Obesity and pneumonia
A complex relationship

Paschalis Steiropoulos, MD, PhD, FCCP; Demosthenes Bouros, MD, PhD, FERS, FCCP

Department of Pneumonology, Medical School, Democritus University of Thrace, Alexandroupolis, Greece

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In the last two decades, the prevalence of obesity has dramatically increased. The diagnosis of obesity is based on body mass index (BMI), calculated as weight in kilograms divided by height in meters squared (kg/m²). A patient with a BMI ≥25 kg/m² is defined as overweight, and a BMI ≥30 kg/m² as obese.

Pneumonia is one of the most common infectious diseases. It has been ranked as the third leading cause of death worldwide and is one of the most common infectious diseases in Western societies. Several risk factors for pneumonia are recognized, including age >65 years, smoking, alcoholism, immunosuppressive conditions, and chronic conditions such as COPD, cardiovascular disease, cerebrovascular disease, chronic liver or renal disease, diabetes mellitus and dementia.

Obesity may increase the risk of pneumonia due to several reasons. First of all, obesity has been associated with impairments in host defense mechanisms, reversible after weight reduction. Additionally, obesity has multiple adverse effects on the respiratory system. Increasing BMI is usually associated with a reduction in forced vital capacity, total lung capacity, functional residual capacity, and expiratory reserve volume. In addition, obesity can increase the work of breathing due to reduced chest wall compliance and increased respiratory system resistance.

Moreover, obesity is also associated with the risk of major chronic conditions such as diabetes, cardiovascular disease and liver diseases, and those diseases may cause an elevated risk of pneumonia. However, the findings of recent studies on the relationship between excessive weight and risk of pneumonia were inconclusive. While some studies indicated that excessive weight gain significantly increased risk of hospitalization with pneumonia, other studies illustrated a reversed relationship. In addition, other studies reported that obese subjects with pneumonia had lower mortality compared to normal weight subjects (obesity survival paradox).

Obese individuals maybe at higher risk for pneumonia. Nevertheless, available data are sparse and inconsistent. Additional prospective studies with adjustment for confounding factors are warranted before a safe conclusion can be drawn.
REFERENCES