

REPORTS OF SCIENTIFIC MEETINGS

James C. Eisenach, M.D., Editor

Ninth International Symposium on Anesthesia and Intensive Care. Herzlia, Israel, October 8-10, 1996.

The Ninth International Symposium on Anesthesia and Intensive Care was held at the Sharon Hotel in Herzlia on Sea (about 10 miles north of Tel Aviv, Israel). The organizing committee for the symposium included G. M. Gurman, M.D., President (Division of Anesthesiology, Soroka Medical Center, Beer Sheva, Israel), A. Gullo, M.D., Co-President (Department of Anaesthesia and Intensive Care, University of Trieste School of Medicine, Trieste, Italy), N. Weksler, M.D., Chair (Division of Anesthesiology and Intensive Care, Beer Sheva, Israel), and A. Fisher, M.D., Scientific Secretary (Department of Anesthesia, Ben Gurion University of the Negev, Beer-Sheva, Israel). The symposium was hosted by the Division of Anesthesiology, Ben Gurion University of the Negev, Beer-Sheva, Israel, in conjunction with the Department of Anesthesia and Intensive Care, University of Trieste School of Medicine, Trieste, Italy.

The first set of lectures and workshop focused on sepsis and chronic obstructive pulmonary disease. A. Gullo, M.D., reviewed organ dysfunction consequent to sepsis. Current research approaches include 1) binding cytokines with circulatory neutralizing molecules and 2) blocking the interaction between cytokines and cell-surface receptors in target tissues. F. Beltrame, M.D. (Department of Anaesthesia and Intensive Care, University of Trieste School of Medicine, Trieste, Italy), discussed ventilatory strategies in chronic obstructive pulmonary disease. New methods to detect expiratory flow limitation include 1) application of negative pressure during expiration, 2) reduction of flow resistance by bypassing the expiratory limb of the ventilator, and 3) removal of external positive end-expiratory pressure. A. DeMonte, M.D. (Department of Anesthesia and Secondary Intensive Care, Ospedale Civile, Udine, Italy), reported his experience with clinical methods in chronic obstructive pulmonary disease patients with an emphasis on hemodynamic aspects. Data on the pulmonary circulation and right ventricular function are used to stratify patients for therapy. Thermodilution determination of right ventricular function and ejection are cost-effective and risk-effective tools for clinical management during anesthesia and in the intensive care unit (ICU). N. Weksler, M.D., reported data on anesthesia for patients with chronic obstructive pulmonary disease. General anesthesia was found to be as safe as subarachnoid block for these patients who have lower abdomen and inferior limb surgery.

The second set of lectures and workshop focused on critical illness and pediatric anesthesia. G. Berlot, M.D. (Department of Anesthesia and Intensive Care, University of Trieste School of Medicine Trieste, Italy), reviewed clinical-pathologic correlations in critically ill patients. Correlation of autopsy findings with clinical diagnoses revealed a 3-4% incidence of diagnostic errors consisting of failure to recognize a potentially treatable life-threatening condition, a 2-10% incidence of failure to recognize a life-threatening condition whose treatment was contraindicated by other concomitant conditions or unlikely to alter outcome, and a 17-33% incidence of failure to recognize a condition unrelated to outcome. C. Sprung, M.D. (Surgical Intensive Care Unit, Hadassah Hebrew University Medical Center, Jerusalem, Israel), discussed triage in intensive care. Mortality rates were significantly higher in patients with APACHE II scores in the 11-20 range who were not admitted to the ICU than in patients who

were admitted to the ICU; mortality rates were not different between the two groups when APACHE II scores were less than 11 or more than 20. C. E. Lesmes, M.D. (Department of Anesthesiology, Ha'Emek Medical Center, Afula, Israel), presented his experience with intravenous *versus* inhalational induction of anesthesia in children. A stage show designed to combine entertainment with education about inducing anesthesia is used to increase children's acceptance of induction. G. Collins, M.B., B.S. (Paediatric Anaesthesia Unit, Bnai Zion Medical Centre, Haifa, Israel), reviewed the use of halothane *versus* newer inhalational anesthetics for pediatric anesthesia. Although desflurane may be too irritating to airways and nitrous oxide may be banned due to environmental concerns, sevoflurane presents many advantages over halothane and may soon supplant it. S. Gassner, M.D. (Department of Anesthesiology, Tel Aviv University Saklerr Medical School, Tel Aviv, Israel), discussed intravenous anesthesia for children. Increasing knowledge of pharmacokinetics and pharmacodynamics of intravenous anesthetics in children has permitted the extension of total intravenous anesthesia to the pediatric population.

The first set of free papers addressed issues of intraoperative anesthetic care. M. Schwartz, M.D. (Department of Anesthesiology, Ha'Emek Medical Center, Afula, Israel), presented data on the Benjet tube for operative laryngoscopy. This technique provided adequate ventilation (documented by stable end-tidal carbon dioxide levels of 36-39 mmHg) and oxygenation and an immobile unobstructed larynx. I. Eilig, M.D. (Division of Anesthesiology, Soroka Medical Center, Beer-Sheva, Israel), discussed the use of epidural analgesia in patients with post-traumatic orthopedic injuries. Epidural opioids, but not local anesthetics, provided analgesia and permitted evaluation of lower limb motor and sensory function. E. Roussabrov, M.D. (Division of Anesthesiology, Ben Gurion University, Beer-Sheva, Israel), reviewed cardiovascular assessment in patients undergoing laparoscopic cholecystectomy using a new approach to estimate heart rate variability (beat-to-beat variability in the R-R interval). This variability was significantly less in patients during laparoscopic compared with open cholecystectomy. C. Crohin, M.D. (Department of Anesthesiology, University of Southern California Medical School, Los Angeles, CA), presented data on 30-s onset of laryngeal paralysis using synergy of nondepolarizing muscle relaxants. Vecuronium (1 mg) combined with rocuronium (50 mg) achieved this goal without causing prolonged recovery. I. Eilig, M.D., discussed the risk of cardiac arrest after transfusion of cold banked blood. Cardiac arrest correlated with increased concentrations of potassium (57-78 mEq/l) in the blood transfused in these cases, with potassium concentrations more than 40 mEq/l found in 25% of all units of cold banked blood. D. C. Segal, M.D. (Department of Anesthesiology, Ha'Emek Medical Centre, Afula, Israel), reviewed the cost of anesthetics. Anesthetic costs alone are less for subarachnoid block than for general anesthesia, and less for spontaneous than for mechanical ventilation. M. Waisman, M.D. (Department of Anesthesiology, Carmel Medical Center, Haifa, Israel), presented data on intraosseal regional anesthesia in limb surgery for trauma. Forty milliliters of 0.5% lidocaine for upper limb surgery and 140 ml 0.25% lidocaine for lower limb surgery provided satisfactory anesthesia with no local or systemic complications during a 4-24 month follow-up period. M. Glasser, M.D. (Division of Anesthesiology, Soroka Medical Center, Beer-Sheva, Israel), discussed intravenous sedation using propofol for noninvasive pediatric radiologic

procedures. Infusion at $40 \mu\text{g} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$ after an initial dose of 2 mg/kg provided satisfactory sedation with no decrease of oxygen saturation below 90% and an average recovery room stay of 16.7 ± 4.1 min. I. Eilig, M.D., presented data on early extubation after coronary artery bypass grafting. Patients receiving only isoflurane after bypass awoke 3 h earlier, were extubated 2–4 h earlier, and were discharged from the ICU 1 day earlier than were patients receiving fentanyl/midazolam after bypass.

The third set of lectures and workshop focused on brain protection and antimicrobial therapy. Y. Shapira, M.D., Ph.D. (Division of Anesthesiology, Soroka Medical Center, Beer-Sheva, Israel) reviewed the pathophysiology of brain injury after head trauma, and the effects of *N*-methyl-D-aspartate antagonists. E. Shohami, Ph.D. (Department of Pharmacology, The Hebrew University, Jerusalem, Israel), discussed the role of cytokines (such as tumor necrosis factors and interleukins) in the pathophysiology of closed head injury. Dexanabinol (HU-211), a nonpsychoactive cannabinoid acting as a functional *N*-methyl-D-aspartate antagonist, inhibits tumor necrosis factor production and reduces brain damage after head trauma. A. A. Artru, M.D. (Department of Anesthesiology, University of Washington School of Medicine, Seattle, WA), reviewed current concepts for brain protection after head injury, including hypothermia, calcium channel antagonists, barbiturates, opioid receptors, lipoxygenase and cyclooxygenase inhibitors, control of blood glucose, and reactive ion "scavengers." Published reports from 1990 to 1996 are positive with hypothermia (supporting progression to large, randomized, prospective clinical trials), discouraging with calcium channel antagonists, supportive of blood glucose control, supportive of the use of barbiturates and lipoxygenase and cyclooxygenase inhibitors to control intracranial pressure (ICP), and are optimistic for further studies with opioid receptor modulators and reactive ion scavengers. S. DiBartolomeo, M.D. (Department of Anaesthesia and Secondary Intensive Care, Azienda Ospedaliera S. Maria della Misericordia, Udine, Italy), reported data on prevention of gram-positive pneumonia in the ICU through a modified formula of selective digestive decontamination. The addition of mupirocin orally and nasally to a standard regimen of tobramycin, polymyxine E, and amphotericin B decreased tracheal colonization and the incidence of lung infection with gram-positive bacteria, and decreased the need for intravenous administration of additional antibiotics. M. Shapiro, M.D. (Department of Infectious Diseases, The Hebrew University Hadassah Medical School, Jerusalem, Israel), discussed the emergence of antibiotic-resistant bacteria. For many strains, the development of new generations of antibiotics has not kept pace with the emergence of resistance.

The fourth set of lectures and workshop focused on treatment of cardiac arrest and trauma. G. Trillo, M.D. (Department of Anaesthesia and Intensive Care, University of Trieste School of Medicine, Trieste, Italy), reviewed trials and perspectives in treatment of cardiac arrest. Double-blind, randomized, prospective clinical trials have found no significant statistical improvement with barbiturates after cardiac arrest, lidoflazine in comatose survivors of cardiac arrest, and the active compression-decompression technique of closed chest compression as compared with standard cardiopulmonary resuscitation. G. Gurman, M.D., presented data on cardiopulmonary resuscitation outcome with and without an anesthesiologist being present on a 24-h basis in a mobile ICU. The presence of an anesthesiologist did not alter the proportion of patients alive on arrival to the emergency room from the mobile ICU, but it did increase the proportion of patients who survived until discharge from the hospital from 1.8% to 7.9%. Y. Donchin, M.D. (Department of Anesthesiology, The Hebrew

University Hadassah Medical School, Jerusalem, Israel), discussed the necessity of capnography in prehospital and in-hospital trauma care. G. Nardi, M.D. (Department of Anaesthesia and Intensive Care, Second Hospital of Udine, Udine, Italy), reviewed the organization and strategy of prehospital care of patients suffering severe blunt trauma. Prehospital mortality, hospital mortality, autopsy-proved preventable mortality rates, and average length of ICU stay decreased when an emergency hospital medical service protocol rather than a basic life support protocol was used. S. DiBartolomeo, M.D., presented his experience in teaching triage to nurses and volunteers.

The second set of free papers addressed issues of ICU care and brain protection. D. Talmor, M.D. (Division of Anesthesiology, Soroka Medical Center, Beer-Sheva, Israel), presented data on the use of magnesium to improve neurologic outcome in closed head trauma in rats. Administration of magnesium 1 h after injury improved brain tissue specific gravity and neurologic outcome compared with rats that were not treated. C. Crohin, M.D., discussed monitoring and computer-controlled neuroprotection during partial iatrogenic ischemia. The protocol includes a loading dose of the noncompetitive *N*-methyl-D-aspartate antagonist ketamine (1.5 mg/kg), computerized spectral analysis of the electroencephalogram, propofol infusion to achieve electroencephalogram burst suppression, and hypothermia to 34°C . Y. Amaki, M.D. (Department of Anesthesia, Jikei University School of Medicine, Tokyo, Japan), reviewed disuse and muscle relaxant sensitivity in skeletal muscle. Decreased sensitivity *in vitro* indicates a change in muscle itself rather than a pharmacokinetic or cardiovascular artifact. C. E. Lesmes, M.D., presented data on intra-hospital transport of pediatric patients receiving critical care. Incidences of events included hypoventilation (7.8%) and hypoxemia (5.8%) in the severe category, pain and anxiety (60.7%) and catheter or drain displacement (37.2%) in the moderate category, and artifactual data (49%) in the mild category. N. Weksler, M.D., discussed intranasal administration of β -sympathomimetics in acute asthma. Intranasal salbutamol reversed severe bronchospasm in patients refractory to conventional therapy. C. E. Lesmes, M.D., reviewed the clinical characteristics of children admitted to the pediatric ICU after operation. Positive predictors for the need for ICU admission include younger age, smaller weight, abdominal or thoracic surgery, longer operative time, and intraoperative hypoxemia or hypovolemia. N. Weksler, M.D., also presented data on "failure to thrive" as an indication for repeated laparotomy of patients with sepsis in the ICU. Repeated laparotomy was positive (a correctable surgical lesion was found) in 63.3% of cases, with no moderate or major complications related to the repeated laparotomy per se. D. Talmor, M.D., presented data on brain edema and neurologic outcome with rapid infusion of 0.45% saline or 5% dextrose in 0.9% saline after closed head trauma in the rat. Infusion of 0.45% saline increased mortality rate, decreased blood osmolality and sodium concentration, and caused no significant change in blood glucose, cerebral edema, hemorrhagic necrosis volume, or neurologic severity score. Five percent dextrose in a 0.9% saline decreased cerebral edema, increased blood osmolality and glucose, decreased blood sodium concentration, and caused no significant change in hemorrhagic necrosis volume, neurologic severity score, or mortality rate.

The fifth set of lectures and workshop focused on heart transplantation and management of blast injury. M. Bertolissi, M.D. (Department of Anesthesia and Secondary Intensive Care, Azienda Ospedaliera ad Alta Specializzazione, Udine, Italy), presented his experience with orthotopic heart transplantation. Cardiovascular drug use correlated positively with pulmonary vascular resistance but not with ischemic

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time, and intubation time and echocardiographic evaluation were not significantly related to pulmonary vascular resistance or ischemia time. F. Giordano, M.D. (Department of Anesthesia and Secondary Intensive Care, Azienda Ospedaliera ad Alta Specializzazione, Udine, Italy), reviewed transesophageal echocardiography in the management of heart transplantation. Transesophageal echocardiography is useful for estimating cardiac volume, visualizing cardiac anatomy, intraarterial abnormalities, and valvular function, and estimating trends in left and right ventricular ejection fraction. Y. Kluger, M.D. (Department of Surgery, Tel Aviv University Saklerr Medical School, Tel Aviv, Israel), discussed the mechanisms of blast injury (blast wave, blast wind, fragmentation, flash burns, crush, and psychological) and common (ear and lung) and uncommon (CNS, abdominal and vascular) injuries that may result. R. Pizov, M.D. (Department of Anesthesiology and Critical Care Medicine, Hadassah Hebrew University, Jerusalem, Israel), presented his experience with hemodynamic monitoring in the early stages after severe blast injury. The negative dUP component (the difference between maximal [inspiratory] and apneic [not ventilation affected] systolic blood pressure) of systolic pressure variation indicates the degree of cardiac depression. P. Sorikine, M.D. (Departments of Intensive Care and Anesthesiology, Tel Aviv Sourasky Medical Center and the Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel), reviewed the use of permissive hypercapnia in patients with lung damage after blast injury. The respiratory acidosis resulting from the reduction of tidal volume to that necessary to maintain peak inspiratory pressure less than 40 cm H₂O and adjustment of respiratory rate to that necessary to maintain arterial blood pH greater than 7.25 was well tolerated.

The guest speakers for the concluding ceremonies included I. Eisen, M.D. (Department of Gynecology, Doctors Hospital, Toronto, Canada), and B. Levinson, M.D. (Psychiatry, Johannesburg, South Africa).

The Tenth International Symposium on Anesthesia and Intensive Care will be held in Israel from September 2-4, 1997. For information, registration, and abstract forms, contact Gabriel M. Gurman, M.D., Division of Anesthesiology, Soroka Medical Center, Beer-Sheva 84101, Israel.

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Low Flow Anaesthesia Symposium 1996 of the Association for Low Flow Anaesthesia. Edinburgh, Scotland, October 31 - November 1, 1996.

The first of anticipated annual symposia organized by the Association for Low Flow Anaesthesia (ALFA) was held in Edinburgh, Scotland, on October 31 to November 1, 1996. The new Association hopes to provide a forum for exchange of ideas and to encourage research on any aspect of low flow anesthesia (LFA). Formation of ALFA reflects renewed interest in this approach to inhalation anesthesia.

The initial symposium, a two half-day affair, offered 10 invited presentations. In the first presentation, Professor A. A. Spence (Edin-

burgh), President of ALFA, suggested reasons for renewed interest in LFA. These included prohibitive cost of new volatile agents when used in anything but a low flow setting and availability of reliable monitors of respired gases. Previous dependence on high gas flows to predict inspired gas concentrations can now be replaced confidently by use of agent-specific monitors.

Four speakers reported on current research on older topics that now are being revisited because they have special relevance in LFA. Dr. D. C. White (Northwick Park) described how agent monitors have mitigated earlier concerns about in-circuit vaporizers. He offered data on the effects of minute ventilation, vaporizer temperature, and fresh gas flow on agent concentration when using these vaporizers. He suggested that with agent monitors in widespread use, there is a role in LFA for these cheap, simple, low-maintenance devices. Dr. J. Murray (Belfast) reviewed the history of carbon dioxide absorption in anesthesia and discussed current research on alternatives to existing chemical methods. These include zeolite molecular sieves and a new chemical (nonregenerative) formulation to be introduced in the near future. Professor G. Rolly (Ghent) also spoke on the role of soda lime in the accumulation of carbon monoxide and degradation products of halothane during LFA. He noted the desire to reduce cost of desflurane anesthesia by use of LFA requires attention to possible interaction of the drug with soda lime and baralyme. Professor Rolly also reviewed data on accumulation of nitrogen, methane, acetone, and ethanol during LFA and warned about the danger of gas monitors interpreting trace gases as being the anesthetic. The anesthesiologist may believe patients are asleep when they are not.

Dr. M. Halsey (Oxford) reminded us that 1996 is the fiftieth anniversary year of the first report of the anesthetic effects of xenon. Xenon, being totally inert, has been useful in studies of the mechanisms and toxicity of anesthetics. Dr. Halsey wonders if its other attributes, low tissue solubility, potency slightly greater than nitrous oxide, and minimal cardiovascular and respiratory depression, warrant attempts to overcome limitations to its use, especially manufacturing cost. He urged clinicians to study whether there is an important niche for the drug.

Use of nitrous oxide and oxygen in closed systems or at near-closed system gas flows is not new. Dr. G. Lockwood (London) has taken a fresh look at factors governing nitrous oxide accumulation and resultant decrease of circuit oxygen concentrations during LFA. He suggested approaches to predict the effect of variations in oxygen and nitrous oxide uptake on the concentration of oxygen, which will develop during the course of anesthesia.

Professor Rolly presented a second paper in which he described quantitative closed system anesthesia via servocontrol of anesthetic agent delivery. It allows rapid increase and decrease of alveolar concentration of the volatile agent, the former by computer-controlled liquid injection, the latter by use of charcoal filters.

Favorable attributes of sevoflurane and desflurane have provoked much interest in LFA to reduce cost of using them, although increased levels of carbon monoxide with desflurane and compound A with sevoflurane in LFA cause alarm. Dr. M. Nathanson (Nottingham) thoroughly reviewed the sevoflurane-compound A-LFA problem. The importance of the finding is not settled, although there is meager clinical evidence for a problem. He suggested facets needing further study.

Dr. M. Logan (Edinburgh) assessed the pharmacoeconomics of LFA. Calculation of true savings, although seeming simple, can be complex. Dr. Logan expressed the savings in terms of how many anesthe-