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Responsiveness of the S³-NIV questionnaire to severe episode of respiratory failure

I. Guerreiro[1], A. Schmit[1],E. Schwartz[2],P.M. Soccal[1,3], J.-P. Janssens[1,3] , D Adler[1,3]

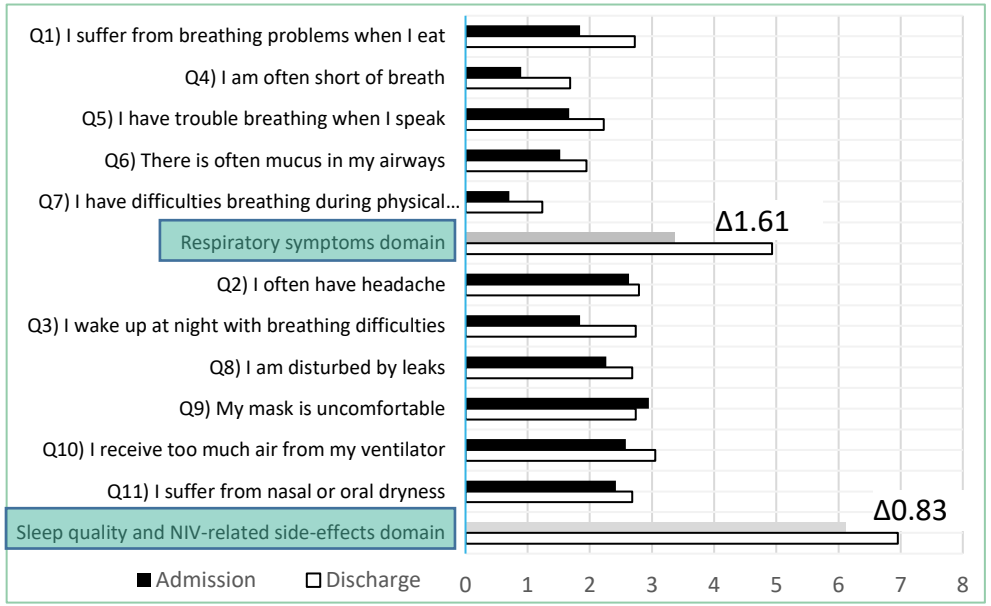
[1]Division of Pulmonary Diseases, Geneva University Hospitals, Geneva [2] Department of Pulmonology and Sleep Disorders Centre, University Hospital Zurich, Zurich, [3] Geneva Medical School, Geneva, Switzerland

Service de Pneumologie — HUG Hôpitaux Universitaires Genève

Background

The S³-NIV questionnaire was recently developed to provide clinicians with a simple and reliable tool to assess important domains such as respiratory symptoms, sleep quality and NIV-related side-effects in patients treated with home NIV (figure 1).

Figure 1 : S ³-NIV questionnaire score at day of admission and discharge for all items and two summary scales: Respiratory symptoms and Sleep-quality and NIV-related side-effects, respectively. The lowest possible score (0) corresponds to the highest impact of disease and treatment, while the highest possible score (10) corresponds to the lowest impact of disease and treatment.



Aim

To test the responsiveness of the S³-NIV questionnaire to changes in health status during recovery from an acute episode of respiratory failure with hospital admission.

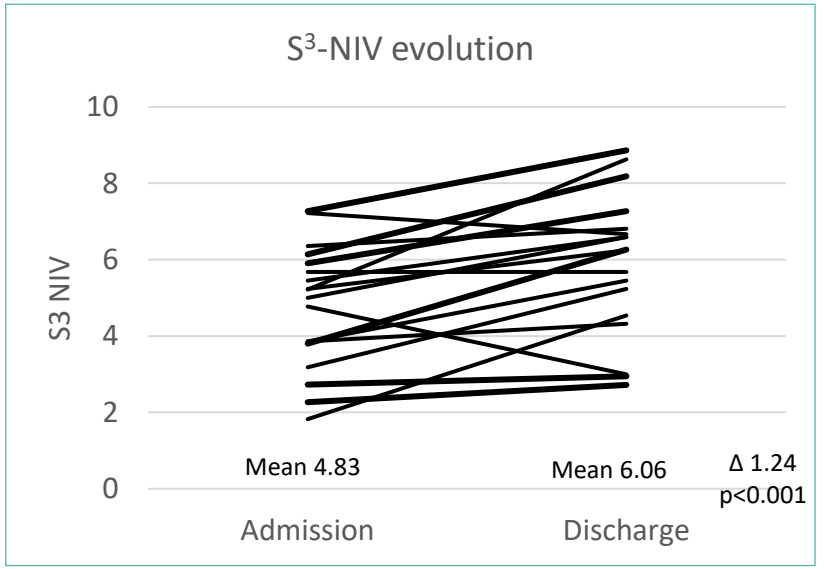
Methods

The S³-NIV questionnaire was administered at hospital admission and hospital discharge in consecutive patients admitted for an acute episode of respiratory failure.

Results

19 patients (8 males, median age 64yrs (interquartile range [IQR]: 55-76), treated with home NIV for a median time of 24 months (IQR: 14-51) were enrolled at admission. 10 patients were diagnosed with COPD, 4 with neuromuscular disorders, 2 with restrictive disorders, 2 patients with obesity hypoventilation syndrome, and 1 with central breathing disturbances during sleep. Median length of stay was 14 days (IQR: 7-22).

Figure 2: S³-NIV questionnaire score at day of admission and discharge. Each line represents an individual patient.



Mean S³-NIV questionnaire score at admission was 4.83 (SD 1.59, 95% CI 4.07 to 5.60) and 6.08 (SD 1.77, 95% CI 5.22 to 6.94) at discharge with a mean difference of 1.24 (SD 1.09, 95% CI 0.71 to 1.77, p<0.001) (figure 2).

Improvement of S³-NIV questionnaire score was more pronounced in COPD patients (1.39, 95%CI 0.58 to 2.19, p = 0.004), compared to non-COPD patients (1.08, 95%CI 0.24 to 1.92, p=0.02). Recovery from a severe exacerbation was associated with improvement in both the "respiratory symptoms" domain (1.61, 95%CI 0.78 to 2.43, p<0.001) and in the "sleep and NIV-related side-effects" domain (0.83, 95%CI 0.24 to 1.43, p=0.01)(figure 1).

Conclusion

Our observation suggests that the S³-NIV questionnaire is responsive to recovery from severe respiratory exacerbation. Further studies to estimate MCID of the S³-NIV questionnaire using distribution and anchor-based methods are ongoing.

Dupuis-Lozeron E et al. Development and validation of a simple tool for the assessment of home noninvasive ventilation: the S³-NIV questionnaire. Eur Respir J 2018;52(5):1801182