The effect of heat-moisture exchanger and closed-circuit technique on airway climate during desflurane anesthesia.

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Abstract

PURPOSE: We assessed whether closed-circuit anesthesia (CCA) could provide a more favorable airway climate than semi-closed anesthesia (SCA), and we also determined the beneficial effect of heat moisture exchangers (HMEs) on the preservation of airway climate during desflurane anesthesia. METHODS: Forty patients scheduled for colorectal surgery (n = 10 for each group) were randomized to receive a fresh gas flow of 250 or 3000 ml.min(-1) with or without HMEs. Anesthesia was maintained by adjusting the inspired concentration of 6% desflurane. Absolute moisture and temperature of inspired gases were measured as the baseline value first at 5 min after tracheal intubation, and then at 10, 20, 45, 60, 90, and 120 min after the induction of anesthesia. RESULTS: At 120 min, the inspiratory humidity and temperature were higher in CCA than in SCA. The HME led to major improvements of the humidity (from 22.1 to 35.7 mg H(2)O.l(-1)) and temperature (from 23.6 degrees C to 31.5 degrees C) of anesthetic gases in the CCA group. CONCLUSION: CCA was much more advantageous than SCA for maintaining the patient's airway climate during the 2-h study. The beneficial effect of HME on the airway climate should be emphasized, especially in patients undergoing general anesthesia.