ULTRASOUND ASSESSMENT OF LUNG AERATION LOSS DURING A SUCCESSFUL WEANING TRIAL PREDICTS POSTEXTUBATION DISTRESS

Thesis

*Submitted for partial fulfillment of the master degree of **Critical Care***

By:

Mahmoud Ahmed Mosa Mohamed
(M. B., B.Ch)

Supervised by

Prof. Dr. Tarek Samir El gohary
Professor of Critical Care Medicine
Faculty of Medicine, Cairo University

Prof. Dr. Khaled Mahmoud Kamel
Professor of Chest Diseases
Faculty of Medicine, Cairo University

Dr. Wael Samy Gamal
Lecturer of Critical Care Medicine
Faculty of Medicine, Cairo University

Faculty of Medicine
Cairo University

2015

Abstract

Ultrasound assessment of lung aeration loss during a successful weaning trial predicts postextubation distress.

Aim of work: To asses whether lung derecruitment during spontaneous breathing trial and postextubation assessed by lung ultrasound is predictive of postextubation distress.

Patients & methods:

Fifty patients on invasive mechanical ventilation fulfilling criteria of weaning from mechanical ventilation were shifted to SBT. Lung ultrasound score before and at the end of a 60-min spontaneous breathing trial and 4 hrs after extubation was calculated to quantify lung aeration.

Results:

Mean age was 56.66 ±6.36, 56% were males. Twelve patients failed the spontaneous breathing trial, 38 were extubated. 24 were definitively weaned (postextubation success group), and 14 suffered from postextubation distress. Loss of lung aeration at end of spontaneous breathing trial was marked in patients with postextubation distress, and increased from (11.57±2.24) to (14.93±2.23). ROC curve has an excellent predictive value for postextubation distress with area under the curve (AUC) 0.972 & cutoff value LUS ≥11 at the end of spontaneous breathing trial, with asensitivity of 100% & a specificity of 88%. ROC curve for difference in LUS between basal &end of trial showed an excellent predictive value for postextubation distress with sensitivity 100% & specificity 83% at cutoff value ≥ 3 (area under the curve = 0.91).

Conclusion: Lung ultrasound determination of aeration changes during a successful spontaneous breathing trial accurately predict postextubation distress

Key Words: lung ultrasound; mechanical ventilation; postextubation distress; weaning.