ASA ABSTRACTS

A1061

TITLE: PERIPHERAL NERVE PALSYES AND PANCREATIC SURGERY: A PRELIMINARY APPRAISAL


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Neuropathies, especially in the brachial plexus territories, have been attributed to various causes following anesthesia and surgery 1,2. The purported causes included preoperative positioning, catheters, inflammatory cuffs, multiple drug therapy, diabetes, sepsis, critical illness and pancreatic diseases 3. We suspected the latest to be involved in some cases of peripheral nerve palsies.

Thus, after approval of the local ethics committee, we prospectively investigated the nerve function in patients who presented with carcinoma or pseudocyst of the pancreas and underwent various surgical procedures (table). Excluded from the study were patients with predisposing factors such as diabetes or chronic alcoholism. Preoperatively, the clinical examination focused on the study of reflexes and sensory and motor nerve function. Electrophysiological screening including glycemia and vitamin blood levels. The electrophysiological investigation consisted on an electromyographic (EMG) study with measurements of motor and sensory conduction velocities (MSCV). A percutaneous access of the right internal jugular vein was realized preoperatively in all patients. Positioning of the patient on the operating table was cautious and standard monitoring included an automatic blood pressure cuff on the right arm, cycling every 5 minutes. Peroperatively, body temperature was maintained between 35° and 37°5°C and glycemia remained within normal range. All patients received the same anesthetic regimen including fentanyl, etomidate, enflurane and pancuronium. Postoperatively, all of them received total parenteral nutrition with vitamin supplementation.

The results are summarized in the table. Preoperatively, none of the patients had detectable signs of peripheral nerve dysfunction. But out of the 10 patients exhibited EMG symptoms of an axonal neuropathy and evidence of denervation with a slowing of MSCV. On the last preoperative day, 4 patients remained free of any nerve dysfunction and 2 patients exhibited a sensory and motor paralysis of the fifth and the sixth cervical roots of the left upper limb. This was confirmed by EMG and slowly recovered in the following months.

It is not certain if our cases represented a particular association neuropathy-pancreatic disease or form part of the broad spectrum of polyneuropathies in the critically ill. Polyneuropathies were described in association with insulinomas and suspected in association with non-endocrine tumor of the pancreas. As nerve damage is a common anasthesia-related patient injury and a major source of professional liability in anesthetic practice, one must consider the possible susceptibility of these patients and the interest of an EMG screening before this type of surgery.

References
1: Chvat 99 : 177-184, 1991
2: Arch Neurol 46 : 1353-1360, 1989
3: J Neurol Neurosurg Psychiatr 51 : 1341-1344, 1988
4: Medicine 61 : 33-44, 1982

A1062

TITLE: ANESTHESIA CRISIS RESOURCE MANAGEMENT TRAINING

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The ability of the anesthesiologist to respond optimally to critical incidents during anesthesia is an important factor in providing safe patient care. Cooper, et al., stated that anesthesiologists act as though "risk management depends almost solely on the anesthesiologist's ability to react instinctively and flawlessly every time a problem arises." Responding to a crisis in the real world involves complex issues of allocation of the anesthesiologist's attention, and coordination and communication with other team members (e.g., surgeons, nurses, and ancillary help). It has been previously reported that even experienced anesthesiologists do not always act instinctively and flawlessly when confronted with simulated critical incidents.

We borrowed principles of "Cockpit Resource Management" (CRM) training from commercial and military aviation to develop a training course called "Anesthesia Crisis Resource Management" (ACRM). These principles include task delegation, priority assessment, monitoring, decision-making, communication, leadership, and avoidance of preoccupation. The goals of the course were: 1) to provide participants with precompiled "emergency procedures" for handling critical incidents; and 2) to instruct participants in the coordinated application of CRM principles using realistic simulation. Two demonstration courses were conducted to test the feasibility and acceptance of this type of training. Twelve anesthesia residents (RES), eight faculty (FAC), and six private practitioners (PP) gave informed consent to participate in the two-day courses. We provided a didactic framework for understanding anesthesiology decision-making and the principles of crisis resource management. Using this knowledge, the participants analyzed videotapes of an airline accident and an actual anesthetic incident. Participants then underwent two hours of realistic, hands-on simulation in groups of four.

Each participant was in the "hot seat" for 30 minutes and was a participating observer for 90 minutes. Each group underwent a structured debriefing with an expert who reviewed the videotape of their simulator session. The debriefing expert stressed concepts concerning optimal crisis management and human performance which had been covered in the didactic framework.

The participants completed pre- and post-course questionnaires and pre- and post-tests of essay format. One investigator graded the tests and was blinded to participant identity and to pre-test vs. post-test status.

<table>
<thead>
<tr>
<th>Course</th>
<th>Videotapes</th>
<th>CRM Principles</th>
<th>Simulator Session</th>
<th>Debriefing Session</th>
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<tr>
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Evaluation scores were from 0 to 9: 0 = "terrible", 9 = "excellent"

The participants greatly enjoyed the course. They felt that the simulations were intense, and that participating in the course would help them to practice anesthesia more safely. Their numerical ratings of course components supported their written comments.

A few groups optimally managed the simulated incidents. They detected problems quickly and coordinated corrective actions well. They delegated tasks to ensure continued monitoring of the patient, communicated clearly with surgeons and nurses, and executed well organized response plans. Other groups showed major deficiencies. They became fixated on single items to the exclusion of others, did not utilize available resources wisely, refused help, and forgot to maintain basic life-support functions during crisis management. Their responses were chaotic and disorganized.

Written test scores improved after the first course (RES) but not after the second course (FAC & PP).

We cannot prove that anesthesiologists who participate in this training will improve the outcome of patients under their care, although the participants believed this to be so. The "face validity" of the training environment along with the understanding of how decisions and actions are made has been sufficient to motivate this kind of crisis management training in other industries. We are convinced that the need for such training in anesthesia is equally compelling.

(Supported by a grant from the Anesthesia Patient Safety Foundation)

References:
1. Anesthesiology 60:34-42, 1984