

# Literature Briefs

C. Philip Larson, Jr., M.D., Editor

Literature Briefs were submitted by Drs. C. M. Ballinger, D. R. Bucchel, R. B. Clark, M. I. Gold, D. H. Morrow, P. H. Sechzer, and A. D. Sessler. Briefs appearing elsewhere in this issue are part of this column.

## Respiration

**AIR VISCOSITY** Viscosities of moist and dry air were measured at four temperatures to determine variations due to changes in water vapor content. Paired measurements of volumetric rates of air flow and pressure decreases along a tube were made. Coefficients of viscosity were calculated, laminar flow being assured by limiting maximal Reynolds numbers. The relationship between viscosity and water vapor content was approximately linear. The increase in the work load of breathing due to an increase in humidity, and hence viscosity, of air appears to be very small compared with the total work of breathing. (Roy, P. D., Josenhans, W. T., and Miller, C. F.: *Variations in Air Viscosity due to Changes in Water Vapor Pressure for Isothermal Conditions at Temperatures below 40° C.*, *Canad. J. Physiol. Pharmacol.* 48: 50 (Jan.) 1970.) **ABSTRACTER'S COMMENT:** Josenhans (Respiration 26: 435, 1969) has shown that airway resistance is increased with high relative humidity and many patients experience difficulty in breathing in humid environments.

**TRACHEOBRONCHIAL SUCTION** Various techniques of tracheobronchial suction were evaluated at the conclusion of surgical operations in 12 anesthetized patients who had no known anatomic tracheobronchial abnormalities. Either a straight catheter or a curved-tip rubber catheter filled with radiopaque solution was passed as far as it would go down the endotracheal tube by one of the following techniques: a) straight catheter, with the patient's head straight up in the midline position, head turned to the right maximally (for left-lung suction), and head turned to

left maximally (for right-lung suction); b) curved-tip catheter, with the patient's head straight up and tip turned to the right (for right-lung suction), head straight up and tip turned to the left (for left-lung suction), head turned to the right and tip turned to the left (for left-lung suction) and head turned to the left and tip turned to the right (for right-lung suction). After each insertion the position of the catheter was determined by x-ray. It was found that: a) a straight catheter seldom entered the left bronchus regardless of the position of the head (three times in 35 attempts); b) a curved-tip catheter entered the right bronchus more often than the left regardless of head position, though it could be guided to the left bronchus more often (14 times in 47 attempts) than a straight catheter. (Kirimli, B., King, J. E., and Pfaeffle, H. H.: *Evaluation of Tracheobronchial Suction Techniques*, *J. Thorac. Cardiovasc. Surg.* 59: 340 (March) 1970.)

**OXYGEN IN HYPERTHYROIDISM** In each of two subjects with hyperthyroidism release of oxygen from blood was increased and concentrations of 2,3-diphosphoglycerate in the erythrocytes elevated. This organic phosphate is the primary regulator of oxygen release from hemoglobin in this and other clinical conditions where imbalances of oxygen supply and demand exist. (Miller, W. W., and others: *Oxygen Relasing Factor in Hyperthyroidism*, *J.A.M.A.* 211: 1824 (March) 1970.)

**HYPOXIC RESPONSE** The ventilatory responses to acute hypoxia produced by transient nitrogen inhalation in patients with cyanotic congenital heart disease, patients with noncyanotic heart disease, and normal subjects were compared. In two of six cyanotic patients, the ventilatory responses were reassessed after the cardiac defects were repaired. Ventilatory responses were quantitated by relating maximum increase in venti-