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| **Correlation between respiratory physiotherapy treatment and ultrasound detected lung reaeration** |
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| **Introduction/Aim:** The purpose of this study was to determine the relationship between the lung reaeration score and respiratory physiotherapy treatment modalities delivered to mechanically ventilated patients with acute lobar atelectasis. Physiotherapists use a range of respiratory treatment techniques to treat acute lobar atelectasis in an intensive care (ICU) mechanically ventilated population, however, current outcome measures of lung aeration and reaeration lack diagnostic accuracy. Lung ultrasound (LUS) has high diagnostic accuracy for diagnosis of lung and pleural pathology. It is an innovative tool for physiotherapists and has potential to monitor lung aeration in ICU patients in response to physiotherapy intervention.  **Method:** LUS reaeration scores of mechanically ventilated adult patients with acute lobar atelectasis in ICU were collected in this prospective cohort study, conducted in a tertiary teaching hospital in Sydney. Participants received respiratory physiotherapy treatment and underwent LUS imaging in a semi-recumbent position before and after physiotherapy treatment delivery, using a systematic scanning protocol. LUS aeration patterns before and after physiotherapy treatment delivery were compared to calculate a reaeration score, reflecting the amount of gain or loss of lung aeration.  **Results:** 43 participants with acute lobar atelectasis were recruited. The mean improvement in lung aeration was 3.95 (95%CI 1.77,6.14). There was no statistically significant relationship between the number of treatment modalities received and the lung reaeration score (F(3,39)=0.51, p=0.679) or between participants that received positioning (F(1,41)=0.01, *p*=0.942) or percussions/vibrations/shaking (F(1,41)=0.26, *p*=0.610) when compared with the lung reaeration score.  **Conclusion:** This study demonstrates LUS as a feasible tool to measure lung aeration and is able to measure change in lung aeration in a mechanically ventilated population in response toa range of respiratory physiotherapy treatment modalities for acute lobar atelectasis. Future research should focus on measuring effectiveness of specific physiotherapy treatment modalities using LUS as an outcome measure.  **Key Words:** POCUS, respiratory physiotherapy, lung ultrasound  **Grant Support:** NSLHD Grant ($5000) |