

Author's reply

In many cases, hypercapnic and hypoxemic respiratory failure coexist.^[1] Actually, all our enrolled patients showed hypercapnic hypoxia.^[2] Certainly, the degree of hypoxia may be associated with the severity of their respiratory status and/or with the complication of secondary pulmonary hypertension. Unfortunately, we could not stratify enrolled patients according to their respiratory status, which might be one of the limitations of our study.

There are two main methods for titration of the inspiratory positive airway pressure (IPAP) at the initiation of the noninvasive positive pressure ventilation (NPPV). One method is to start with low pressures and gradually increase IPAP, and the other is to start with high pressures and gradually decrease IPAP. The American Thoracic Society's protocol for initiation of NPPV suggests the former method.^[3] The merit of this "upward titration" is its ease of patient acceptance. Thus, we started NPPV with low IPAP (8–10 cmH₂O) and gradually titrated upward as tolerated by the patient. Some patients, however, could not accept higher pressures. Such patients could not tolerate conventional IPAP levels when NPPV was started. Therefore, because long-term treatment was a priority, settings providing lower IPAPs were unavoidably used. Consequently, we found that patients who started NPPV with lower IPAP experienced more exacerbations of chronic respiratory failure, and we concluded that NPPV should be started with a pressure support >10 cmH₂O.

The lack of humidification may increase nasal resistance and nasal symptoms, especially in the presence of air leaks;^[4] therefore, it contributes to reduced compliance with continuous positive airway pressure.^[5] Nava *et al.* performed a small pilot study to compare the airway symptoms and side effects in patients treated with either heated humidification or a heat and moisture exchanger.^[6] The main results of the study were that compliance with treatment and the occurrence of infections were similar for heated humidification and the heat and moisture exchanger, but patients receiving heated humidification showed less dryness of the throat. Overall, at the end of the present study, the large majority of the patients declared their preference for heated humidification. Consequently, active humidification is suggested for NPPV, as it may improve adherence and comfort.^[7] Moreover, the Japanese Respiratory Society Guidelines for NPPV also recommend the use of heated humidification to avoid dryness of the upper airway, especially in patients with massive unintentional leaks from their mouths or masks.^[8] Therefore, we used heated humidifiers for all patients.

Toru Kadowaki

Department of Pulmonary Medicine, National Hospital Organization Matsue Medical Center, 8-31, 5 cho-me, Agenogi, Matsue, Shimane, 690-8556, Japan
E-mail: toru.kadowaki@mmedc.jp

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