Do Anesthetics Affect Outcome of Gamete Intrafallopian Transfer? Beilin et al. (page 36)

There has been controversy as to whether general anesthesia, especially propofol, N₂O, and potent inhaled agents, affects outcome when administered to patients undergoing gamete intrafallopian transfer (GIFT). To determine whether a larger prospective randomized study is necessary to resolve the question, Beilin et al. initiated a multicenter pilot trial and survey to evaluate the effects, if any, of anesthetics on pregnancy outcome after GIFT. The team mailed invitations to participate to 50 US fertility programs that are members of the Society for Assisted Reproductive Technology and that performed 30 or more GIFT procedures each year.

Seven medical centers participated in the survey, contributing data on 455 women who underwent GIFT in 1993 and 1994. As asked, the centers provided data regarding patient age, duration of the procedure, type of anesthetics used, number of oocytes transferred, and pregnancy outcome. Except for the method of oocyte collection, the GIFT procedure was similar at all participating centers. Five centers performed oocyte collection laparoscopically, whereas the other two used ultrasound-guided follicular aspiration.

Overall, the clinical pregnancy rate (defined as the presence of a fetal sac by ultrasound 21 days after the procedure) was 35%, and the delivery rate was 52%, with rates varying from center to center. The investigators were unable to detect a significant effect on either the pregnancy rate or delivery rate due to the use of propofol, N₂O, midazolam, isoflurane, or any potent inhaled anesthetic. The only factor significantly associated with delivery rate was patient age. Although the study is limited by its retrospective design and low response rate, the authors were unable to find a connection between anesthetic agents and pregnancy and delivery rates after GIFT. A more extensive trial, they believe, is not warranted at this time.

Risk of Ulnar Neuropathy after Surgery Evaluated. Warner et al. (page 54)

Although infrequent, development of perioperative ulnar neuropathy can sometimes be severe and lead to prolonged disability. In an effort to determine the frequency of this event and to possibly identify a subset of surgical patients at higher risk, Warner et al. enrolled 1,506 patients in their study over a 3-month period. Those with preexisting ulnar neuropathy or undergoing cardiac surgery were excluded from the study, as were patients scheduled for upper extremity procedures likely to involve ulnar nerve manipulation, such as elbow arthroplasty.

Patients were seen before surgery and evaluated by four research assistants who had taken a pre-study course in peripheral neurologic examination taught by a study neurologist, who also randomly examined five patients seen by each assistant to monitor the consistency and accuracy of patient examinations. After surgery, patients were assessed in the postoperative recovery room and daily until discharged using a standardized questionnaire and screening neurologic examination designed to detect manifestations of ulnar nerve dysfunction. Those discharged before 7 days were interviewed by telephone. If patients exhibited signs of ulnar neuropathy, they were examined by a single neurologist to confirm the diagnosis. Patients who developed ulnar neuropathy were contacted at 1- and 2-yr intervals to determine their long-term outcomes.

The team collected complete data on 1,502 of the 1,506 enrolled patients. Within 7 days after surgery, 27 patients developed signs or symptoms indicative of ulnar neuropathy. After evaluation by the neurologist, 20 of these patients were determined not to have ulnar neuropathy, but rather carpal tunnel symptoms (n = 16), median neuropathy at the wrist (n = 2), brachial plexopathy (n = 1), and symptomatic migraine with hemiparesthesia (n = 1). Six of seven patients with confirmed diagnoses of ulnar neuropathy were men, and the median onset of symptoms was 4 days after surgery. In four of the seven, symptoms had completely resolved within 6 weeks of surgery. The remaining three patients had residual symptoms 2 yr later.

Ulnar neuropathy was an uncommon complication in this series, occurring in 1 of 200 patients who underwent surgery. The patients who developed this complication were men aged 50-75 who underwent intraabdominal or intrapelvic procedures. The authors suggest that anatomic differences, specifically larger tubercles of the coronoid process and less adipose tissue over the medial aspect of the elbow, may contribute to the higher rate of this complication in men.
Administration of Alfentanil: A Clear Advantage of Epidural versus Intravenous Route? Coda et al. (page 98)

Using pharmacokinetically tailored intravenous infusions to produce matching plasma alfentanil concentrations, Coda et al. compared analgesia and side effects of epidural and intravenous administration of alfentanil in 12 healthy volunteers. All subjects first participated in one pre-study session for pharmacokinetic tailoring of alfentanil and three sessions for comparison of effects of epidural alfentanil, intravenous alfentanil, and saline infusion. The sessions were separated by at least 10 days. Intravenous infusion days always followed the epidural infusion day, but the order of the placebo day was randomized.

Study participants fasted after midnight before each study day. On each of the study days, investigators obtained baseline measurements of volunteers’ subjective ratings of pain intensities (delivered alternately to the toe and finger using constant current and stimulus isolation units) and sensitivities to pinprick and ice (on skin of the abdomen, thighs, and legs). Baseline measurements were also taken of motor function, subjective side effects, ET_{CO_2}, and pupil size. On one test day, subjects received epidural alfentanil (100 μg bolus + 400 μg/h infusion for 2 h) and an intravenous saline infusion. Pain intensity, motor, and skin sensitivity tests were administered at regular intervals. Blood samples were collected before and at regular intervals after administration of alfentanil. On another test day, subjects received epidural saline and a computer-controlled intravenous infusion of alfentanil. The testing protocol was repeated. On placebo day, the order of which was randomized, volunteers received both epidural and intravenous saline infusions and were given the same battery of tests.

The total doses of alfentanil on the epidural and intravenous days were similar. For both epidural and intravenous administration, the onset of analgesia was rapid and reached maximum effect at approximately 15 min. Oxygen saturation remained at greater than 97% for all subjects, and pupil size decreased by a similar amount during both types of administration. Nausea was uncommon, and peak VAS scores for pruritus were higher for intravenous than for epidural alfentanil, although the difference was not statistically significant. There was no difference between upper and lower extremity analgesia with either route of administration. Regardless of the mechanism of analgesia (systemic absorption or supraspinal), epidural administration of alfentanil does not appear to have a clear advantage over the intravenous route.

Propofol’s Anxiolytic Properties Tested in Animal Model. Pain et al. (page 191)

Pain et al. used an elevated plus maze, a right-angle cross maze elevated 50 cm above the ground, to test the anxiolytic properties of propofol in rats. Exposure to the maze, which has two open arms and two enclosed arms, is usually associated with low levels of exploration in nonsedated rats. In addition, exposure to the maze also increases plasma corticosterone concentrations, heart rate, blood pressure, and plasma norepinephrine concentrations, above the same values of rats left in their home cages.

In the first experiment, the team randomly assigned 24 rats to one of four groups of six each, to receive either 0, 1, 3, or 9 mg/kg of propofol. Five minutes after intraperitoneal injection, each rat was moved to another cage in the experimental room, where activity counts (U/5 min) were used to establish spontaneous activity scores. In experiment 2, 48 rats were randomly assigned to 6 groups of 8 each to receive either propofol 0 (“Intralipid” 5%), 1, 3, or 9 mg/kg, or diazepam 0 (0.9% sodium chloride), or 2 mg/kg. Five minutes after injection, rats were moved to cages in the experimental room. After another 5 min elapsed, they were then placed at the center of the elevated plus maze facing one of the open arms. The number of entries into each arm and the cumulative time spent within each area of the maze were recorded via videotape and were evaluated by an investigator blinded to drug administered.

Only 10–20% of undrugged rats’ total time is spent in the open arms of such a maze, reflecting the normal anxiety of rodents for any elevated open platform. In experiment 2, both propofol and diazepam significantly increased the number of entries into the open arms of the maze. The largest increase of time spent within the open arms (up to 50%) was observed in rats receiving propofol, 9 mg/kg, and diazepam, 2 mg/kg. This anxiolytic effect was independent of any sedative effect from the propofol. In experiment 1, there was no locomotor impairment after propofol was administered. The rats actually exhibited a slight hyperlocomotion in the elevated plus maze. These results raise possibilities for the use of propofol in humans to induce “conscious sedation” or for use as an adjuvant to local or regional anesthesia.

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