

POSTER PRESENTATION

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Radiological signs of pulmonary congestion do not predict failed spontaneous breathing trial

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Introduction

Both delayed and premature liberation from mechanical ventilation (MV) are associated with increased morbimortality. Positive pressure ventilation exerts beneficial effects in individuals with cardiogenic pulmonary edema; inspiratory fall in intra-thoracic pressure during spontaneous breathing trial (SBT), in its turn, may precipitate cardiac

dysfunction through abrupt increase in venous return and in left ventricular afterload.

Objectives

Determine the impact of radiological signs of pulmonary congestion prior to submission to SBT on weaning outcomes in a mixed ICU population.

Table 1. Numerical score of radiological signs of lung edema. The severity of lung congestion or edema according to radiological score (RS) criteria was determined as follows: RS of 0–1 for a normal chest X-ray, 2–4 for interstitial lung congestion, and RS values of 5–6, 7–8 and 9–10 signified mild, moderate and severe alveolar edemas, respectively.

Sign	Value
Lung vessels redistribution—no	0
Lung vessels redistribution—yes	1
Width of cardiac silhouette (60%)—no	0
Width of cardiac silhouette (60%)—yes	1
Peribronchial cuffing—no	0
Peribronchial cuffing—yes	1
New pleural effusion—no	0
New pleural effusion - unilateral	1
New pleural effusion - bilateral	2
Kerley A orland B orland C line :	
None	0
Uncertain	1
Definite	2
No lung opacity	0
Lung opacity	1
Lung ground-glass opacity	2
Lung batwing edema	3

Figure 1

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Methods

A prospective, observational study in an adult medical-surgical ICU. All enrolled patients met eligibility criteria for weaning from MV. Traqueostomized subjects were excluded. The primary end point was SBT failure, defined as inability to tolerate a T-piece trial during 30 to 120 minutes, in which case patient was not extubated. An attending radiologist applied a radiological score (RS)

Results

There was a total of 170 SBTs procedures; SBT failure eventuated in 28 (16.4%). Nineteen patients (11.2%) had systolic heart failure (ejection fraction < 35%), 4 (2.4%) had chronic obstructive pulmonary disease (COPD) and 31 (18.2%) had been intubated due to respiratory sepsis. One hundred thirty-three patients (78.3%) were extubated at first attempt. RS was similar between SBT failure and success subjects (median 3 [2 - 4] vs 3 [2 - 4], $p = 0.146$), which means only interstitial lung congestion for both groups. Receiver operating characteristic (ROC) curves analysis demonstrated fair accuracy (area under curve [AUC] = 0.58) of CXRs prior to T-piece trial for discrimination between SBT failure and success individuals. There was no correlation between fluid balance in the 48 hours preceding SBT and RS ($\rho = -0.13$).

Conclusions

Radiological findings of pulmonary congestion should not delay SBT indication since they did not predict greater probability of SBT failure in medical-surgical critically ill population.

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1. Shochat M, Shotan A, Trachtengerts V, Blondheim DS, Kazatsker M, Gurovich V, Asif A, Shochat I, Rozenman Y, Meisel SR: **A novel radiological score to assess lung fluid content during evolving acute heartfailure in the course of acute myocardial infarction.** *Acute Card Care* 2011, **13**(2):81-6, Jun.

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