

# PATHOPHYSIOLOGY OF HYPOXEMIA AND DYSPNEA IN SEVERE PNEUMONIA

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## *Abstract*

Severe pneumonia, including viral, such as COVID-19 is almost always associated with significant hypoxemia which can further increase the risk of adverse outcome. The main cause of hypoxemia in most cases of both viral and bacterial pneumonia is blood shunting in unventilated and collapsed areas of the lungs. However, in COVID-19 a hypoxemia is also determined by a thickening of the alveolocapillary membrane and ventilation-perfusion mismatches, associated both with numerous micro thrombosis and primary loss of hypoxic vasoconstriction. Severe dyspnea almost always aggravates the impairment of lung mechanics in patients with severe pneumonia, however, in COVID-19 the severity of dyspnea is not always proportional to the degree of hypoxemia.

This publication formulates practically important questions about the development and clinical significance of above-mentioned disorders and also answers them both from the perspective of pathophysiology and evidence-based medicine.

**Key words:** severe pneumonia, COVID-19, hypoxia, hypoxemia, ventilation-perfusion mismatches, shunting, microthrombosis, dyspnea, hypocapnia.

**Ukr. Pulmonol. J. 2020;2:19–26.**

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