A survey of anesthetic choice among nurse anesthetists

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A total of 500 CRNAs were surveyed concerning their personal preference of anesthetic choice, regional versus general anesthesia, through the use of two scenarios. CRNAs surveyed preferred regional anesthesia over general anesthesia in both emergency and elective scenarios. These results are consistent with similar studies of anesthesiologists.

Studies have been published delineating the personal stated anesthetic preference of anesthesiologists in scenarios of emergency versus elective surgery.1,2 The authors conducted this study of the personal anesthetic preferences of certified registered nurse anesthetists to compare their preferences to those of anesthesiologists and to determine whether certain demographic variables influenced their choices.

Methods

Five hundred CRNAs were chosen at random from the membership list of the American Association of Nurse Anesthetists. Each was sent a questionnaire describing two scenarios modeled on a similar survey of anesthesiologists.2 In Scenario A, the nurse anesthetist sustains an open fracture of the tibia immediately after eating lunch, with an open reduction, internal fixation (ORIF) scheduled in 2-4 hours. Scenario B occurs 6 months later, when the nurse anesthetist is to undergo elective surgery for the removal of the tibial plate.

In each scenario, the CRNA has no other medical problems (ASA Classification 1 or 1E). An anesthesiologist or nurse anesthetist capable of performing all types of lower extremity regional anesthetic blocks is available to perform a regional block or to administer general anesthesia. Within each scenario, the following questions were asked:
1. I would:
   a. strongly prefer a general anesthetic
   b. prefer a general anesthetic
   c. have no preference
   d. prefer a regional anesthetic
   e. strongly prefer a regional anesthetic
2. If a regional anesthetic is preferred, what type of block do you desire?
   a. subarachnoid
   b. epidural
   c. caudal
   d. sciatic and femoral-inguinal-paravascular (3-in-1)

Demographic data requested included age, number of years in practice, and percentage of practice involving regional anesthesia. The geographic location of each response was obtained by examining the zip code of the returned postmark. All replies were confidential and anonymous. Data was analyzed using a Student's t-test (significance at p<0.05).

Results

A total of 311 replies were received from 500 questionnaires (62.2%). The CRNAs responding strongly preferred a regional anesthetic (Table I) in
Table I
Preferred technique of CRNAs for emergency and elective surgery

<table>
<thead>
<tr>
<th>Preferred technique</th>
<th>Emergency Scenario A</th>
<th>Elective Scenario B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Regional</td>
<td>305 (98.1)*</td>
<td>297 (95.5)†</td>
</tr>
<tr>
<td>General</td>
<td>5 (1.6)*</td>
<td>12 (3.83)†</td>
</tr>
<tr>
<td>No preference</td>
<td>1 (0.3)</td>
<td>2 (0.7)</td>
</tr>
</tbody>
</table>

*p < 0.001 (Regional versus General Scenario A)
†p < 0.001 (Regional versus General Scenario B)

Student's t-test utilized, p < 0.05

both scenarios. Preference for a regional anesthetic technique was greater in Scenario A (emergency surgery) than in Scenario B (elective surgery).

In scenario A (emergency surgery), 71% of the CRNAs who desired a regional technique preferred to have a spinal anesthetic, 28% an epidural, 1% a caudal, and no one requested a sciatic and femoral-inguinal-paravascular block. In Scenario B (elective surgery) 62% of the CRNAs who desired a regional technique elected to have a spinal anesthetic, 37% an epidural, 1% a caudal, and again as in the emergency scenario, no one requested a sciatic and femoral-inguinal-paravascular block.

No differences were seen when anesthetic preferences were associated with the number of years in practice, geographical location, or the frequency with which the respondents performed regional anesthesia in their own practice settings.

Discussion

The preferences of nurse anesthetists for regional anesthesia over general anesthesia for emergency surgery (98%) is similar to the preferences expressed by anesthesiologists (96%). The present study indicates that nurse anesthetists still would prefer regional anesthesia for their own elective extremity surgery (95.4%). This is a higher preference than that indicated in the elective preference of the Broadman study of anesthesiologists (73.9%).

It is interesting to note that there were no significant differences in this study between the nurse anesthetists strong preference for regional anesthesia between the emergency and the elective scenarios.

Conclusion

The popularity of regional techniques among anesthesia providers for themselves belies the fact that it is not a popular choice in their practices. The general public is often mislead by faulty information concerning regional anesthesia such as spinal headaches, promises from other members of the surgical team that they will be asleep for their procedures, and encounters with anesthesia providers who are not equally skilled in all facets of anesthesia practice. The omnipresent specter of medicolegal difficulties, rush of the surgical schedule and preference of individual surgeons all add to the lack of enthusiasm on the part of some anesthesia providers to perform regional anesthesia.

Regional techniques are often the preferred choice of both CRNAs and anesthesiologists. The general public should be made aware of the ease of administration, lower incidence of major perioperative complications, and postoperative analgesia afforded by regional anesthesia techniques.

REFERENCES


AUTHORS

Janet A. Dewan, CRNA, MSN, graduated from Douglas College, received a MSN degree from New York Medical College and completed her anesthesia education at New England Medical Center School of Nurse Anesthesia. She has practiced in Niger, West Africa and Boston, Massachusetts. She is currently the program director of the New England Medical Center School of Nurse Anesthesia, Boston, Massachusetts.

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Send resume to ARKANSAS ANESTHESIA, P.A.
9601 Lile Dr., Plaza A
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ATTN: Mary Shenker, Chief CRNA
Phone: 501-227-9114
Unique metabolism: the key to predictable control

TRACRIUM® Injection is meaningfully different from all other neuromuscular blockers. TRACRIUM is inactivated in plasma by two pathways, Hofmann elimination and ester hydrolysis, that act independently of kidney or liver function.

As a result, TRACRIUM produces no cumulative effects, making the onset and recovery of neuromuscular blockade more predictable. TRACRIUM offers a consistent pattern of response even with multiple reinjection or long periods of infusion. All other non-depolarizing neuromuscular blockers are cumulative to some degree and require age-related adjustments. This is not the case with TRACRIUM. Age-related differences in organ function do not alter the dose response curves of TRACRIUM, unlike pancuronium and vecuronium. The lack of cumulative effects of TRACRIUM by infusion makes possible a smooth, steady level of surgical relaxation without the need for multiple maintenance bolus doses throughout a long procedure.

Superior Predictability Means Superior Total Patient Care

The superior control afforded by non-accumulation produces greater predictability. TRACRIUM increases your control by increasing your dosing options. TRACRIUM provides a choice of dosing methods: bolus injection or continuous infusion. Predictable, superior control gives you more time for routine, specialized and extensive patient monitoring, which can add to patient care. This could allow you — and your patients — to spend less time in the operating room.

Unlike other neuromuscular blockers, TRACRIUM requires no dose adjustments to compensate for drug accumulation. Valuable time is not spent on dosage adjustments. Repeated equipotent doses of TRACRIUM, administered at equal intervals, have no cumulative effect and will not affect the time required for spontaneous recovery. This results in a smooth transition from operating room to recovery room.
TRACRIUM® INJECTION
(atracurium besylate)

Brief Summary
This drug should be used only by adequately trained individuals familiar with its actions, character-
istics, and hazards.

CONTRAINDICATIONS: Atracurium is contraindicated in patients known to have a hypersensitivity to it.

WARNINGS: TRACRIUM SHOULD BE USED ONLY BY THOSE SKILLED IN AIRWAY MANAGEMENT AND RESPIRATORY SUPPORT. EQUIPMENT AND PERSONNEL MUST BE IMMEDIATELY AVAILABLE FOR ENDOTRACHEAL INTUBATION AND SUPPORT OF VENTILATION, INCLUDING ADMINISTRATION OF POSITIVE PRESSURE OXYGEN. ADEQUACY OF RESPIRATION MUST BE assured through assisted or controlled ventilation. ANTICHOLINERGIC REVERSAL AGENTS SHOULD BE IMMEDIATELY AVAILABLE.

DO NOT GIVE TRACRIUM BY INTRAMUSCULAR ADMINISTRATION.

TRACRIUM has no known effect on consciousness, pain threshold, or cerebration. It should be used only with adequate anesthesiology.

TRACRIUM injection, which has an acid pH, should not be mixed with alkaline solutions (e.g., barbiturate solutions) in the same syringe or administered simultaneously into intravenous lines or with infusions through the same needle. Depending on the resultant pH of such mixtures, TRACRIUM may be inactivated and a free acid may be precipitated.

PRECAUTIONS:

General: Although TRACRIUM is a less potent histamine releaser than d-tubocurarine or metocurine, the possibility of substantial histamine release in sensitive individuals must be considered. Special caution should be exercised in administering TRACRIUM to patients in whom substantial histamine release would be especially hazardous (e.g., patients with clinically significant cardiovascular disease) and in patients with any history (e.g., severe anaphylactoid reactions or asthma) suggesting a greater risk of histamine release. In these patients, the recommended initial TRACRIUM dose is lower (0.3 to 0.4 mg/kg) than for other patients and should be administered slowly or in divided doses over one minute.

Since TRACRIUM has no clinically significant effects on heart rate in the recommended dosage range, it will not counteract the bradycardia produced by many anesthetic agents or vagal stimulation. As a result, bradycardia during anesthesia may be more common with TRACRIUM than with other muscle relaxants.

TRACRIUM may have profound effects in patients with myasthenia gravis, Eaton-Lambert syndrome, or other neuromuscular diseases in which potentiation of nondepolarizing agents has been noted. The use of a peripheral nerve stimulator is especially important for assessing neuromuscular blockade in these patients. Similar precautions should be taken in patients with severe electrolyte disorders or carboxinasthenia.

The safety of TRACRIUM has not been established in patients with bronchial asthma.

Drug Interactions: Drugs which may enhance neuromuscular blocking action of TRACRIUM include: epinephrine; isoproterenol; halothane; certain antibiotics, especially the aminoglycosides and polymyxins; lithium; magnesium salts; procainamide; and quinidine.

If other muscle relaxants are used during the same procedure, the possibility of a synergistic or antagonistic effect should be considered.

The prior administration of succinylcholine does not enhance the duration, but quenches the onset and may increase the depth of neuromuscular blockade induced by TRACRIUM. TRACRIUM should not be administered until a patient has recovered from succinylcholine-induced neuromuscular blockade.

Cardiogenic, Metabolic, Impairment of Fertility: A positive response was observed in the mouse or rat using the acute assay under which 50% of the treated cells. A faster response was observed in the presence of metabolic activation at concentrations which also killed more than 50% of the treated cells.

Pregnancy: Teratogenicity: TRACRIUM has been shown to be potentially teratogenic in rabbits, when given in doses up to approximately one-half the human dose. There are no adequate and well-controlled studies in pregnant women. TRACRIUM should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Labor and Delivery: It is not known whether muscle relaxants administered during vaginal delivery have immediate or delayed adverse effects on the fetus or increase the likelihood that resuscitation of the newborn will be necessary. The possibility that forceps delivery will be necessary may increase.

TRACRIUM (0.3 mg/kg) has been administered to 26 pregnant women during delivery by cesarean section. No harmful effects were attributable to TRACRIUM in any of the newborn infants, although small amounts of TRACRIUM were shown to cross the placental barrier. The possibility of respiratory depressions in the newborn infant should always be considered following cesarean section during which a neuromuscular blocking agent has been administered. In patients receiving magnesium sulfate, the reversal of neuromuscular blockade may be unsatisfactory and TRACRIUM dose should be lowered as indicated.

Nursing Mothers: It is not known whether the drug is excreted in human milk. Caution should be exercised when TRACRIUM is administered to a nursing woman.

Pediatric Use: Safety and effectiveness in children below the age of 1 month have not been established.

ADVERSE REACTIONS:

Observed in Controlled Clinical Studies: TRACRIUM produced few adverse reactions during extensive clinical trials. Most were suggestive of histamine release (see Precautions Section). The overall incidence rate for clinically important adverse reactions was 7/757 or 0.8%.

Most adverse reactions were of little clinical significance unless they were associated with significant hemodynamic changes. Substantial vital sign changes greater than or equal to 30% observed in 5/500 patients, without cardiovascular disease, were as follows: in those patients given the recommended initial dosage range of 0.3 to 0.5 mg/kg of TRACRIUM, mean arterial pressure increased in 2.8% and decreased in 3.7% of patients while the heart rate increased in 2.8% of these patients. At doses > 0.60 mg/kg, 4.3% of the patients had a decrease in mean arterial pressure while 4.8% had an increase in heart rate. At doses > 0.30 mg/kg, mean arterial pressure increased in 1.9% and decreased in 1% of patients, while heart rate increased in 1.6% and decreased in 0.8% of these patients.

Observed in Clinical Practice: Based on clinical experience in the U.S. and the United Kingdom of approximately 1 million patients given the following adverse reactions are among the most frequently reported: General: allergic reactions (anaphylactic or anaphylactoid) which, in rare instances, were severe (e.g., cardiac arrest); Musculoskeletal: inadequate, prolonged block; Cardiovascular: hypotension; vasodilatation (flushing), tachycardia, bradycardia; Respiratory: dyspnea, bronchospasm, laryngospasm; Integumentary: rash, urticaria, injection site reaction.


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For a nurse anesthetist in the Army Reserve, responsibility can take on a whole new meaning. “Here, I work much more independently in the O.R.; they really rely on you. And that gives me more confidence in what I can do.” And you’ll find that in the Army Reserve, your responsibilities go beyond nursing. As an officer, you’ll be looked up to as a leader—and a teacher.

“Training the enlisted people and younger officers is really enjoyable, seeing them getting more involved and learning new techniques.”

You’ll also have the opportunity to learn. You can enhance your knowledge of your specialty and explore related fields. And your Army experience may even provide you with new and different professional challenges. “I’m given the chance to brush up on skills and techniques I don’t often use, like administering spinal and epidurals, and working on more airway and mask cases.”

The benefits of being a nurse anesthetist in the Army Reserve are more than professional. They’re personal as well. “I really look forward to my Reserve weekends, to being with this group of people. They’ve become my friends, not just people I work with.”

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Regono* (pyridostigmine bromide) Injection, USP

BRIEF SUMMARY—(Please consult full package insert, enclosed in every package, before using Regonol.)

INDICATIONS—Pyridostigmine bromide is useful as a reversal agent or antagonist to nondepolarizing muscle relaxants.

CONTRAINDICATIONS—Known hypersensitivity to anticholinesterase agents, intestinal or urinary obstructions of mechanical type.

WARNINGS—Pyridostigmine bromide should be used with particular caution in patients with bronchial asthma or cardiac dysrhythmias. Transient bradycardia may occur and be relieved by atropine sulfate. Atropine should also be used with caution in patients with cardiac dysrhythmias. When large doses of pyridostigmine bromide are administered, as during reversal of muscle relaxants, prior or simultaneous injection of atropine sulfate is advisable. Because of the possibility of hypersensitivity in an occasional patient, atropine and anti-shock medication should always be readily available. When used as an antagonist to nondepolarizing muscle relaxants, adequate recovery of voluntary respiration and neuromuscular transmission must be obtained prior to discontinuation of respiratory assistance and there should be continuous patient observation. Satisfactory recovery may be defined by a combination of clinical judgment, respiratory measurements, and observation of the effects of peripheral nerve stimulation. If there is any doubt concerning the adequacy of recovery from the effects of the nondepolarizing muscle relaxant, artificial ventilation should be continued until all doubt has been removed.

Use in Pregnancy—The safety of pyridostigmine bromide during pregnancy or lactation in humans has not been established. Therefore its use in women who are pregnant requires weighing the drug's potential benefits against its possible hazards to mother and child.

ADVERSE REACTIONS—The side effects of pyridostigmine bromide are most commonly related to overdosage and generally are of two varieties, muscarinic and nicotinic. Among those in the former group are nausea, vomiting, diarrhea, abdominal cramps, increased peristalsis, increased salivation, increased bronchial secretions, miosis, and diaphoresis. Nicotinic side effects are comprised chiefly of muscle cramps, fasciculation, and weakness. Muscarinic side effects can usually be counteracted by atropine. As with any compound containing the bromide radical, a skin rash may be seen in an occasional patient. Such reactions usually subside promptly upon discontinuance of the medication. Thrombophlebitis has been reported subsequent to intravenous administration.

DOSAGE AND ADMINISTRATION—When pyridostigmine bromide is given intravenously to reverse the action of muscle relaxant drugs, it is recommended that atropine sulfate (0.6 to 1.2 mg) or glycopyrrolate in equiient doses be given intravenously immediately prior to or simultaneously with its administration. Side effects, notably excessive secretions and bradycardia, are thereby minimized. Reversal dosages range from 0.1 to 0.25 mg/kg. Usually 10 or 20 mg of pyridostigmine bromide will be sufficient for antagonism of the effects of the nondepolarizing muscle relaxant. Although full recovery may occur within 15 minutes in most patients, others may require a half hour or more. Satisfactory reversal can be evident by adequate voluntary respiration, respiratory measurements and use of a peripheral nerve stimulator device. It is recommended that the patient be well ventilated and a patent airway maintained until complete recovery of normal respiration is assured. Once satisfactory reversal has been attained, recurarization has not been reported. Failure of pyridostigmine bromide to provide prompt (within 30 minutes) reversal may occur, eg, in the presence of extreme debilitation, carcinomatosis, or with concomitant use of certain broad-spectrum antibiotics or anesthetic agents, notably ether. Under these circumstances, ventilation must be supported by artificial means until the patient has resumed control of his respiration.

HOW SUPPLIED—Regonol is available in:

5 mg/mL
2 mL ampuls—boxes of 25—NDC-0052-0460-02
5 mL vials—boxes of 25—NDC-0052-0460-05

References: