

[Clinical usefulness of EMMA for monitoring end-tidal carbon dioxide].

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Background

Transportable capnometers(EMMA) can be useful in the emergency department or Rapid Response System. Before EMMA can be implemented, it must be compared with currently employed capnography methods.

Methods

The concentration of CO₂ in a reference gas was measured by two EMMA machines and a side-stream capnometer (CAPNOX), respectively. Next, Etco₂ in twelve patients under general anesthesia was measured by both EMMA machines and the side-stream capnometer, respectively. Results were analyzed using Pearson's correlation coefficient and the Bland-Altman plot.

Results

With regard to the reference gas ([CO₂] of 38 mmHg), the EMMA machines reported CO₂ concentrations of 37.2 mmHg and 35 mmHg, and the capnometer reported 38 mmHg. For the 12 anesthetized patients, 47 Etco₂ readings were taken. Pearson's correlation coefficient between the first EMMA machine and the capnometer was 0.98 (P<0.0001, bias 3.6 mmHg, 95% limits of agreement 1.3-5.9mmHg) and between the second EMMA machine and the capnometer was 0.99 (P<0.0001, bias 0.85 mmHg, 95% limits of agreement-0.7-2.4 mmHg).

Conclusions

In patients under general anesthesia, EMMA measured Etco₂ within 4 mmHg of side-stream capnography, indicating sufficient accuracy for clinical use. At the same time, discrepancies in readings between individual machines must be taken into consideration.