Diagnostic Criteria for Obesity Hypoventilation Syndrome in Thais

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**Background:** Obesity hypoventilation syndrome (OHS) is a condition with high morbidity and mortality. If left untreated, the mortality rate will be 37% at 10 years. Approximately 90% of patients with OHS are associated with obstructive sleep apnea. The diagnostic criteria for OHS include body mass index (BMI) > 30 kg/m\textsuperscript{2}, with daytime pCO\textsubscript{2} > 45 mmHg. These criteria may not be applied for Thai or Asian population. The criterion for obesity in Asian population was 25 kg/m\textsuperscript{2}.

**Objective:** This study aimed to find appropriate diagnostic criteria for OHS in Thais.

**Methods:** This study was a retrospective study conducted at Srinagarind Hospital, Khon Kaen University. The inclusion criteria were adult patients diagnosed as OHS between January 2005 and September 2017. Patients were excluded if one of the following conditions existed: hypothyroidism, COPD, neuromuscular diseases, opiate overdose, or severe electrolyte abnormalities such as hypophosphatemia, hypokalemia, or hypercalcemia. Patients diagnosed as obstructive sleep apnea (OSA) during the same period were randomly selected as control. The ratio of OHS: OSA was 1:4. Clinical factors associated with OHS were executed by using multivariate logistic regression analysis.

**Results:** During the study period, there were 25 OHS and 108 OSA patients. The OHS group had significantly higher BMI (48.9 vs 29.2 kg/m\textsuperscript{2}) than the OSA group. The OHS group also had higher proportions of patients with pulmonary hypertension (50\% vs 2\%). Whilst, there was a higher proportion of patients with heart failure (76\% vs 6.5\%) in the OSA group. Two independent predictors for OHS included BMI and serum bicarbonate level. The adjusted odds ratio (95\% CI) of both factors were 1.08 (1.01, 1.17) and 1.96 (1.15, 3.34), respectively. The BMI of more than 25 kg/m\textsuperscript{2} and serum bicarbonate > 25 mEq/L yielded 100\% sensitivity for OHS.

**Conclusion:** The appropriate diagnostic criteria for OHS in Thais may be different from the Western populations.

**Keywords:** Obstructive sleep apnea, Sensitivity, Diagnosis, Obesity, Serum bicarbonate