

Availability of Portable Capnometers in Children with Tracheostomy

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Abstract

Background

A capnometer is a noninvasive monitor that is used to assess patients' respiratory status. This study was performed to evaluate the availability of a portable capnometer in children with tracheostomy.

Methods

This retrospective study included children with tracheostomy who were treated at the Osaka Women's and Children's Hospital in Osaka, Japan, from 1 September 2018 to 31 October 2019. We assessed the correlation between the partial pressure of venous carbon dioxide (PvCO₂) and end-tidal carbon dioxide tension (EtCO₂) using a portable capnometer (EMMA™; Masimo, Irvine, CA, USA).

Results

In total, 9 infants and 43 simultaneous PvCO₂–EtCO₂ pairs were analyzed. The correlation coefficient of these pairs was 0.87 (95% confidence interval, 0.77–0.93; $p < 0.001$). The Bland–Altman plot showed that EtCO₂ was on average 10.0 mmHg lower than its paired PvCO₂ value (95% limits of agreement, 1.0–19.1). The difference between PvCO₂ and EtCO₂ was significantly greater in patients on ventilators.

Conclusions

The portable capnometer evaluated in this study (EMMA™) was readily available and useful for assessment of the respiratory condition in children with tracheostomy.