primary studies - published RCT

In vivo physiologic comparison of two ventilators used for domiciliary ventilation in children with cystic fibrosis.

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

Prospective, randomized, crossover comparison of two ventilators with different modes.

Participants

Tertiary pediatric university hospital. 8 children with cystic fibrosis (age, 11-17 yrs) and chronic respiratory failure (pH 7.4 +/- 0.0; PaO2, 57.5 +/- 7.5 torr; PaCO2, 46.1 +/- 2.5 torr), naive to NIMV.

Interventions

Two 20-min runs of pressure support and AC/VT ventilation were performed in random order, each run being preceded and followed by 20 mins of spontaneous breathing.

Outcome measures

Flow and airway pressure and esophageal and gastric pressures were measured to calculate esophageal (PTPes) and diaphragmatic pressure-time product (PTPdi) and the work of breathing.

Main results

The two NIMV sessions significantly improved blood gas variables and increased tidal volume with no change in respiratory rate. Indexes of respiratory effort decreased significantly during the two modes of NIMV compared with spontaneous breathing, with PTPdi/min decreasing from 497.8 +/- 115.4 cm H2O x sec x min(-1) during spontaneous breathing to 127.8 +/- 98.3 cm H2O x sec x min(-1) and 184.3 +/- 79.8 cm H2O x sec x min(-1), during AC/VT and pressure support, respectively (p

Authors' conclusions

In awake, stable children with cystic fibrosis, both AC/VT and pressure support unloaded the respiratory muscles. The disappearance of ventilator triggering occurred in a subgroup of patients during AC/VT ventilation, and this explained the good tolerance and the superiority of this mode in the present study.

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See also

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Keywords

Adolescent; Artificial Ventilation; Child; Home; Home Care Services; non pharmacological intervention - devices OR physiotherapy; non pharmacological intervention - psyco-soc-edu-org; Respiratory Insufficiency; Respiratory Tract Infections; Ventilators; Infection; Respiratory Tract Diseases; Organization;