The Society for Obstetric Anesthesia and Perinatology (SOAP) held its twelfth annual meeting in Boston from May 8–11, 1980. Forty-eight works in progress were presented, and invited speakers reviewed recent developments in obstetric anesthesia, neonatology, and obstetrics. The following brief descriptions are representative of papers presented.

Kuhnert (Cleveland) studied plasma cholinesterase and plasma levels of 2-chloroprocaine (2CP) in normal women and their infants during vaginal delivery or cesarean section. 2CP was detectable in maternal plasma for at least 5–10 min after each epidural injection, while the metabolite, 2-chloramino-benzozic acid (CABA), was detectable throughout labor. In one-half of the cord blood samples, 2CP was detectable, while CABA could be found in three-fourths of the samples. Plasma cholinesterase activity in maternal plasma was 42 per cent less than that in nonpregnant controls; after anesthesia, activity decreased to 20 per cent of preanesthetic levels. Cholinesterase activity levels in cord plasma were higher than those found in maternal plasma, though reduced after maternal 2CP administration.

Lidocaine injected for subarachnoid block can be found in both maternal and fetal blood at the time of delivery, according to Datta (Boston). Lidocaine, 55 to 65 mg, was administered for subarachnoid block to healthy patients undergoing elective cesarean section. This led to mean maternal venous levels of 0.65 mg/ml, umbilical venous levels of 0.17 μg/ml, and a mean fetal/maternal ratio of 0.4. It was concluded that blood levels of local anesthetics after subarachnoid block, while low, are not negligible.

Several papers dealt with the effects of maternal medication on the child. Amiel-Tison, Barrier, Shinader, et al. (Paris and San Francisco) described a scoring system for evaluating the effects of obstetric medication in newborns. The ABS score, named for the first three authors, was compared to the Scanlon Early Neonatal Neurobehavioral Scale (ENNS). While an average ENNS examination required seven minutes, an ABS examination averaged four minutes. Interobserver reliability was equally good for both examinations (about 90 per cent) and both identified the same problem infants. The authors suggested that the ABS examination's value was in the speed with which it could be performed, the clarity with which a single score communicated the results, the emphasis placed on items known to be affected by medication, and the avoidance of noxious stimuli. Preliminary results of a long-term prospective study of the effect of obstetric medication on child development were presented by van den Berg (Berkeley). The study included 4000 children born between 1959 and 1966 who underwent several developmental examinations at age five and again at age 9–11. Though the study involved only full-term neonates born to healthy mothers after uncomplicated pregnancies, multiple confounding variables were examined. Preliminary results did not show a relationship between long-term development and obstetric medication. In a report by Hodgkinson (San Antonio), infants of mothers who had at least 100 mg of meperidine during labor showed neurobehavioral depression on the ENNS during the first two days of life, but not thereafter. In contrast, Stefani (San Francisco) found that neither enflurane nor nitrous oxide when inhaled for obstetric analgesia produced adverse neurobehavioral effects on the newborn at 10 min, 2 hours, or 24 hours after birth.

Several authors presented papers describing the use of epidural morphine. Witzer (North Carolina) compared morphine with bupivacaine for continuous lumbar epidural analgesia during labor. Patients received either 2 mg of morphine in dextrose or 8 ml of 0.25 per cent bupivacaine. Most patients given morphine demonstrated little pain relief in spite of multiple doses; in contrast, nearly all patients receiving bupivacaine had good relief of pain after a single dose. Neurobehavioral depression was more evident in babies whose mothers had received morphine. It was concluded that epidural morphine was not effective for pain relief during labor in the doses used.

The remaining papers dealt with the use of epidural morphine for postoperative pain relief. Donchin (Jerusalem) found that 4 mg of morphine sulfate in glucose injected near the end of a cesarean section under epidural anesthesia markedly reduced the number of postoperative narcotic injections requested by patients. Similar results were obtained by Shelley (Philadelphia) who used 6 mg of morphine sulfate in saline. Redick (Raleigh) described the use of epidural meperidine, hydromorphone, and morphine for postoperative and postpartum pain relief. Morphine had a much longer duration-of-action than either of the other two drugs, but all produced good relief of pain. No patient experienced major side effects, though several who received morphine complained of generalized itching.

Blood levels of morphine after epidural administration are too low to account for pain relief provided, according to Weddel (San Antonio) suggesting that analgesic action is mediated within the spinal cord. Side effects using 5–10 mg of morphine in sterile water included generalized pruritus in 3 of 21 patients, urinary retention for 12–24 hours in all but one patient, and respiratory depression in one patient. The latter occurred six hours after epidural morphine administration and required several doses of naloxone for successful treatment. In the panel discussion which followed these presentations, discussants emphasized that patients who receive epidural morphine should be watched for a long time for signs of late apnea. They concluded that epidural morphine was not yet acceptable as a standard analgesic technique.

Shinader (San Francisco) reported that endogenous epinephrine levels fell by 46 per cent after patients were given lumbar epidural analgesia during labor. Shinader also examined maternal and fetal norepinephrine levels and
neonatal neurobehavioral status after four different general anesthetic techniques for Cesarean sections: nitrous oxide 50 per cent; nitrous oxide 50 per cent with 0.5 per cent halothane; nitrous oxide 50 per cent with 0.5 per cent enflurane; and nitrous oxide 50 per cent with 1 per cent enflurane. He reported a rise in maternal plasma norepinephrine with endotracheal intubation in all groups; there was no difference in fetal well-being or neurobehavioral status with any of the anesthetic techniques. Maternal awareness occurred in 6 per cent of the nitrous oxide group, but none was experienced when a halogenated hydrocarbon was added to nitrous oxide.

Last year, two papers suggested that maternal hydration with glucose containing solutions before cesarean section worsened fetal acidosis. This year, Datta (Boston) presented a study in which healthy non-diabetic parturients receiving spinal anesthesia for cesarean section were prehydrated with either 5 per cent dextrose in lactated Ringer's solution or the same solution without dextrose. Patients receiving dextrose had significantly higher maternal levels of glucose, pyruvate, and lactate but there was no significant difference in maternal artery pH between the two groups. Infants of mothers who had received dextrose had higher umbilical vein levels of glucose and lactate, but there was no significant difference in pH. It was concluded that the brief period of hyperglycemia due to rapid dextrose infusion did not exacerbate the mild neonatal acidosis associated with transient maternal hypotension. Kenep (Philadelphia) studied the effects of hydration with dextrose containing solution before epidural anesthesia for cesarean section. Higher serum lactate and lower pH were observed in neonates whose mothers received dextrose-containing solution than in those whose mothers received only saline. The incidence of neonatal hypoglycemia and physiologic jaundice was also higher in the dextrose-treated group.

Prophylactic intramuscular ephedrine and its maternal and neonatal effects were studied by Roblin (Toronto) who gave 25 or 50 mg of ephedrine with epidural anesthesia for cesarean section. There were no significant neonatal effects of this practice but there was a high incidence of persistent hypertension in patients given the 50-mg dose. Administration of ephedrine as soon as blood pressure starts to fall is more effective than waiting until the patient is hypotensive, according to Datta, who studied healthy patients administered spinal anesthesia for cesarean section. Patients who did not become hypotensive received no ephedrine. Of the remainder, some received intravenous ephedrine as soon as the blood pressure started to fall; the remainder received ephedrine only after hypotension had developed. Ephedrine administered as soon as a fall in blood pressure was detected prevented a further fall in blood pressure and was associated with a significantly reduced incidence of nausea and vomiting. Fetal acid-base balance in parturients so treated was identical to that in patients who did not experience a fall in blood pressure, and was significantly better than in the group which developed frank hypotension, subsequently treated with ephedrine. The next SOAP meeting will be held in San Diego, California from April 1–4, 1981.

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REPORTS OF SCIENTIFIC MEETINGS

Second Annual Meeting of the Society of Cardiovascular Anesthesiologists

The second annual meeting of the Society of Cardiovascular Anesthesiologists was held August 22–23, 1980 at Kiawah Island, South Carolina. The meeting format consisted of invited papers, panel discussions, and free papers. The first session, devoted to care of the heart was opened by J. L. Waller (Atlanta), who presented data on the high-dose fentanyl technique. Doses of fentanyl (≥ 125 μg/kg) or of newer, more potent synthetic narcotics may block imperfect attenuation of cardiovascular responses following intubation and sternotomy which are not blocked at a lower dose. J. H. Tinker (Rochester) examined the effect of anesthetics on regional and global myocardial ischemia in a dog model. Pentobarbital, 40 mg/kg, resulted in significantly greater depletion of myocardial ATP (20 min after left anterior descending coronary artery ligation) than did halothane or enflurane. This implies a potentially deleterious effect for patients with ischemic heart disease in whom a large dose of barbiturate is used for cerebral protection (e.g., head injury). W. A. Lell (Birmingham) stated that the rationale for use of cold chemical cardioplegia includes reduction in both myocardial oxygen consumption (MVO₂) and resting wall tension (at 22°C the MVO₂ of the quiescent heart is one-sixth that of the fibrillating heart at the same temperature). Problems with currently available cardioplegic solutions include hypokalemia, hemodilution, and embolization. W. J. Levy (Philadelphia) reviewed the problems associated with the clinical use of EEG. Single-channel EEG is inadequate since it reflects only the electrical activity in the cortical zones which are immediately adjacent to the electrodes. Most single-lead EEG recordings lack a means of detecting elevated electrode impedance. The multilead system not only allows simultaneous evaluation of different cortical areas, but also permits evaluation of electrode impedance. In the future, automated EEG analysis, including power spectrum analysis, may solve the aforementioned problems.

J. Arens (Galveston) delivered the Annual Lecture in which he discussed the contributions of cardiovascular anesthesia to cardiac surgery. A unique part of this superb presentation was the use of recorded recollections of some of the pioneers in the field, including R. Patrick, who vividly described the drama and humor involved in the preparations for the first repair of a ventriculoseptal defect in a 5.5-year-old girl at the Mayo Clinic in 1955.

The second session was devoted to the pathophysiology of cardiopulmonary bypass (CPB). P. N. Samuelson (Birmingham) presented experimental data which suggested that continued perfusion of the brain at 10°–15°C may cause both structural and functional cerebral damage. "Reperfusion" damage may occur during rewarming and account for some of the organic deficits which have been observed following CPB. Inadequate and uneven rewarming may be the etiology of hypertension, arrhythmias and impaired conglutination seen postoperatively. C. J. Kopriva (New Haven) emphasized that hemodilution prevents hypothermia-induced increases in blood viscosity and therefore facilitates adequate tissue perfusion during hypothermic CPB. J. G. Stone (New York City) reported that a pulsatile flow assist device used during CPB in more than 2,000 procedures was associated with 20 per cent greater coronary graft blood flow, doubling of urinary output, more rapid cooling and rewarming, and a smoother weaning from CPB. No complications have been directly associated with this device.

The first day's activities concluded with the presentation of free papers. T. Behrenbeck (Rochester, Minnesota) evaluated the effects of halothane on regional wall mechanics of the ischemic canine heart. The rate of peak systolic wall thinning in the ischemic area was not significantly different at 0.5 MAC from that at 1.0 MAC halothane. M. Nugent (Rochester) examined the possibility that anesthetics might ameliorate functional deterioration from global ischemia. No significant differences in protection of postsischemic ventricular function was observed between halothane, morphine, or pentobarbital anesthesia.

The second day's activities were oriented to new and controversial areas in cardiovascular anesthesia. S. Slogoff (Houston) reported that almost 50 per cent of deaths following carotid artery surgery are attributable to perioperative myocardial infarction. Clinical data (51 patients) have shown that combined (simultaneous coronary and carotid artery bypass surgery) rather than staged procedures can reduce morbidity and mortality of these procedures. P. G. Barash (New Haven) discussed the limitations of indirect indices of myocardial oxygen consumption (rate pressure product) in clinical practice. He emphasized the differing effects of increases in heart rate and blood pressure of MVO₂. Increases in heart rate are associated with: 1) a decreased diastolic filling time; 2) relative increase in the duration of systole; 3) increase in tension developed per minute; and 4) augmented inotropic state. In contrast, increases in blood pressure are associated with increased coronary blood flow and a possible increased perfusion beyond stenotic areas of the coronary circulation. C. L. Lake (Charlottesville) reported that atrial cannulation prior to CPB requires careful observation by the anesthesiologist since difficulties in this procedure can include air embolus and malposition of the cannulas with obstruction of venous return. The advantages of a new single atrial cannula are: single atrial cannulation; single atrial incision; decreased time of cannulation; and easier insertion. However, the disadvantages still include difficulty in obtaining an optimal position for uniform unobstructed venous drainage, and it may also interfere with cardioplegia techniques.

The free scientific papers again reflected a wide range of interests. C. M. Christian II (Durham) reported on a new index of contractility (Eo) which relates pressure/length ratios. In the physiologic range, Eo is independent of preload and afterload. Halothane and enflurane produced dose-dependent decreases in Eo, while fentanyl did not. M. Hilberman (Palo Alto) presented data comparing the hemodynamic and renal effects of dopamine and dobutamine. Under similar systemic hemodynamic conditions, dopamine and dobutamine have similar effects on glomerular filtration rate and renal hemodynamics. How-
ever, dopamine causes a significantly greater diuresis and naturesis and thus, was superior in the patient with LV dysfunction following cardiac surgery. This effect is hypothesized to be caused by a tubular mechanism independent of renovascular effects. C. R. Noback stated that prostacyclin (PGI₂) is a potent vasodilator which may be useful not only as a platelet preserver, but also as a means of controlling intra-bypass hypertension. He observed an increase in cardiac index (59 per cent), and decrease in systemic vascular resistance (49 per cent) and mean arterial pressure (14 per cent) in six patients; four of the six patients required methoxamine to attain pre-infusion blood pressure. Two papers were presented that discussed K⁺ therapy in cardiac surgery. E. E. Butner (Birmingham) examined the role of serum K⁺ during reperfusion and its relation to the type of cardiac activity spontaneously resumed by the ventricle. Patients (n = 24) with significantly higher serum K⁺ during reperfusion resumed spontaneous cardiac activity more readily than patients (n = 27) with lower serum K⁺ who tended to fibrillate and required electrical conversion to a sinus rhythm. M. W. Allard (Loma Linda) reported the effects of omitting intra- and postoperative supplementary potassium (K⁺). Despite continued diuresis postoperatively (and no further K⁺ replacement), K⁺ continued to rise to the control concentration. ECG showed no signs of hypokalemia, and spontaneous cardioversion was observed after CPB.

J. G. Reves (Birmingham) opened the session on new drugs with an update on the topic of calcium (Ca⁺²) blockers. This family of drugs which include nifedipine, lidoflazine, and verapamil, blocks influx of Ca⁺² into muscle cell and thus effect the plateau portion of phase 2 of the cardiac action potential. Some Ca⁺² blockers (e.g., verapamil) have a pronounced effect on atrioventricular conduction and have therapeutic importance in the management of supraventricular tachycardia. G. P. Gravelle (Winston-Salem) stated that beta-adrenergic blocking agents are only partial selectivity. Cardioselective beta blockers (e.g., metaprolol) in low doses may be beneficial to the patient with chronic obstructive pulmonary disease or brittle diabetes since the side effects of bronchoconstriction and hypoglycemia are reduced.

The concluding session covered complications, interesting cases, and scientific papers. M. A. Ghattas (Cleveland) reported the results of a prospective study evaluating neurologic complications in 418 patients undergoing coronary artery surgery. Central nervous system (CNS) deficits were seen in 16 per cent (2 per cent had significant functional impairment). Neurologic complications were focal in 37 per cent of patients with deficits, the remainder had diffuse encephalopathies. Half the deaths (1.7 per cent of the entire group) were associated with severe CNS deficit. Peripheral neuropathies involving the brachial plexus were seen in 13 per cent of patients. In 69 per cent of patients with brachial plexus lesion, the side of the lesion correlated with the site of internal jugular catheterization. M. B. Howie (Columbus) stated on the basis of experimental work in animals and echocardiographic and gated scintiscan studies in patients, that ventricular "disparity" may be a source of left ventricular failure immediately after cardiopulmonary bypass. In severe pulmonary artery hypertension, the right ventricle progressively dilates, causing the intraventricular septum to bulge into the LV cavity. This can be associated with a decreased compliance and decreased LV peak systolic pressure. Treating the right ventricular failure without decreasing pulmonary vascular resistance will not improve the situation.

The next meeting will be May 10–18, 1981 at the Sheraton Palace Hotel, San Francisco, California.

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