In summary, all electrically operated patient monitoring devices present the hazard of electrical burns when used in the presence of electrocautery. This electrical hazard can be minimized by following straightforward safety procedures and avoiding the use of monitoring devices that are not designed to specifically inhibit the reception of radiofrequency current. Yellow Springs Instrument Company temperature probes are not so designed, and in compliance with the YSI Company’s own literature, should not be used in the presence of electrocautery.

REFERENCES


Severe Histamine-mediated Reaction to Rectally Administered Methohexitol

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Preanesthetic medication of children with rectally administered methohexitol eliminates the pain of parenteral drug administration and reduces anxiety for both the child and parents when they are separated from each other. In essence, the child can fall asleep in the parent’s arms before being taken to the operating room. Clinically effective doses and sleep times have been established for this technique. Although hypersensitivity reactions to methohexitol are rare, we describe a case of a severe histamine-mediated reaction to rectally administered methohexitol. Histamine, norepinephrine, and epinephrine levels were obtained in close proximity to the acute event.

REPORT OF A CASE

An extremely apprehensive healthy 7-year-old (24 kg) female child with recurrent urinary tract infections was admitted for a cystoscopy.

Her past medical history was unremarkable except for an episode of otitis media and allergic reactions to a number of drugs. The child’s first drug reaction occurred two years prior to admission when she developed a rash after receiving Gantrex® (sulfisoxazole) (Roche, Nutley, New Jersey) for 10 days. A year later she complained of pruritis, developed hives, and became somnolent after receiving Robitussin® (guaifenesin) (A. H. Robins Co., Richmond, Virginia), Dimetapp® (brompheniramine, phenylpropanolamine, phenylpropanolamine) (Robins), and aspirin for a respiratory infection. Following both occasions, the child received Benadryl® (diphenhydramine) and was admitted to the hospital for overnight observation. One month prior to the present admission, the patient had another drug-related reaction. Her lips became edematous and she complained of pruritis after receiving Ipsapril® (ippec, ammonium chloride) (Key Company, Miami, Florida). She again was treated with diphenhydramine. Neither her parents nor her two siblings have a history of drug allergies. However, the patient’s paternal grandmother was allergic to several drugs.

The preanesthetic physical examination was normal. Her systolic blood pressure was 100 mmHg, and her heart rate 136 beats/min and regular. Preanesthetic medication consisted of rectally administered methohexitol (720 mg). Seven min after receiving the drug, the child fell asleep. Concurrent with the onset of sleep, her face became flushed and she began coughing. Her heart rate and arterial blood pressure remained unchanged. After suctioning secretions from her airway, anesthesia was induced via a mask with halothane, nitrous oxide, and oxygen. Two minutes later (15 min following methohexitol administration) coughing ceased, and the skin of her face, chest, and neck became bright red. Arterial blood pressure, heart rate, electrocardiogram, and temperature remained unchanged. Five minutes later the skin of her entire body became erythematous and edematous. Approximately 2 min later (22 min after methohexitol administration),

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systolic blood pressure dropped to 50 mmHg and wheezing was heard through the precordial stethoscope. Halothane and nitrous oxide were discontinued and the child was given 100% oxygen, ephedrine (10 mg iv), and diphenhydramine (20 mg iv). Venous blood histamine, norepinephrine, and epinephrine levels measured 1 min after were 6,270, 622, and 72 pg/ml respectively (normal values in unstrained adults are: histamine < 1,000 pg/ml; norepinephrine < 400 pg/ml; and epinephrine < 200 pg/ml). Systolic blood pressure rose to 75 mmHg 5 min later and to 80 mmHg 10 min later. The skin flush subsided, and halothane and nitrous oxide were readministered. Systolic blood pressure remained stable at 80 mmHg, wheezing continued, and flushing increased. Halothane and nitrous oxide again were discontinued. Five minutes later the flush subsided and wheezing decreased. Systolic blood pressure was 90 mmHg and heart rate was 90 beats/min. The decision was made to proceed with the cystoscopy. Halothane and nitrous oxide again were readministered. The skin of the face, neck, and thorax became erythematous once again. Blood pressure and heart rate did not change, and wheezing was barely audible. Venous blood histamine, norepinephrine, and epinephrine levels at this time (47 min after methohexitol administration, and 25 min after diphenhydramine and ephedrine) were 3,640, 1,392, and 297 pg/ml. The cystoscopy proceeded without incident. At the end of the procedure, the patient was awakened and taken to the recovery room. Her skin appeared slightly edematous and there was moderate erythema of her face and neck. No wheezing was detectable, and her vital signs remained stable. Her recovery from anesthesia was uneventful and her skin symptoms gradually subsided. She was discharged from the hospital 4 h after anesthesia and her mother was informed and instructed regarding her response to methohexitol. The patient’s parents elected not to have the child undergo sensitivity testing.

**DISCUSSION**

Hypersensitivity reactions to barbiturate anesthetic induction drugs fortunately are rare. In 1980 Lilly and Hoy reported that only 41 cases in the literature involving anaphylaxis have been attributed to thiopental. In 1982 Clark reported that 10 of the 90 published and unpublished cases of adverse reactions to thiopental in the United Kingdom died. In comparison, no deaths have been associated with the administration of methohexitol. However, only 12 cases of possible hypersensitivity reactions to methohexitol have been reported in the literature. Six of these 12 cases were reported by Driggs and O’Day in their dental practice. They had an experience of 43,000 administrations of methohexitol with an incidence of approximately one reaction in 7,000. In another report of over 23,000 patients who received iv methohexitol, no hypersensitivity reaction to the drug was seen. Our case is the first report of a hypersensitivity reaction following rectally administered methohexitol. This is the only reaction of this nature in greater than 12,000 children who have received the drug by this route in our institution.

A number of reports indicate that iv administered methohexitol, along with other agents used during anesthesia (thiopental, Althesin, propanidid, d-tubocurarine, gallamine, succinylcholine, decamethonium, atropine, mor-
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Effectiveness of Bicitra® as a Preoperative Antacid

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Because aspiration of acidic (pH > 2.5) gastric contents causes more lung damage than does aspiration of nonacidic contents,1,2 many authors recommend prophylactic antacids before general anesthesia for cesarean section.3,4 Also, because animal studies have indicated that particulate antacids may cause an extensive bronchopneumonia when aspirated,5 a clear, nonparticulate antacid is preferable. We found that the clear antacid, 0.3 M sodium citrate, is effective for this purpose.6 However, this preparation is not available commercially and, therefore, must be prepared by individual hospital pharmacies. Bicitra® (Willen Drug Co., Baltimore, Maryland), on the other hand, is a commercially available, urinary alkalinizing drug that contains approximately the same amount of sodium citrate as does a 0.3 M sodium citrate solution. Furthermore, Eyler et al. found in the rabbit model that Bicitra® is not harmful when aspirated.7 Although Bicitra® contains approximately the same amount of sodium citrate as does 0.3 M sodium citrate, the pH of Bicitra® is 4.8, while that of 0.3 M sodium citrate is approximately 8.5. Therefore, Bicitra®’s buffering or neutralizing capacity might be less than sodium citrate’s. However, in vitro studies in our laboratory indicate that the two agents can buffer comparable amounts of hydrochloric acid.8 Nevertheless, the effectiveness of Bicitra® in the clinical setting remained to be demonstrated. Therefore, we determined the capacity of Bicitra® to increase gastric pH above 2.5 in patients undergoing general anesthesia for cesarean section.

METHODS

We studied 26 patients scheduled for general anesthesia and cesarean section. The human experimentation committee approved the protocol, and all patients provided informed consent. Bicitra®, 30 ml, was administered to patients about to undergo elective cesarean section when they were called to the operating room and to other patients as soon as the need for emergency cesarean section was determined. Then the patients were asked to rotate from side to side to mix the agent and stomach contents well. Anesthesia was induced with either thio-