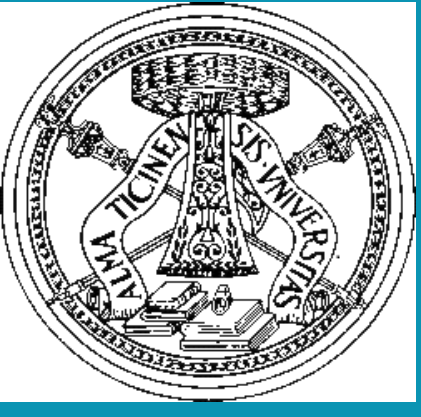




Lung ultrasound score after 7 days of ICU treatment but not at ICU admission predicts COVID-19 patients' outcome

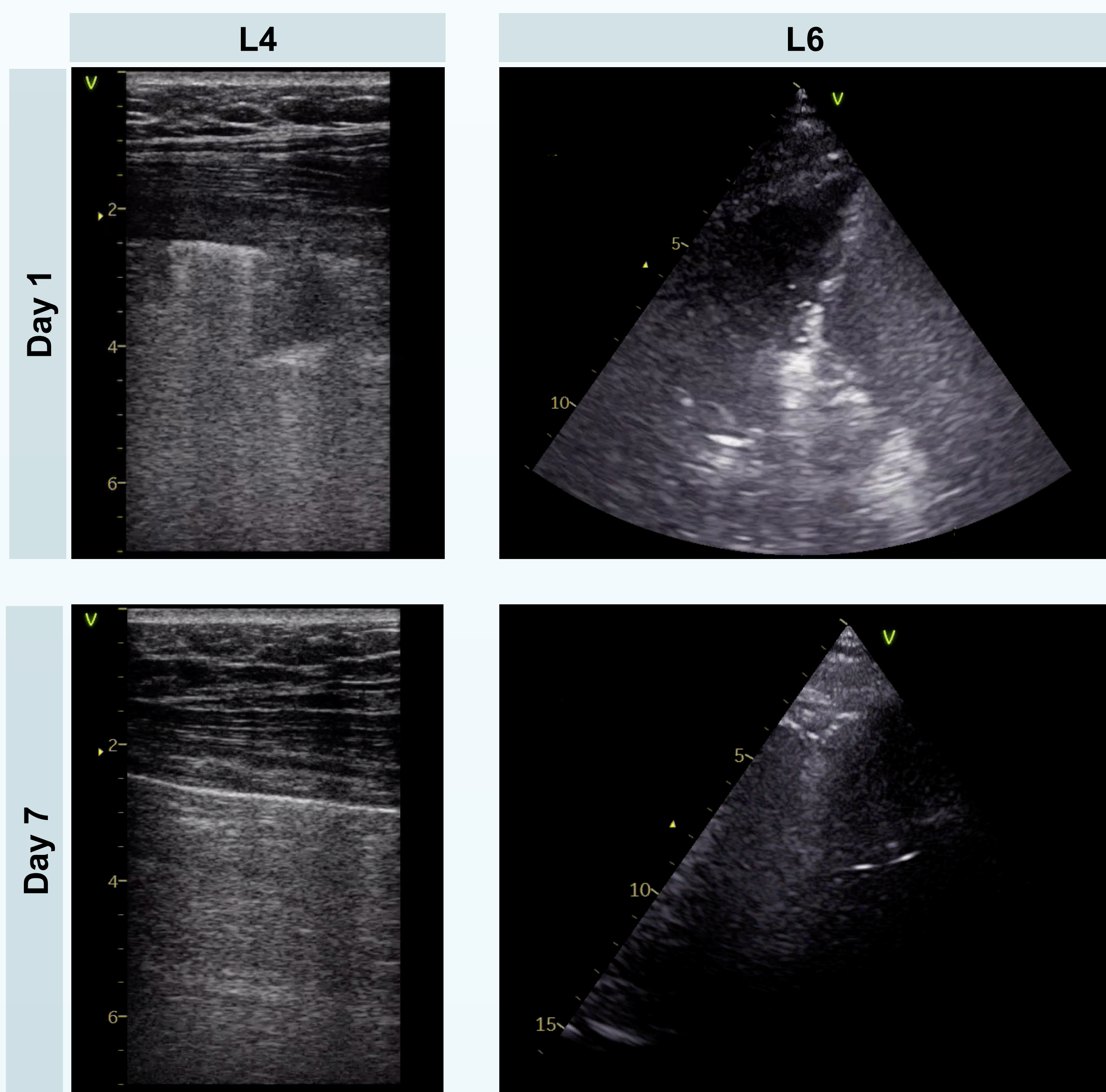


Stella A, Colombo A, Pariani E, Villa CL, Bettini G, Bonaiti S, Daverio F, Cavagnino M, Siano GM, Pregnotato S, Salve G, Orlando A, Arisi E, Pozzi M, Tavazzi G, Mojoli F, Mongodi S

Anaesthesia and Intensive Care, IRCCS Policlinico San Matteo Foundation, University of Pavia, Pavia, Italy

Introduction

Lung ultrasound (LUS) is a useful tool in the management of ARDS; a lung ultrasound score can be computed to quantify lung loss of aeration and monitor response to treatment [1]. It has been applied to predict the need of mechanical ventilation in COVID-19 patients [2]. We systematically monitored COVID-19 under mechanical ventilation.



Methods

Retrospective monocenter study. LUS was performed daily computing the lung ultrasound score in 12 standard thoracic areas according to the visualized pattern as previously described [1-3]. Median [IQR] range were used for quantitative variables, number (percentages) for categorical ones. Comparisons among the categorical variables were evaluated with Pearson chi-square/Fisher's exact test; Wilcoxon/Mann-Whitney U-test was used for quantitative variables. P-value ≤ 0.05 was considered significant (two-sided). ROC curves analysis was performed to study ability of LUS score, both at admission and at day 7, to predict mortality in ICU.

Results

We present preliminary data on 18 patients (male 75.0%; age 60.5 [55.5-73.0] year-old, mortality 61.1%). Median LUS score at admission was 18.0 [14.0-21.0], with no significant difference between survivors and non-survivors (16.0 [11.0-18.0] vs. 18.0 [14.0-21.0]; $p=0.2741$). After seven days, 2 patients had deceased. Data on the remaining 16 patients showed a significantly lower LUS score in survivors (10.0 [6.0-12.0] vs. 20.0 [18.0-21.0]; $p=0.0170$). While survivors showed an improvement in lung aeration, with a median reduction of -6.0 points [-11.0- -3.0], in non-survivors LUS score was mainly increased or unchanged (variation 2.0 [0.0-5.0]). AUC for LUS score at admission was 0.6558 and after 7 days of 0.8571 (Fig.1).

Conclusion

LUS score after 7 days of optimized ICU-treatment in COVID-19 ARDS identifies high-risk patients.

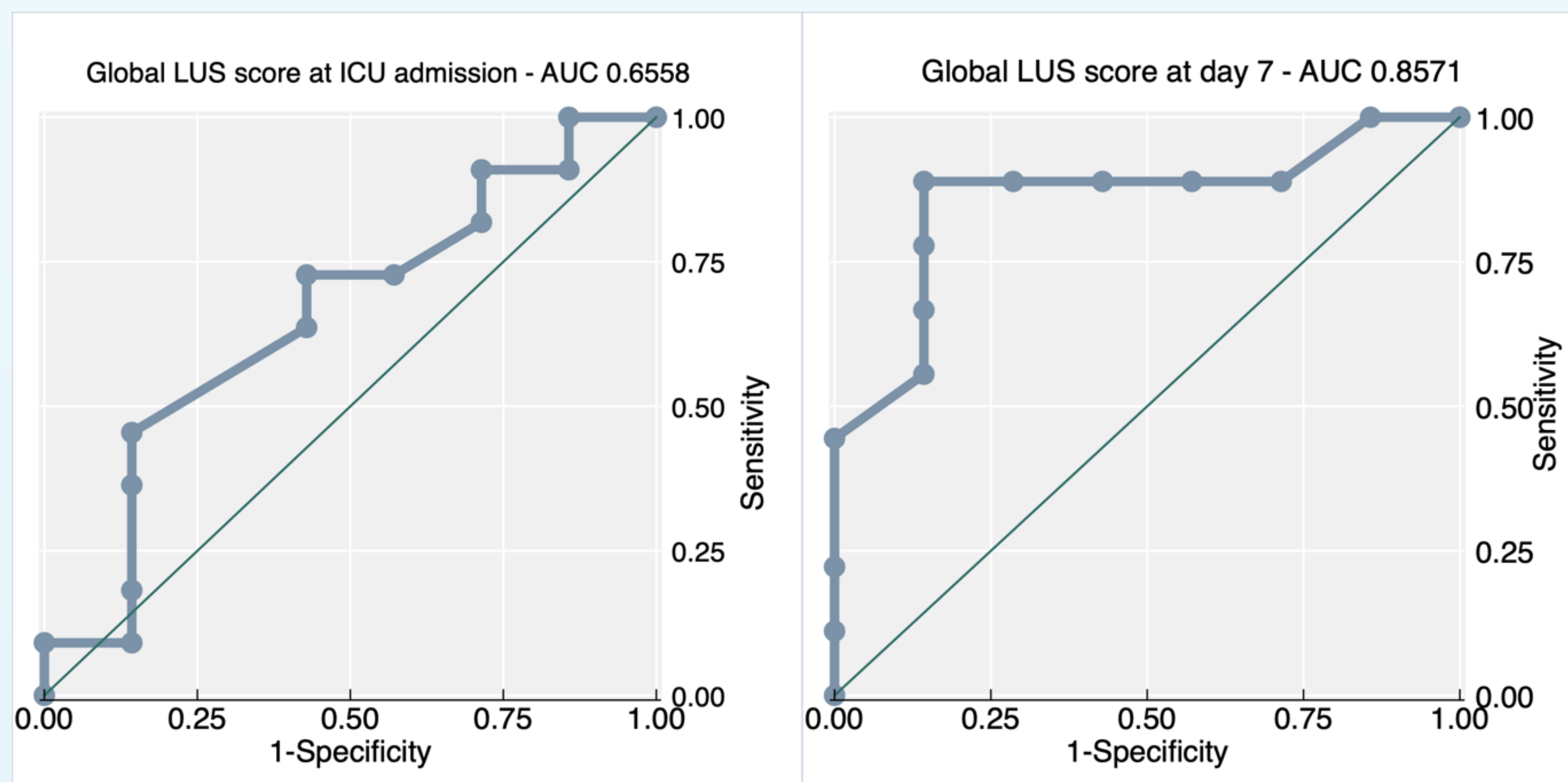


Figure 1: ROC curves for Lung Ultrasound Score at ICU admission and after 7 days of ICU treatment

References

- 1.Mojoli F. Am J Respir Crit Care Med 2019;15;199(6):701-714
- 2.Zieleskiewicz L. Intensive Care Med. 2020;46(9):1707-1713
- 3.Chiumello D. Crit Care Med 2018;46(11):1761-1768