

# Non-invasive ventilation and intra-abdominal pressure – an association or dissociation?

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Dear Editor,

We have read with great interest the original study by Adrian Regli *et al.* titled “The effect of non-invasive ventilation on intra-abdominal pressure” which analysed the effect of non-invasive ventilation (NIV) on intra-abdominal pressure (IAP) [1]. This observation is very interesting and controversial. However, we believe that some interesting aspects should have been considered in this study.

It is interesting to know the relationship of IAP and body position during NIV. Previous studies evaluated the influence of supine position and variations in head of bed (HOB) elevation on IAP values. However, in this study, the methods aspect and conclusions are not clearly defined. In the first study, the authors described the measurement of IAP, which is usually performed supine. However, for NIV there is no standard position, and therefore the impact of elevated IAP could be difficult to understand in the standard awake NIV approach. The main question is whether the elevated or normal measurement of IAP is a fleeting or sustained effect. The events happening during NIV therapy are not clear. This aspect is controversial and not yet clarified in patients with non-invasive ventilation and at risk for increased intra-abdominal pressure. Elevation of the HOB angle from 0 to 30° significantly increases IAP. It seems that the measurement of IAP at a HOB angle of 15° was more reliable than 30° [2, 3]. The impact of NIV mode and setting pressure is another controversial topic. From previous studies, we know that increased IAP was related to the type of respiratory mode with the

more increased IAP observed by BIPAP and CPAP modes [4]. Other factors that were not reported by the authors are the impact of fluid balance with NIV [5]. We find the pCO<sub>2</sub> trends during this study controversial and in need of clarification. The indications for which NIV was indicated were not specified and nor were the associated comorbidities, e.g. COPD, which predisposes to different dynamic lung compliance and trends in pCO<sub>2</sub>. How the authors analyse the pCO<sub>2</sub> and NIV is not clearly described. Further clinical trials need to clarify the optimal NIV protocols and the relevance of its relationship with IAP.

## ACKNOWLEDGEMENTS

1. Financial support and sponsorship: none.
2. Conflict of interest: none.

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Anaesthesiol Intensive Ther 2022; 54, 2: 194

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