

Valve Replacement or Repair in Man, J. Clin. Invest. 44: 406 (Mar.) 1965.

PULMONARY SURFACTANT Current evidence indicates that the surface tension of the alveolar lining varies with change in area. The alveoli presumably do not collapse at the end of expiration because of the low surface tension of pulmonary surfactant. The prediction is made that if surface tension is high due to an abnormal surface or if the distending pressure is low, focal atelectasis can be expected. Occasional increase in surface area occurs normally with a deep breath. This variation in respiration apparently is necessary to maintain normal function of pulmonary surfactant. Continued shallow breathing with a low distending pressure leads to damage of the quality of pulmonary surfactant with the eventual result of atelectasis. This atelectasis is not due to airway collapse and does not need to follow the distribution of a bronchus. (Tierney, D. F.: *Pulmonary Surfactant in Health and Disease, Dis. Chest 47: 247 (Mar.) 1965.*)

ACETYLCYSTEINE Clinical response of 16 children with cystic fibrosis treated with acetylcysteine aerosol as measured by changes in vital capacity, blood pH P_{CO_2} , and oxygen saturation indicated that the most severe group had only a short initial response. There was no significant alteration in the basic disease process. A more beneficial response was demonstrated in the less severe group in which a better pulmonary status of the patients was maintained. (Stamm, S. J., and Doctor, J.: *Clinical Evaluation of Acetylcysteine as a Mucolytic Agent in Cystic Fibrosis, Dis. Chest, 47: 414 (Apr.) 1965.*)

PULMONARY EDEMA Pulmonary edema was induced by intravenous infusion of dextran in anesthetized dogs. Surface tension properties were measured on saline extracts of lungs. Pressure-volume relations were determined in excised lobes and compared with normal controls. Dark atelectatic portions of edematous lungs showed significantly increased maximal and minimal surface tension and significantly decreased extract stability index. When edema was induced in degassed, nonventilated lung

and no foaming occurred, surface properties were abnormal, but less so than in lung permitted to foam. Edematous lung lobes showed a significantly reduced expansion index relative to normal lobes. Pulmonary edema leads to regional impairment of pulmonary surface activity, associated with premature alveolar closure. The mechanism of altered surface activity was not explained fully. Foaming was an important, but not essential, factor. (Said, S. I., and others: *Pulmonary Surface Activity in Induced Pulmonary Edema, J. Clin. Invest. 44: 458 (Mar.) 1965.*)

COLLATERAL VENTILATION Collateral ventilation, the passage of respired gases between contiguous segments within a lung lobe, is increased when the tidal volume is increased and the respiratory rate slowed. Histamine reduced collateral ventilation. Serotonin given intravenously produced no changes. Acute surgical ligation of the pulmonary artery branch to the lobe under study sharply reduced collateral ventilation. Acute surgical occlusion of the lobar pulmonary vein reduced collateral ventilation slowly and progressively, with rapid reversal when the occlusion was released. (Call, E. P., and others: *Some Physiologic and Pharmacologic Aspects of Collateral Ventilation, J. Thor. Cardio. Surg. 49: 1015 (June) 1965.*)

EMPHYSEMA Resection or surgical obliteration of large emphysematous bullae affords relief in a high percentage of patients. There must be strict criteria for the choosing of surgical candidates. A large stationary bulla of at least one-third the size of the hemithorax, or an expanding bulla accompanied by increasing dyspnea are the most common indications. Preoperative regimen includes seven days of expectorant therapy and intermittent positive pressure breathing treatments. The most important and informative preoperative procedure is a pulmonary angiograph. (Joannides, M.: *Chronic Obstructive Emphysema, J.A.M.A. 192: 365 (May 3) 1965.*)

PROLONGED APNEA A 70 year old man with jaundice and choledochal carcinoma underwent uneventful ether anesthesia with succinylcholine 160 mg. and *d*-tubocurarine 9 mg.

On the seventh postoperative day a second laparotomy was done for fresh paralytic ileus. Succinylcholine 40 mg. was used 3 times for intubation and opening and closing the peritoneum under ether anesthesia. Subsequent apnea lasted 7½ hours. The patient had been treated with 1 mg. of the anticholinesterase DFP (diisopropyl fluorophosphate) and 7.5 mg. of prostigmine for paralytic ileus one day prior to the second operation. (*Yonezawa, T., and others: Prolonged Apnea Caused by SCC in a Patient Being Treated for Paralytic Ileus with Anticholinesterase (Japanese), Jap. J. Anaesthesiol. 13: 1008, 1964.*)

ACUTE ASTHMA A significant number of patients do not respond to prompt treatment of bronchial asthma with epinephrine or other bronchodilators. When this occurs the respiratory acidosis that is refractory to the usual forms of therapy appears to be relieved by initial correction of acidemia with sodium bicarbonate, followed by the bronchodilator drugs. This form of therapy occasionally results in transient metabolic alkalosis when the patient is in a state of chronic chloride depletion. (*Mithoefer, J. C., Runser, R. H., and Karetzky, M. S.: Use of Sodium Bicarbonate in the Treatment of Acute Bronchial Asthma, New Engl. J. Med. 272: 1200 (June) 1965.*)

KEROSENE PNEUMONITIS Survival studies were conducted following the instillation of kerosene into the tracheas of rats. Comparison was made between controls and kerosene test animals during and after the use of oxygen at high pressure. One hundred per cent oxygen at three atmospheres prolonged survival, although it did not increase the total survival rate. A significant improvement in survival time was associated with the administration of 100 per cent oxygen at four atmospheres. Complications of oxygen toxicity require further evaluation before a safe clinical regimen can be established. (*Schwartz, S. I., and others: Effects of Drugs and Hyperbaric Oxygen Environment on Experimental Kerosene Pneumonitis, Dis. Chest 47: 353 (Apr.) 1965.*)

OBESITY AND RESPIRATORY FUNCTION Spirometric studies were performed

on 30 obese patients without pulmonary disease and 24 obese patients with various respiratory diseases. The first group showed no change of ventilation. Vital capacity, residual volume, timed vital capacity and maximal breathing capacity were within normal limits. There were abnormal values in two parameters: marked diminution of the expiratory reserve volume and a tendency to hyperventilation of nearly 150 per cent of normal. Since pulmonary function studies performed in the standing position showed the expiratory reserve volume to be near normal it was assumed that the diminution of the expiratory reserve volume was due to mechanical factors, whereas the hyperventilation was thought to be of metabolic origin. The second group of obese patients included cases of obstructive emphysema, chronic asthmatic bronchitis, bronchiectasis, etc. Vital capacity was within normal limits, but the residual volume was definitely increased. Timed vital capacity was decreased and maximal breathing capacity averaged only 62 per cent of the predicted normal. In this group the expiratory reserve volume was likewise strikingly small resulting in a decreased resting expiratory level. A definite tendency toward hyperventilation (nearly 150 per cent of normal) occurred in this group as in group I. Only three obese individuals showed definite diminution of ventilation. None had clinical or radiological evidence of pulmonary disease. (*Krackhardt, H., and Krackhardt, W.: Pulmonary Function and Adiposity (German), Z. Klin. Med. 158: 337 (Apr.) 1965.*)

CARDIAC ARREST A retrospective study of the case histories of 20 infants and children who sustained cardiac arrest during or after anesthesia and operation indicated signs of respiratory embarrassment in three-fifths of the patients prior to cardiac arrest. Pulmonary atelectasis was a common postmortem finding. Other predisposing causes of arrest were fever, anemia, and debility due to disease or previous operation. Of the 20 patients, 8 were successfully resuscitated, 2 by external closed chest massage and 2 by thumping over the precordium. Resuscitation by means of direct cardiac massage was less successful. Three of the 4 children resuscitated by artificial respiration and direct cardiac massage sustained perma-