Obesity and anesthetic pharmacology

Tae Kyun Kim MD

Dept. Anesthesia and Pain Medicine, Pusan National University, Busan, Korea

The prevalence of obesity is increasing year by year in worldwide. By the report of WHO, obesity population accounts for 13% of the world's adult population and is growing steadily and about three times that of 1975 as of 2016. In particular, the morbidly obese population with a BMI of more than 40 is on the rise. As the number of surgeries to treat obesity-induced diseases and obesity itself is increasing, the increased comorbidity of obese patients has become a burden of care to the anesthesiologist. Anesthesiologist used to have troubles with the obese patients care in regards to the difficult airway management and intubation before and after surgery, mechanical ventilation, diabetes, hypertension, obstructive sleep apnea, and cardiopulmonary disease.

In addition, pharmacokinetic and pharmacodynamic changes in obese patients make it difficult to control the appropriate dose of anesthetic agents. The increase of body mass and composition changes influences the pharmacokinetic parameters such as distribution volume, clearance and elimination half-life [1, 2]. Comorbidity of obese patients like obstructive sleep apnea may cause narrowing of therapeutic dynamic range [3].

Simply administering a drug based on body weight to obese patients would be at high risk of overdosing. Moreover, the comorbidity associated with obese patients can make the risk of overdosing more serious one. In order to determine the appropriate dose for obese patients, it is important to understand how pharmacokinetics and pharmacodynamics change as the body weight increases. Factors that affect the pharmacokinetic changes in obese individuals includes increase of adipose tissue, increase of LBW, increase of extracellular fluid and increase of cardiac output. [4, 5]

References

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