

Perioperative Management of Deventilation Syndrome

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Introduction:

- ❖ Deventilation Syndrome is a rare complication observed in obstructive sleep apnea patients (OSA)
- ❖ Severe dyspnea just after cessation of non-invasive mechanical ventilation therapy (NIMV) (1)
- ❖ Occurrences of dyspnea, muscle weakness and fatigue (1)
- ❖ Disability to perform daily activities at least 30 minutes (2)
- ❖ Patient- NIMV device asynchrony, auto-positive end-expiratory pressure, trigger asynchrony, coexisting medical problems
- ❖ Muscle tone improves and reverses adverse effects of inaccurate NIMV application

Case Definition:

- ❖ 37 years old, morbidly obese patient (body mass index 40 kg/m²) male
- ❖ Under continuous positive airway pressure (CPAP) treatment for 3 years
- ❖ Suffering from deventilation syndrome that lasts for 30 minutes every morning
- ❖ Snoring and daytime sleepiness despite CPAP therapy
- ❖ Improvement in muscle tone overcomes the effect of inaccurate CPAP application
- ❖ Preoperative arterial blood gas analysis: PaO₂ and PCO₂ values were 84.1 mmHg and 35.4 mmHg respectively

Perioperative Management:

General anesthesia

- ❖ Unilateral adrenalectomy
- ❖ Mask ventilation, intubation periods were uneventful
- ❖ Cormack-Lehane Grade 2
- ❖ Paracetamol 1 g and tramadol 100 mg for postoperative analgesia

- ❖ Sugammadex 4 mg/kg was used to reverse neuromuscular blockade
- ❖ Successfully extubated after 120 minutes laparoscopic adrenalectomy
- ❖ In the recovery room:
 - 2 l/min O₂ support via facemask in the recovery room
 - Hemodynamically stable and did not have any airway obstruction
- ❖ Discharged to the ward: Alderete score >9, PaO₂ and PCO₂ values 97.4 mmHg and 41.7 mmHg respectively
- ❖ CPAP therapy was continued during sleep at the night of the operation
- ❖ Discharged from the hospital on the 3rd day healthfully

Discussion:

- ❖ Deventilation Syndrome may indicate:
 - Inappropriate NIMV treatment, tendency to airway obstruction after general anesthesia
 - The most appropriate CPAP pressure and interfaces adjusted for the patient
- ❖ Short-acting anesthetics and regional anesthesia if possible

References:

1. Noninvasive Mechanical Ventilation: Theory, Equipment and Clinical Applications. A.M. Esquinas (ed.), DOI 10.1007/978-3-319-21653-9_83. pages 717-23
2. Esquinas AM, Ucar ZZ, Kirakli C. Deventilation syndrome in severe COPD patients during long-term noninvasive mechanical ventilation: poor sleep pattern, hyperinflation, or silent chronic muscular fatigue? Sleep Breath. 2014 May;18(2):225-6. doi: 10.1007/s11325-013-0931-3

