

Author's Response to Letter to the Editor "Is the mNUTRIC Score the Only Independent Risk Factor for Abdominal Muscle Thickness Influencing Weaning?"

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Dear Editor,

We would like to thank the readers for reading and raising queries that have clinical significance on the recently published article on the mNUTRIC score being an independent predictor of thinner abdominal expiratory muscles in mechanically ventilated critically ill patients.¹

First, we excluded patients with abdominal trauma, distorted abdominal wall anatomy, abdominal surgeries, patients with any neuromuscular weakness, and patients with any diaphragmatic disorders.^{1,2} Since our study was a retrospective study, and we included patients from another prospective study for the ultrasound measurements of the four abdominal expiratory muscles, the exclusion criteria were the same as those of the prospective study.²

We agree that diaphragmatic excursion (≥ 1.79 cm) is a predictor of successful weaning, which we found in our previous prospective study.² However, apart from the role of inspiratory muscles in weaning, the integral significance of the expiratory muscles of the abdomen which play an important role in weaning (especially in cases of diaphragmatic weakness) should not be overlooked.^{2,3}

Second, about 25.9% of patients were on corticosteroids. The use of corticosteroids was among 34.5% of patients with a thin internal oblique (IO) (< 0.492 cm) and only 7.7% with thick IO (≥ 0.492 cm, $p < 0.001$ Chi-square test), however, the regression analysis did not reveal the use of corticosteroids to be an independent predictor of thin IO or any of the other expiratory abdominal muscles rectus abdominis (RA), external oblique (EO) or transversus abdominis (TA).¹ None of the patients received neuromuscular blocker infusions.

Third, though the lung ultrasound scores (LUS) were lower in the patients with thicker IO as compared to the thinner IO (8 ± 5.34 vs 9.36 ± 5.02 , p -value 0.264, Independent Student t -test) and thicker EO as compared to the thinner EO (7.85 ± 5.08 vs 9.67 ± 5.04 , p -value 0.116, Independent Student t -test), but there was no statistically significant difference. Likewise, the Pearson correlation between all four abdominal expiratory muscles and the LUS was not significant in our study. However, conceptually, since thinner expiratory muscles lead to basal alveolar collapse and higher LUS, this may be investigated in future studies.³ But our study was not aimed at investigating this correlation.¹

Fourth, we completely agree that the Nutritional Risk in Critically Ill (NUTRIC) score is applicable only for protein, energy, and macronutrients, and even micronutrients, which are not incorporated in the NUTRIC score may influence abdominal

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expiratory muscle thickness.⁴ However, we did not determine the utility of micronutrients as a predictor of expiratory abdominal muscle thickness.¹

The cut-off scores of mNUTRIC in our study were determined as per the best sensitivity and specificity to predict thinner expiratory abdominal muscle.¹ Depending on the cut-off score determined, there may be a change in the sensitivity and specificity to predict an outcome of interest. A higher mNUTRIC score of five mentioned in the literature predicts more serious adverse outcomes like an increased length of intensive care unit stay or mortality.⁵ The authors also found different cut-offs for the mNUTRIC score based on a specific subgroup of patients for predicting 28-day mortality (cut-off five for mechanically ventilated patients, cut-off six for patients with renal replacement therapy, though with a much lower sensitivity of about 45%).⁵ However, we obtained a much lower score cut-off mNUTRIC score ≥ 4 for predicting thinner abdominal expiratory muscles, with sensitivity and specificity of about 70%.¹

As correctly opined by our esteemed readers, the mNUTRIC score may be just one of the other independent predictors of abdominal expiratory muscle thickness influencing weaning. However, with the association of lower mNUTRIC score, thicker abdominal expiratory muscles, and successful weaning being conspicuous, their role in weaning cannot be overlooked.

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