Comparison of end-tidal CO2 measured by transportable capnometer (EMMA™ capnograph) and arterial pCO2 in general anesthesia.

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Author information:
(1)Seoul Paik Hospital, College of Medicine, Inje University, 9, Marunnai-ro, Jung-gu, Seoul, Korea.

An end-tidal CO2 monitor (capnometer) is used most often as a noninvasive substitute for PaCO2 in anesthesia, anesthetic recovery, and intensive care. Additionally, the wide spread on-site use of portable capnometers in emergency and trauma situations is now observed. This study was conducted to compare PaCO2 measurement between the EMMA™ portable-capnometer and sidestream capnometry. End-tidal CO2 (portable capnometer: EMMA™ capnograph, side stream capnometry module: Datex-Ohmeda S5 Anesthesia Monitor) levels were recorded at the time of arterial blood gas sampling of patients undergoing general anesthesia. Data were compared using the Bland and Altman method, and by evaluating the clinical significance performed by calculating the percent error (%). A total of 100 data were obtained from 35 patients. The bias of PaCO2 and portable capnometer was 6.0 mmHg, where the upper and lower limits of the agreement were 11.8 and 0.3 mmHg, respectively. The percent error was 18.0 %. The bias of side stream capnometry and portable capnometer was 2.2 mmHg, where the upper and the lower limits of the agreement were 6.0 and -1.6 mmHg, respectively. The percent error was 13.0 %. Significant differences between the PETCO2 and PaCO2 values of the EMMA™ portable-capnometer were not observed for patients undergoing general anesthesia. ClinicalTrials.gov identifier NCT02184728.