was to assess the anti-emetic effects of metoclopramide on postanaesthetic vomiting. As many variables as possible in the group of patients investigated, were controlled.

METHOD

Postoperative vomiting was studied in 100 women (aged 18–44) who required evacuation of the uterus following incomplete abortion. The duration of pregnancy ranged from 7 to 18 weeks. Patients were questioned pre-operatively as to the number of weeks pregnancy had advanced, drug therapy, vomiting during pregnancy and vomiting associated with previous anaesthetics. A standard premedication, consisting of morphine 10 mg and atropine 0.6 mg was given 1½ hours pre-operatively by intramuscular injection.

All the observations and anaesthetics were carried out by one or other of the authors. The anaesthetic was induced with thiopentone 6 mg/kg and maintained with nitrous oxide.
(6 l./min) and oxygen (3 l./min) using a Magill circuit; low concentrations of trichloroethylene were used to supplement the nitrous oxide mixture. No patient was intubated. A pharyngeal airway and facepiece were used and respiration was spontaneous. Intravenous ergometrine 0.5 mg was given during anaesthesia in each case on request from the surgeon. All patients passed into the recovery room and were supervised by a sister or staff nurse until fully awake and orientated.

Metoclopramide was injected in 50 patients, the remaining 50 constituting the control group.

Intramuscular injections of isotonic saline or metoclopramide 20 mg drawn from identical 2 ml ampoules labelled X or Y were given by recovery room staff on reception of the patients. The time of injection and recovery time were recorded, the latter being defined as the ability to respond to simple commands; in no case did emergence vomiting occur. No attempt was made to adjust dosage to body weight. The choice of injecting X or Y was left to the nurse receiving the patient. The next day the patient was interviewed as casually as possibly by one of us. Assessment was made with regard to nausea, vomiting, dry mouth, blurred vision, drowsiness and any other complaints. The identity of the contents of the ampoules was not known to the observers until the end of the trial. As no serious side effects were encountered the code was not broken until the series had been completed. For the purpose of this study we adopted Riding’s (1960) criteria of postoperative nausea and vomiting: “Any nausea, retching or vomiting occurring after the end of the operation whether remembered or not”. In addition to questioning the patient, the recovery room staff and the ward staff were asked to note any of the above.

No undesirable effects on respiration or circulation were apparent from postoperative recovery room observations on patients who received metoclopramide. The range of duration of anaesthesia was wide (table I). In most cases the duration was close to the average and only a few fell in the very short or very long category. No appreciable prolongation of recovery time was noted in patients treated with metoclopramide. In the group treated with metoclopramide the incidence of nausea and vomiting was less than that in the untreated groups. There was a non-significant reduction in the incidence of nausea only but a significant reduction in the number who vomited once, vomited several times or vomited at all.

Regarding possible side effects, there was a higher incidence of unpleasant postoperative sequelae in the control group. Dry mouth occurred significantly less frequently in the treated group as did headache. Complaints of blurred vision, drowsiness and giddiness were also less frequent in the treated group but in no instance did the reduction achieve statistical significance.

**DISCUSSION**

Many factors tending to produce postoperative vomiting were present in the group of patients chosen. All were females (Burtles and Peckett, 1957), in early pregnancy where nausea and vomiting is often a feature.
The emotional factors associated with the knowledge that pregnancy was about to be terminated could well predispose to vomiting. Preoperative opiates had been administered both as sedatives and in the premedication to all the patients and these have been reported by Riding (1960) to increase the tendency to vomit after operations. Bellville (1961) noted that stimulation of the cervix uteri at operation was a factor in postoperative vomiting. Trichloroethylene was used as a supplement to nitrous oxide and is stated to be a factor influencing vomiting (Defalque, 1961). Pharyngeal airways were inserted in each case (Jones, 1960).

The high incidence of vomiting after evacuation of the uterus, especially if the cervix has to be dilated, has been observed by Dundee, Nicholl and Moore (1962). Most vomiting studies are truly surveys since control of the myriad influences on postanaesthetic vomiting, such as sex, age, anaesthetic agents, duration of surgery and anaesthesia and the type of premedication, is not attempted. In the investigation described an attempt was made to control the following factors. All were pregnant females undergoing the same type of operation in the lithotomy position. Premedication was standard, as were the anaesthetic agents, and an oropharyngeal airway was inserted in every case. Ergometrine was administered to each patient. None of the patients received a postoperative analgesic. Food and drink were freely given in the postoperative period. The last two factors can obviously influence vomiting.

Assessment of vomiting in the first 24 hours postoperatively was based on both the patient's subjective recall and nursing observations, so it is unlikely that amnesia obscured the results.

The possibility of sedation from the anti-emetic causing limitation of movement, which would in itself reduce vomiting, must be considered but no significant correlation between drowsiness and metoclopramide was found compared with the control group. It seemed unlikely that metoclopramide would exert a sedative effect as recovery from anaesthesia was not prolonged; this is in agreement with the observations of Dobkin, Evers and Israel (1968).

A double-blind comparison of a placebo, metoclopramide and trimethobenzamide was carried out by Dobkin, Evers and Israel (1968) in 284 adult patients undergoing elective major upper abdominal surgery under methoxyflurane-nitrous oxide anaesthesia. Metoclopramide 10 mg was given intravenously half an hour before the end of the operation. They found its anti-emetic effect to be no better than that of a placebo and that nasogastric suction was the most effective means of reducing postoperative vomiting. However, the dose used was half that used in the series described above and, in these abdominal cases, vomiting was closely associated with injection of opiate analgesics.

ACKNOWLEDGEMENTS

Thanks are due to nursing staff of the Recovery Room, Edgware General Hospital, for their co-operation; Dr. Lawrie of Beecham Research Laboratories for supplies of Metoclopramide; Mrs. Woolfson and Miss Brooks-Hill for secretarial assistance.

REFERENCES


La petite enfance techniquement possible et effective, et montre, comme Dr. Vale, que la blocage bronchique dans seulement à ce stade. Cette impression a été renforcée par l'airless aspect de la bronche droite supérieure, et retiré en la trachée seulement après l'application du bloc. Elle a été resserrée lorsqu'il a été considéré que l'extension de la dissection tardive. Il a été senti que le bloc est efficace jusqu'à une tardive dissection de la bronche. Différences ne sont pas statistiquement significatives.

CORRESPONDENCE

SELECTIVE BRONCHIAL BLOCKING IN A SMALL CHILD

Sr,—Reference is made to the case report by Dr. R. Vale (Brit. J. Anaesth. (1969), 41, 453). Before Dr. Vale's report was received here, it was intended to seek publication of a report of a similar case, brief details of which are set out below.

On June 9, 1969, a child, a sufferer from cystic fibrosis, was anaesthetized for lobectomy. He was 17 months old and weighed 7.8 kg. When operation was decided upon, he had been in hospital for 4 months, during which time intensive treatment including aerosols, physiotherapy and antibiotics, had failed to effect re-expansion of a collapsed right lower lobe, from which purulent sputum was being produced.

The right lower lobe bronchus was blocked using, as in Dr. Vale's case, a Fogarty embolectomy catheter, 3 gauge.

As an additional precaution the endotracheal tube (Portex 3.5 mm) was passed into the left main bronchus, and withdrawn into the trachea only after the bronchial clamp had been applied. It was felt that the blocker was effective until a late stage of dissection of the bronchus, as secretions appeared in the airway only at that stage. This impression was strengthened by the airless appearance of the right lower and middle lobes, whereas the upper lobe was partly inflating, presumably due to some leak from the left lung.

The remainder of the anaesthetic, and the initial postoperative period, were uneventful. After some days, however, the child's condition deteriorated due to uncontrollable progression of his underlying disease, and he died on the fifth postoperative day.

Although our patient ultimately perished, this case shows, as did Dr. Vale's, that bronchial blocking in a small child is technically possible and effective, and should be employed when indicated.

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THE PRESENT PLACE OF SPINAL SUBARACHNOID ANALGESIA IN OBSTETRICS

Sr,—We would like to comment on the article by Mr. Bryan Williams in the July issue of the Journal. In the paragraph which compares the technique with that of epidural block it is implied that infection of the epidural space in the lumbar region, due to lack of asepsis, is a complication of epidural block.

A reference is given to an article by Hulme and Dott (1954) and on perusal of this article we find a report on 26 cases of epidural abscess, 21 of these being due to infection elsewhere in the body, 4 due to trauma and the remaining one due to a lumbar puncture. In a review of 226 cases in the world literature, Rankin and Flothow (1946) state that epidural abscess is "always secondary to a supplicative process elsewhere in the body". In a further review, Huessner (1948) states that "no example of direct infection due to faulty asepsis during performance of spinal puncture has been found".

Whilst admitting that reference slinging can be a fruitless pastime, we feel that Mr. Bryan Williams might well have included a mention of the work of Rosenbaum and colleagues (1952). In this the authors show a definite incidence of delayed, and at the time unsuspected, chronic adhesive arachnoiditis following saddle-block analgesia. This we consider to be a most telling argument for the replacement of spinal block by epidural block.

Some unkind things have in the past been said about epidural block, sometimes perhaps with justification, but we submit that there is no justification whatever for adding epidural abscess as a complication of epidural block.

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REFERENCES


