

## Streszczenie w języku angielskim

The COVID-19 pandemic, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), emerged in China in late 2019 and spread rapidly worldwide, causing significant mortality and burdening healthcare systems. Most cases of COVID-19 are mild or asymptomatic. Some predisposed patients develop serious complications requiring intensive care and mechanical ventilation (MV). COVID-19 patients in the ICU are at risk of developing severe bacterial infections, such as bacterial bloodstream infections (BSIs) and ventilator-associated pneumonia (VAP). The PhD dissertation aims to investigate these complications and identify risk factors and common pathogens.

Critically ill patients often require intensive care procedures, which increase the risk of BSI. The study aimed to identify the pathogens responsible for BSI and determine the risk factors for infection in COVID-19 patients in the ICU. Data from 201 patients were analyzed, of whom 43 (21.4%) developed BSI. Mortality in the group with BSI was 65.1% and in the group without BSI, 58.9%; this difference was not statistically significant. The occurrence of BSI was significantly associated with MV time, ICU stay, presence of VAP, use of muscle relaxants, high body mass index (BMI), and male gender. The primary pathogens are *Klebsiella pneumoniae*, *Acinetobacter baumannii* and *Enterococcus faecalis*. MDR pathogens accounted for 87% of cases. The first positive blood culture occurred on average 11.4 days after ICU admission.

MV is commonly used to treat severe cases of COVID-19 but can lead to complications such as VAP. In the wake of the COVID-19 pandemic, a significant number of patients with severe respiratory failure required intensive care procedures, increasing the risk of secondary infections. The medical records of 235 patients were analyzed, of which 180 fulfilled the inclusion criteria. Of these, 67 (37%) developed VAP, and the mortality rate was 70.1%. Patients with VAP had longer ICU and MV duration compared to patients without VAP. The most common bacteria were *Klebsiella pneumoniae*, *Staphylococcus aureus*, and *Enterococcus faecalis*, and 57% of cases were MDR pathogens. Patients with VAP had a higher mortality rate compared to those without VAP, the difference was not statistically significant. The results show that VAP is a common complication in COVID-19 patients undergoing MV, and MDR bacteria are a significant problem, highlighting the need for effective VAP prevention and treatment strategies in this patient group.

