Editorial

# Obesity and pneumonia
## A complex relationship

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In the last two decades, the prevalence of obesity has dramatically increased[1]. The diagnosis of obesity is based on body mass index (BMI), calculated as weight in kilograms divided by height in meters squared (kg/m$^2$). A patient with a BMI ≥25 kg/m$^2$ is defined as overweight, and a BMI ≥30 kg/m$^2$ as obese.

Pneumonia is one of the most common infectious diseases. It has been ranked as the third leading cause of death worldwide[2] and is one of the most common infectious disease in Western societies[3]. Several risk factors for pneumonia are recognized, including age >65 years[3-5], smoking[4], alcoholism[5], immunosuppressive conditions[5], and chronic conditions such as COPD,[6] cardiovascular disease, cerebrovascular disease, chronic liver or renal disease, diabetes mellitus and dementia[7].

Obesity may increase the risk of pneumonia due to several reasons. First of all, obesity has been associated with impairments in host defense mechanisms[8-11], reversible after weight reduction[11]. 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[12]. In addition, obesity can increase the work of breathing due to reduced chest wall compliance and increased respiratory system resistance[12].

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[13,14]. However, the findings of recent studies on the relationship between excessive weight and risk of pneumonia were inconclusive[15]. While some studies indicated that excessive weight gain significantly increased risk of hospitalization with pneumonia[4,16-19], other studies illustrated a reversed relationship[20-23]. In addition, other studies reported that obese subjects with pneumonia had lower mortality compared to normal weight subjects[24-28] (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.

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