

[LETTERS TO THE EDITOR]

Altered Consciousness, Non-invasive Ventilation, and Hypoxemic Respiratory Failure: The Trident Question Unresolved - Reply

Key words: acute respiratory failure, critical care medicine, non-invasive ventilation

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The Authors Reply We thank Antonio Esquinas and colleagues for highlighting their concerns regarding non-invasive ventilation (NIV) for acute hypoxic respiratory failure in patients with an altered level of consciousness (ALC).

They referred to two prospective studies (1, 2) to discuss the association between ALC and NIV failure. However, these studies mainly included patients with acute respiratory distress syndrome and did not represent other types of respiratory failure, including pneumonia or cardiac pulmonary oedema cases, which we commonly experience. Moreover, the patients in the study (1) rarely had ALC and thus, it is difficult to evaluate the actual effect of ALC. To the best of our knowledge, our study is the first to evaluate the effect of ALC on NIV treatment.

Antonio Esquinas and colleagues commented on the higher rate of neurological failure in the ALC group among the heart failure subgroup in our study (3). One possible reason for this is that the strict agitation control required for the treatment of heart failure itself resulted in the early use of sedation. Indeed, all five cases of neurologic failure in the ALC group involved the use sedation; with appropriate sedation, intubation was successfully avoided in three of these cases.

Three patients in our study had a Kelly-Matthay scale score of 5, even though we excluded all cases involving GCS values of <8. These three patients had Glasgow Coma Scale (GCS) values of 12, 9, and 9, respectively, and were thus eligible for our study.

Regarding the Kaplan-Meier curves for the NIV duration at up to 48 hours [Fig. 2 in our study (3)], Antonio Esquinas and colleagues pointed out that the line of the ALC group stops around 24 hours. This is because all events including NIV failure or weaning off (defined as not requiring NIV during daytime) occurred during that time. The median duration of NIV in this group was 6 hours (interquartile range 3-11).

We constructed a multivariate Cox proportional hazards model with ALC and other factors previously identified as

Table. Univariate Analyses of Factors Associated with NIV Failure.

	RR*	p value
ALC**	1.59 (0.82-3.12)	0.17
Age >75 vs. ≤75 y	1.64 (0.86-3.19)	0.14
IPAP >8 vs. ≤8 cmH ₂ O	1.05 (0.51-2.03)	0.90
APACHE II score >18 vs. ≤18	1.09 (0.74-1.6)	0.65
PaO ₂ /FiO ₂ ratio <150 vs. ≥150	2.15 (1.1-4.41)	0.024

RR*: risk ratio, ALC**: altered level of consciousness

risk factors for NIV failure (4). Here, we add the results of the univariate analysis to evaluate the association between each factor and NIV failure in our present study (3) (Table).

Antonio Esquinas and colleagues stated that we incorrectly reported the incidence of nosocomial pneumonia. We did not observe nosocomial pneumonia during the first 48 hours and this low rate was in accordance with that in previous studies (5). However, we acknowledge that the observation period might have been too short to evaluate the true incidence.

In conclusion, we are confident about our scientific data and therefore suggest the possible efficacy of NIV for overcoming acute hypoxic respiratory failure in patients with ALC.

This study was performed in Kobe City Medical Centre General Hospital, 2-1-1 Minatojima-minamimachi, Chuo-ku, Kobe 650-0047, Japan.

The authors state that they have no Conflict of Interest (COI).

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