Pulmonary Edema in Cardiac Surgery

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OUR clinical experience of pulmonary edema in cardiac surgery is summarized in the abstract which you have. I would like to discuss today about the inducing factors of this deliterious complication particularly regarding elevated pulmonary arterial pressure.

In an experimental study, the pulmonary arterial pressure was elevated by perfusion technique and the incidence of the pulmonary edema was investigated. The incidence was 14.3% when the pulmonary pressure was raised to 20 to 25 mm.Hg and 78.3% when the pressure was elevated up to 40 to 50 mm.Hg.

Furthermore, when the animal was pre-disposed with artificially created mitral stenosis, the incidence increased to 75% even when the pulmonary arterial pressure was only 20 to 30 mm.Hg. Blood transfusion, cerebral embolism, hypoxia and intravenous administration of adrenalin were all proved to cause the pulmonary edema with much higher incidence in mitral stenosis dog than in normal dog. These results may indicate that the elevation of the pulmonary arterial pressure is an inducing factor of pulmonary edema.

In the following experiment, a permeability of the capillary membranes of the lung was investigated upon the changes in the pulmonary arterial pressure. Radioactive phosphate, P³², was employed as an indicator. The elevation of the pulmonary pressure resulted in the increased permeability of the capillary membranes. In the series of the experiments mentioned, an preventive effect of hesperidine, a vitamine P product, was also evaluated. The results of this study suggested an advantageous effect of vitamine P upon decreasing the incidence of the pulmonary edema.

In summary, the elevation of the pulmonary arterial pressure may cause the increasing permeability of the capillary membranes of the lung and induce pulmonary edema. Mitral stenosis and A.S.D. patients may be predisposed with such manner. Vitamine P has been employed clinically with satisfactory results on the prevention of the pulmonary edema.