

Title: Reexpansion Pulmonary Edema: Regional vs. Global Forces

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Abstract:

Rapid reexpansion of a collapsed lung after pleurocentesis may lead to pulmonary edema. The risk of this occurring after evacuation of pleural effusion depends on the amount of fluid in the pleural space, the duration of collapse, and the rapidity of lung reexpansion. Sudden increase in intrapleural negative pressure is thought to be the major pathophysiologic force in this setting. We describe here a liver transplant patient who developed severe pulmonary edema intraoperatively after her hydrothorax had been drained immediately after anesthesia induction. Severe hemodynamic instability and metabolic abnormality also developed at that time, which co-incided with liver reperfusion. Her pulmonary edema resolved postoperatively after resuscitation with fluid and blood products, and mechanical ventilation. Patient recovered with no pulmonary or neurological sequelae. We postulate that there may exist a global force that augments the formation of reexpansion pulmonary edema, and changes in negative pleural pressure play a less important role under positive pressure ventilation. Bilateral nature of the pulmonary edema also suggests that global forces such as plasma oncotic pressure, systemic or pulmonary diffusible factors, transbroncheal spread or hypoxic lung injury may be involved.