primary studies - published RCT

The effect of back-up rate during non-invasive ventilation in young patients with cystic fibrosis.

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Study design (if review, criteria of inclusion for studies)

An in vitro study evaluated the inspiratory trigger in seven domiciliary ventilators. Then, a prospective, randomized, crossover trial was conducted

Participants

Ten patients with cystic fibrosis (CF).

Interventions

During the in vivo study, the back-up rate was progressively increased to the maximum that patients could tolerate (Fmax) and respiratory effort, as judged by pressure/time product of the diaphragm (PTPdi/min), was compared between the two ventilatory modes.

Outcome measures

effect on respiratory effort of three different back-up rates during pressure support (PS) and assist-control/volume-targeted (AC/VT) ventilation.

Main results

Differences were observed between trigger pressure, trigger time delay, trigger pressure/time product and the slope between flow and pressure in the seven ventilators. PS and AC/VT ventilation were associated with a decrease in respiratory effort (PTPdi/min was 518+/-172, 271+/-119 and 291+/-138 cmH(2)O. s(-1). min(-1), for spontaneous breathing, PS and AC/VT ventilation, respectively, p=0.05). During the two modes, increasing the back-up rate to Fmax resulted in a greater reduction in PTPdi/min (p=0.001), which was more pronounced during AC/VT ventilation, due to the automatic adjustment of the inspiratory/expiratory time ratio.

Authors' conclusions

Increasing the back-up rate during PS and AC/VT ventilation decreases respiratory effort in young patients with CF, but this effect was more marked with AC/VT ventilation.

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See also

Intensive Care Med. 2004 Apr;30(4):673-81. Epub 2004 Jan 16.

Keywords

Adolescent; Adult; Artificial Ventilation; Child; non pharmacological intervention - devices OR physiotherapy; non pharmacological intervention - psyco-soc-edu-org; Ventilators; NIV;