Deciphering Oxygenation Metrics in ARDS: A Deep Dive into the OXIVA-CARDS Study

Sathwik Gangireddy[1], Pratyusha Kambagiri[2], Atul Jindal[3]

Dear Editor,

We read with great interest the article by Vadi et al. "Oxygenation index, oxygen saturation index (OSI) vs PaO_2/FiO_2 *PEEP: A secondary analysis of OXIVA-CARDS study" which has been published recently in IJCCM that aimed to see if incorporation of positive end expiratory pressure (PEEP) in PaO_2/FiO_2 (P/F) ratio improves the predictability of in-hospital mortality.[1] OXIVA-CARDS study analyzed the correlation and prognostic significance of oxygenation index (OI), OSI and P/F in coronavirus disease-2019 (COVID-19) afflicted acute respiratory distress syndrome (ARDS) adult patients (C-ARDS).[2] The authors must be commended for thinking laterally and incorporating PEEP in P/F which fills in the blanks in the Berlin definition, and their objective to compare it with P/F to see if it reclassifies the severity of ARDS and for mortality prediction. It was first validated by Palanidurai et al. on a large database of ARDS patients, and Sayed et al. came up with P/F *PEEP for the first time in classifying ARDS severity.[3,4]

The Berlin definition of ARDS classifies the severity of this condition based on the P/F ratio, which measures the efficiency of oxygenation in the lungs.[5] The authors demonstrated that the incorporation of mean airway pressure (MAP) was more reliable when looking at the severity of ARDS as well as mortality as compared to PEEP alone. Hence, it is suggested that OI and OSI are more reliable than traditional P/F or P/FP. For the same reasons, pediatric acute lung injury consensus conference (PALICC) guidelines used for defining and stratifying ARDS in the pediatric population are based on OI/OSI, if being invasively ventilated.[6]

However, we would like to raise certain points for consideration. First, the authors have analyzed individual measurements rather than patient-centric data. Though C-ARDS is a dynamic disease, it would still be prudent to see sensitivity analysis on patient aggregate data. Second, though P/FP reclassified ARDS severity for 34% of measurements, the question is whether this reassignment led to any change in therapy or patient outcomes. Third, in the study by Palanidurai et al., it's interesting to note that at higher PEEP, P/FP had better sensitivity and specificity.[4] Though the authors have mentioned overall receiver operating characteristic curve (ROC), it would be good to know if their observations are similar too.

So, the study highlights beautifully the shortcomings of classification based on P/F, and the need of the hour is to come up with a refinement of the traditional ARDS definition by incorporating MAP into oxygenation indices (OI and/or OSI) which would have implications for therapeutic decisions and resource allocation. Furthermore, this study is on C-ARDS patients alone.

[1–3]Department of Pediatrics, All India Institute of Medical Sciences (AIIMS), Raipur, Chhattisgarh, India

Corresponding Author: Atul Jindal, Department of Pediatrics, All India Institute of Medical Sciences (AIIMS), Raipur, Chhattisgarh, India, Phone: +91 8224014667, e-mail: dratuljindal@gmail.com

So, by exploring non-C ARDS patients, definite conclusions can be derived, which is an area for further research.

ORCID

Sathwik Gangireddy https://orcid.org/0009-0001-7983-4272

Pratyusha Kambagiri https://orcid.org/0000-0002-0659-0254

Atul Jindal https://orcid.org/0000-0002-0504-1077

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