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Introduction:

Community-acquired pneumonia (CAP) in immunocompromised patients represents a heterogeneous group with outcomes and specific pathogens related to the immunosuppression state. This study aims to determine which cause of immunosuppression is associated with a higher risk of in-hospital mortality in immunosuppressed adults diagnosed with CAP admitted to the intensive care unit (ICU).

Methods:

An observational prospective cohort study was performed based on the MIMIC-IV database. Adult patients with CAP and immunosuppression admitted to the ICU during the first 24 hours between 2008 and 2019 were included. The total cohort was subcategorized according to immunosuppression cause (i.e., solid tumor, hematological tumor, autoimmunity status, transplant status, asplenia, human immunodeficiency virus [HIV], sickle cell disease, and inflammatory bowel disease). A multivariate logistic regression model was developed to evaluate the relationship between immunocompromise and in-hospital mortality.

Results:

A total of 1776 patients were included; 58.89% were male with a median age (IQR) of 68 (56–79). Solid tumor was the most frequent cause of immunosuppression (55.68% [989/1776]), followed by hematologic tumor (17,3% [307/1779]). A quarter of the cohort (25.11% [446/1776]) had an etiological microbial isolation. Typical bacterial pathogens related to CAP were the most frequently isolated (57.39% [256/446]). A total of 71,6% (1274/1779) of patients died during the hospital admission. Older age and solid tumors were associated with a two-fold increase in mortality risk among CAP patients with immunosuppression. (**Table 1**).

Conclusion:

This study exposes that among immunosuppressed patients with CAP, solid tumor is strongly associated with in-hospital mortality, and each immunosuppression cause represents a different mortality risk for this population. Immunosuppressed patients with CAP might have different clinical outcomes according to the etiology of their immunosuppression and should be addressed individually.

Table:

Variables	Univariate Analysis OR (95% CI)	p-value	Multivariate Analysis OR (95% CI)	p-value
Age	1,03 (1,99-3,03)	<0,01	1,02 (1,01-1,03)	<0,01
Solid tumor	2,46 (1,99-3,03)	<0,01	1,88 (1,48-2,38)	<0,01
Asplenia	0,23 (0,12-0,59)	0,01	0,38 (0,16-0,88)	0,03
HIV/AIDS	0,53 (0,35-0,82)	0,01	0,88 (0,56-1,39)	0,59
Inflammatory bowel disease	0,47 (0,30-0,74)	0,01	0,60 (0,38-0,95)	0,03
Autoimmune status	0,51 (0,36-0,73)	<0,01	0,67 (0,46-0,97)	0,03

Hematological tumor	1,12 (0,85-1,48)	0,45
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Table 1. Univariate and multivariate analysis of immunosuppression cause and in-hospital mortality in immunosuppressed patients with CAP admitted to ICU.