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Literature Briefs

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Literature Briefs were submitted by Drs. R. D. Bastron, R. B. Clark, L. H. Cronau, B. C. Dalton, J. R. Harp, H. Rackow, G. H. Rockwell, and E. Salanitre. Briefs appearing elsewhere in this issue are part of this column.

Circulation

MYOCARDIAL MORPHOMETRY Mean muscle-fiber diameters and numbers of fibers per unit area were determined in histologic sections from 65 human hearts, by optically projecting the sections at 500× to allow for accurate mensuration. In normal hearts, the mean diameter of the left ventricular fibers (LVF) was significantly greater than that of right ventricular fibers (RVF). Fiber diameter correlated well with wet and dry ventricular weight.

Fiber diameter increased in a predictable manner in the presence of gross myocardial hypertrophy. The absolute increase in fiber diameter was greater in right (RVH) than in left (LVH) ventricular hypertrophy.

In 78 hearts from patients with chronic obstructive pulmonary disease and RVH, mean RVF diameter was always greater than mean LVF diameter. Myocardial water and phospholipid content were normal (83 per cent of the total mass). Biventricular hypertrophy, diagnosed clinically in 20 patients, was documented by histologic examination in only five. Left ventricular dilation was present in the remainder. The degree of increase in RVF diameter correlated significantly ($0.01 < P < 0.02$) with the presence of antemortem hypoxemia, but did not correlate with an increased antemortem hematocrit or the presence of hypercarbia. (*Ishikawa, S., and others: Functional Morphometry and Myocardial Fibers in Cor Pulmonale, Am. Rev. Resp. Dis. 105: 358–367, 1972.*) ABSTRACTER'S COMMENT: Analysis of myocardial changes in patients with chronic obstructive pulmonary disease has been limited by the unreliability of simple techniques for determining early ventricular hypertrophy. This method allows accurate quantitation of ventricular changes, and provides a useful tool for the evaluation of ventricular adaptive responses to cardiac and pulmonary disease.

Respiration

MEDIASTINAL SHIFT AND AIRWAY OBSTRUCTION This is a case report of an asymptomatic 6½-year-old boy with large cystic cavities in the right lung and pectus excavatum, who had a right pneumonectomy, followed in three months by repair of the pectus deformity. Five months after the second operation, dyspnea developed, with a mediastinal shift to the right. Two months later, a severe upper respiratory infection, with severe expiratory obstruction and compression of the left mainstem bronchus, occurred. An emergency thoracotomy was done. The left lung was emphysematous and the heart was entirely in the right chest. Moving the left pulmonary artery anteriorly relieved the obstruction. Postoperatively, the boy's condition improved, but after three weeks progressive expiratory obstruction recurred. Three months after the previous operation, with another severe upper respiratory infection, severe expiratory obstruction recurred and another emergency thoracotomy was performed. The heart was again in the right chest. A polyethylene bag filled with Lucite balls was placed in the right chest, pushing the mediastinum to the midline. The child has been asymptomatic for six months postoperatively. Unilateral agenesis of the lung presents the same problem and can be treated in the same way. Mediastinal shift is of greater magnitude with right than with left lung agenesis, and has a higher mortality rate. (*Adams, H. D., and others: Severe Airway Obstruction Caused by Mediastinal Displacement after Right Pneumonectomy in a Child, J. Thorac. Cardiovasc. Surg. 63: 534–539, 1972.*)