Literature Briefs

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Briefs were submitted by Drs. J. Adriani, C. M. Ballinger, H. S. Davis, D. Duncalf, M. Helrich, G. Hohman, J. J. Jacoby, F. C. McPartland, W. H. Mannheimer, J. W. Pender, R. E. Ponath, A. D. Randall, H. S. Roe and N. Rosenbaum. Abstracts of Japanese and Russion articles were prepared by Exerpta Medical Foundation. Briefs appearing elsewhere in this issue are part of this column.

BRONCHIAL OBSTRUCTION In dogs with a unilateral bronchial constriction up to 75 per cent of the initial cross-sectional area, a redistribution of delivered tidal volume takes place when a volume controlled respirator is used for ventilation. This is due to a static phase which occurs at the end of flow, which allows the respirator to compensate for the difference in time constants between the obstructed and unobstructed lungs. Alveolar ventilation decreases with increasing respiratory frequency, but the obstruction per se does not have any effect on it. (*Sabar, E. F., and others: Gas Distribution Studies in Experimental Unilateral Bronchial Constriction Using an Accelerating-Flow, Volume-Controlled Respirator, Surgery 58: 713 (Oct.) 1965.*)

AIRWAY OBSTRUCTION Obstruction to air flow in emphysema and chronic bronchitis was studied in a series of 9 patients, employing measurements of bronchial pressure, lung volume, flow and esophageal pressure during a series of vital capacity breaths. Radiopaque material was then instilled into the tracheobronchial tree and cinefluorographic films were taken during forced expiration and cough. There are two levels of obstruction in emphysema and bronchitis. One is in the small airways, is relatively fixed, present on both inspiration and expiration, and little affected by changes in lung volume. The other type of obstruction is in the large airways, is highly variable, present only on expiration, and markedly affected by changes in lung volume. In 5 patients, expiratory flow limitation was due to the large airway obstruction; in 2, it was due to obstruction in the small airways; and in 2 others, both large and small airways appeared to limit air flow. The relative severity of the two lesions seems to determine which obstruction is flow limiting. (*Mackklem, P. T., Fraser, R. G., and Brown, W. G.: Bronchial Pressure Measurements in Emphysema and Bronchitis, J. Clin. Invest. 44: 897 (June) 1965.*)

PULMONARY MECHANICS In the normal lung there is no significant difference in compliance between the upper and lower lobe, even though intrathoracic pressure swings are greater about the lower lobe than about the upper lobe. These intrathoracic differences between upper and lower lobes increase with lung volume. In older patients, with and without mild obstructive airway disease, the whole lung compliance, and particularly upper lobe compliance, is greater than in healthy young subjects. Patients with moderate to severe obstructive airway disease have more compliant lungs than healthy subjects, and upper lobe compliance is significantly greater than lower lobe compliance. Homogeneous intrathoracic pressures are found in patients with obstructive disease at all lung volumes. Older patients with pulmonary fibrosis have lobar compliance and intrathoracic pressure differences similar to those in younger healthy patients. In the presence of obstructive airway disease, the lung or lobe with pulmonary fibrosis may have normal compliance, but it has homogeneous intrathoracic pressures. In pleural disease, differences exist in intrathoracic pressure between all points measured within the chest. (*Martin, C. J. Young, A. C., and Ishikawa, K.: Regional Lung Mechanics in Pulmonary Disease, J. Clin. Invest. 44: 906 (June) 1965.*)

PULMONARY SHUNTS In normal man the arterial oxygen tension during breathing of 100 per cent oxygen exceeds 600 mm. of