

## Reports of Scientific Meetings

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### International Conference on Intensive Care of the Newborn

The International Conference on Intensive Care of the Newborn met in Banff, August 28–September 1, 1973. This organization, which might be called a “non-society,” was born in London in September 1968, during the Fourth World Congress of Anaesthesiologists. Following a symposium devoted to pediatric intensive care,<sup>1</sup> many of the participants retired to a convenient London pub to discuss mutual interests. From such humble beginnings was formalized the International Conference of Intensive Care of the Newborn.

The following year Professor Alex Minkowski was the host at a conference meeting in Paris. Whereas the meeting in London was attended principally by anesthesiologists, the meeting in Paris was composed largely of neonatologists.<sup>2</sup> The third meeting took place in 1971, on the small island of Stora Korno off the west coast of Sweden. This meeting was restricted to 35 participating anesthesiologists and neonatologists. The results of these last proceedings are now in press.<sup>3</sup>

The 1973 meeting in Banff took place at the Banff School of Fine Arts. The Province of Alberta generously assisted the Canadian hosts. The meeting was conducted in English, with about 40 participants from Canada, the United States, ten European countries, South Africa, and Australia. Many of the papers presented at this meeting will appear in *Critical Care Medicine*.

Although many topics were discussed, those sections of the meeting dealing with respiration were of greatest potential interest to the anesthesiologist. Reports on the follow-up status of children treated in neonatal I.C.U.'s were of marked interest from an ethical point of view, as they attempted to answer the question, “Is this effort and expense worthwhile?” Other papers were stimulating, interesting, and provocative.

Alvar Swensson opened the meeting with a review of the clinical and pathophysiologic aspects of mechanical ventilation. He carefully detailed the consequences of failure to remove the work of breathing from the sick infant. Lack of such support may use 40 per cent of body energy expenditure, and associated hypoxia leads to failure of the cell's sodium pump, with intracellular accumulation of sodium and lactate, loss of catecholamine sensitivity, etc.

Mary Ellen Avery's group from Montreal reported on mechanisms in the control of pulmonary surfactant. She offered preliminary data on an exciting study in progress. Following experimental success with rabbits, pregnant women “at risk” were treated with Ritodrine, a  $\beta_2$  stimulator. Although the series is still small, there was a lower incidence of respiratory distress syndrome in infants of treated mothers compared with controls.

The group from the Hospital for Sick Children in Toronto (Bryan, Olinsky, and Bryan) pointed out that the breathing pattern of the premature infant is similar to that of adult panting. Through this mechanism the premature infant increases residual lung volumes, and this may also be the explanation for the periodic episodes of apnea seen in premature infants.

Monitoring of the neonates is a continuing challenge. N.R.C. Robertson of Oxford described his silver-lead continuously-recording  $\text{Pa}_{\text{O}_2}$  electrode. This electrode is passed via the umbilical artery and is accurate for 36–48 hours, although the equipment has been in continuous clinical use for more than 100 hours in a few patients.

There was also interest in the use of twin nasal cannulas for the administration of continuous positive airway pressure (CPAP) in treatment of the respiratory distress syndrome. Bucci's group, from Rome, reported

good results with this method. However, their complications included two cases of necrosis of the nasal septum before switching to silastic cannulas, and episodes of pneumothorax with death in four of 33 infants. Faranoff and Klaus, of Cleveland, reported increased survival with nasal CPAP compared with the use of the continuous-negative-pressure body box. They emphasized the complication of intraventricular hemorrhage which can be initiated by too-tight neck bands. Swyer's group, in Toronto, compared mask CPAP, nasotracheal tube CPAP, and continuous negative pressure (CNP) in 119 cases of respiratory distress syndrome (RDS). In approximately half the infants treated with mask CPAP and CNP it was necessary to intubate and employ intermittent positive-pressure ventilation (IPPV). There was more than 50 per cent survival in infants weighing less than 1,500 g, and three weighing less than 1,000 g survived.

As noted, intraventricular hemorrhage may be a cause of death in infants treated for RDS. E.D. Burnard, of Sydney, reported his coagulation monitoring system. Fresh frozen plasma concentrate is used when indicated. If disseminated intravascular coagulopathies occur, therapy is with heparin. Mildred Stahlman, of Vanderbilt, pointed out that the same group which develops retrolental fibroplasia is also subject to intraventricular hemorrhage. Dr. Stahlman also presented slides demonstrating the genesis of bronchopulmonary dysplasia as air dissects into and through the pulmonary lymphatic system. Victor Chermick, of Winnipeg, reported that following the introduction of continuous distending pressure (PEEP) to their program of IPPV they halved the incidence of bronchopulmonary dysplasia. Unfortunately, they also doubled the rate of pneumothorax.

The importance of fetal cardiac monitoring was demonstrated by John Driscoll, of Columbia. Apgar scores of 6 or less at 1 minute have dropped from 21 to 14 per cent in the "at-risk" group since the introduction of fetal monitoring. Fetal blood sampling is performed in 20 per cent of the monitored ("at-risk") group.

Pamela Davies, of Hammersmith Hospital,

London, reviewed the neurologic development of infants weighing less than 1,500 g. Prior to 1965 there was a fear of over-feeding these tiny infants. Since then it has been shown that better caloric intake results in better physical development. Temperature maintenance is also important: spastic diplegia occurred in infants with the lowest temperatures. Mildred Stahlman reported that social class made a significant difference in the outcome of her patients. Most important, where she compared these patients with their siblings, she found neurologic development of the ventilator-treated child to equal that of the "normal" sibling.

A prospective study of infants weighing less than 1,500 g, or more than 1,500 g if RDS or cerebral distress is present, is in progress in Lausanne, Switzerland. The investigator, Dr. A. Calame, has suggested that neurologic defects are difficult to predict at the time of hospital discharge. Most permanent defects will probably be apparent at the six-month examination, although all defects found at six months may not be permanent.

Madame Amiel-Tison, of Paris, presented a follow-up report of 100 cases of hyaline membrane disease treated with IPPR. These included 21 cases of bronchopulmonary dysplasia. Neurologic difficulties were numerous. They ranged from squint (11), hearing difficulties (7), seizure disorders (3), and delayed speech (8), to microcephalus (2). Of seven who had severe EEG abnormalities, only one returned to normal. Of eight who had normal EEG's at discharge, one became hydrocephalic. B. Doray, of Montreal, offered a less depressing review. He had 15 patients (six in the 1,500-1,800-g weight range). At 18-month follow-up psychological development was within the normal range, but language development was slow. Doray utilized the negative-pressure body-box technique for ventilation. Outerbridge, of Montreal Children's Hospital, followed up 95 living RDS patients. He found 82 were normal, three hydrocephalic (all less than 1,500-g birth weight), one had a seizure disorder, one was spastic, one was deaf, and seven showed increased tone or hyperactivity. There

were two deaths due to bronchopulmonary dysplasia, and one each from septicemia, total anomalous pulmonary venous return, meningitis, Smith-Lemi-Opitz syndrome, and battering. There was also one case of retrolental fibroplasia and nine cases of squint.

Although there was variation in follow-up results, the trend seemed to indicate that improved fetal monitoring offered a better outlook. Ventilation by nasal cannulas, coagulation monitoring, control of body temperature, and good nutrition increased survival. Certain deaths are inevitable (microcephalus, multiple anomalies, etc.). In those who survive, I.Q.'s may reflect social-class (?) or genetic variables. How far other neurologic and pulmonary deficits can be reduced is unknown.

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2. Minkowski A, Monset-Couchard M, Amiel-Tison C (editors): *Symposium on artificial ventilation*. *Biol Neonate* 16:1-196, 1970
3. Stetson JB, Swyer PR, (editors): *Current Concepts of Neonatal Intensive Care*. St. Louis, Warren H. Green, Inc., 1974

#### Sepsis

**HEPATITIS** From 1968 to 1970, serum hepatitis occurred in 19 of 43 patients in one dialysis unit, and in 15 of 59 staff workers and one wife of a staff worker. From 1970 to 1971, there was one case in 13 patients in the same unit, with no occurrence in staff workers. The altered incidence is attributed to the exclusive use of reconstituted frozen erythrocytes in lieu of whole blood and packed cells, which was introduced in 1970. (*Carr, J.B., DeQuesada, A.M., and Shires, D.L.: Decreased Incidence of Transfusion Hepatitis after Exclusive Transfusion with Reconstituted Frozen Erythrocytes. Ann Intern Med* 78: 693-695, 1973.)  
**ABSTRACTER'S COMMENT:** As the authors note, serum hepatitis (hepatitis B) is transmitted both parenterally and non-parenterally. This report does not exclude the incidence of epidemic non-parenteral transmission of hepatitis between 1968 and 1970.