lungs are re-expanded rapidly, it is seen with short duration collapse and re-expansion without suction (in 15 of 47 cases available for assessment). Most cases were following pneumothoraces; 7 following effusion drainage. The volumes were between 1000 ml and 4500 ml.

Laws et al. [13] and Antunes et al. [14] documented the BTS’s advice on the evacuation of pneumothoraces and pleural effusions. The former says ‘good practice suggests that no more than about 1.5 l should be drained at one time...’ There is certainly evidence at thoracoscopy that much larger volumes of fluid can be safely drained. The latter paper notes that, ‘caution should be taken if removing >1.5 l on a single occasion’. There are cases of REPO occurring with <1.5 l, which may be related to the negative intrapleural pressure, the amount of time that the lung has been down and the age of the patients. Caution – for example in avoiding high intrapleural pressures – should be applied irrespective of the amount of fluid drained, with vigilance to the development of any respiratory symptoms. If no symptoms occur, then there is little good evidence to prohibit draining an effusion to dryness.

7. Clinical bottom line

REPO does occur following re-expansion of a lung in pneumothorax and pleural effusion. The incidence of REPO following pneumothorax and effusion is between 0 and 1% in most studies. The BTS guidelines suggest <1.5 l pleural fluid should be drained at one time. Provided no respiratory symptoms occur it is not unreasonable to drain larger volumes to dryness; caution should be taken to avoid high negative intrapleural pressures. Patients who appear to be at higher risk, which may warrant more gradual evacuation, are: those who have had large pneumothoraces; young patients; patients in whom the lung has been down >7 days; and possibly those who have >3 l of pleural fluid drained.

References


eComment: Earliest symptom of re-expansion pulmonary oedema

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Congratulations to the authors for raising and clearing a lot of air surrounding re-expansion pulmonary oedema (REPE) [1]. Re-expansion pulmonary oedema is a distinct entity as is proved in this article. Its incidence is definitely much more common than hitherto believed. If looked for specifically, a subtle change in lucency of radiographs can frequently be picked up in post-drainage skiagram.

In my experience, the longer the duration of pneumothorax or effusion, the greater the chances of REPE. Age of the patient or pre-existing lung pathology have not been found to have linear correlation with REPE.

While draining pneumothorax or effusion, I rely on a sudden bout of cough as the warning bell of impending REPE. At the first cough, I would clamp the chest catheter and wait for a few minutes and then drain further. If the cough persists, chest catheter is left clamped for 30 min to 1 h.

Keeping these things in mind, most of REPE can be avoided or at least its severity reduced.

Reference


eComment: Re-expansion pulmonary oedema: is its prevention possible?

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Re-expansion pulmonary oedema (REPO) constitutes a non rare complication with many not yet elucidating causative factors. As it is reported by your review [1], as well as by other studies [2, 3], data concerning the incidence, predisposing factors and mortality rate are controversial. In fact, the average incidence of this syndrome should be much higher than 1% mentioned in your article.

All of us have often observed the abrupt appearance of gradually increasing dyspnea, during the massive drainage (>1000 ml) of pleural effusion. However, the dyspnea is eliminated if we interrupt the drainage for 15–20 min. On the contrary, the non-stop drainage might lead to the complete appearance of the syndrome, increasing its real incidence. We consider as the more possible explanation of this syndrome, the hypothesis of ischemia/reperfusion injury. In case of massive pleural effusion, a notable segment of lung parenchyma is compressed and therefore becomes ischemic. The sudden
re-expansion of the parenchyma due to the massive drainage, leads to the reperfusion injury of the collapsed lung which contributes to a massive production of reactive oxygen species (ROS). A ROS activating the «cascade» of ischemia/reperfusion injury, severely impair cell membranes and simultaneously increase the permeability of the vessel wall. As a result, macro-molecules extravasate into alveolar space [4, 5]. There is no doubt, that there are also additional factors such as amount of effusion, time of collapse, age of the patient, the oxidative stress etc., contributing to the complete appearance of the syndrome. The acceptance of this hypothesis, led us to the adoption of the following strategy: in every patient with massive pleural effusion, we suggest the administration of 100 mg Nimesulide per os (Mesulid®. Boehringer – Ingelheim, Germany), 1 h before the drainage. There is not enough evidence to support the protective action of this agent. However, till this time, none of the 35 patients treated with the above medication underwent REPO or REPO-like reaction during the drainage.

References