

THE EFFICACY OF NONINVASIVE VOLUME TARGETED VENTILATION IN PATIENTS WITH CHRONIC RESPIRATORY FAILURE DUE TO KYPHOSCOLIOSIS

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INTRODUCTION. Severe kyphoscoliosis can cause chronic respiratory failure (CRF). Noninvasive mechanical ventilation (NIMV) is a new optional treatment for such patients. The aim of this study was to evaluate the effectiveness of average volume-assured pressure support (AVAPS) NIMV in patients with kyphoscoliotic CRF.

MATERIAL. Material of the study consisted of 12 patients (age 48.9 ± 11.0 , body mass index $27.5 \pm 7.9 \text{ kg/m}^2$) with advanced kyphoscoliosis complicated by severe CRF ($\text{PaO}_2 - 6.68 \pm 0.34 \text{ kPa}$, $\text{SaO}_2 - 81.7 \pm 3.1 \%$, $\text{PaCO}_2 - 9.51 \pm 1.08 \text{ kPa}$) treated by AVAPS NIMV. The efficacy of NIMV was evaluated on 5-th day and after 1 year home treatment.

RESULTS. We observed a significant improvement of diurnal PaO_2 and PaCO_2 on 5-th day of NIMV (respectively the increase of $1.39 \pm 0.26 \text{ kPa}$ and the decrease of $1.81 \pm 0.80 \text{ kPa}$, $p \leq 0.05$) and after 1 one year of home NIMV (respectively the increase of $2.07 \pm 0.46 \text{ kPa}$ and the decrease of $2.68 \pm 0.85 \text{ kPa}$, $p \leq 0.05$). There was a significant increase of mean blood oxygen saturation during sleep on 5-th day ($86.2 \pm 7.2\%$) and after 1 year of treatment ($89.4 \pm 1.2\%$) compared to the baseline values ($83.2 \pm 3.2\%$). The forced vital capacity increased after 1 year of therapy compared with baseline values ($1024 \pm 258 \text{ ml}$ vs $908 \pm 267 \text{ ml}$, respectively; $p < 0.05$). The NIMV tolerance was high and no patient discontinued the treatment during the observation period (1-5 years).

CONCLUSION. AVAPS NIMV is an effective and well tolerated treatment option in kyphoscoliotic patients with chronic respiratory failure resulting in a rapid and long-term improvement of daytime and nocturnal blood gas exchange.