Letter to the Editor

In Reference To High BMI Value is a Risk Factor But Not a Contraindication for CO₂ Retention in HFJV During Airway Surgery

We agree with Dr. Ihra’s opinion that jet ventilation techniques have proved their high value when gas exchange during airway surgery has to be maintained. Improvements in surgical viewing and unimpaired access to laryngeal structures are essential benefits of the technique, although some difficulties in gas exchanges should be overcome. The generally adopted strategies to improve gas exchange are as follows: first, driving pressure of jet streams can be adjusted to increase applied tidal volumes and to prevent CO₂ retention. But when the driving pressure is increasing, the risk of barotrauma should also be considered. Second, the frequency of jet ventilation can be decreased and the rate of I/E can be adjusted to increase the CO₂ elimination. But when the subglottic jet ventilation technique through a jet tube modified from a thin suction catheter was used, as described in our article, the whipping effect may be increased, causing the possibility of tracheal mucosa injury. Third, superimposed high-frequency jet ventilation, which uses two jet streams with different frequencies simultaneously, can provide adequate ventilation and meanwhile facilitate CO₂ elimination. But this kind of machine has not been widely used in developing countries.

As we mentioned in the Discussion section, the highest value of PaCO₂ was 71 mmHg, the lowest value of pH was 7.22, and the duration of ventilation was no longer than 15 minutes in our report. No significant differences of cardiovascular parameters were found in patients with CO₂ retention compared to those without CO₂ retention. It appears that the extent of CO₂ retention in our study did not cause any significant adverse effects or life-threatening events. So we made the conclusion that a high body mass index (BMI) value is a primary risk factor for CO₂ retention in a high-frequency jet ventilator (HFJV) and should be integrated into the anesthesia plan before surgery starts, which may be a reference to clinical application. Our conclusions were aimed at the monofrequent jet ventilation mode applied by the machine examined in the article. We did not rule out the usage of any kind of jet ventilation mode in obese patients.

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