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The Relationship between Human Neutrophil Elastase Levels and Acute Respiratory Distress Syndrome in Patients with Thoracic Trauma

Authors : Wahyu Purnama Putra, Artono Isharanto

Abstract : Thoracic trauma is trauma that hits the thoracic wall or intrathoracic organs, either due to blunt trauma or sharp trauma. Thoracic trauma often causes impaired ventilation-perfusion due to damage to the lung parenchyma. This results in impaired tissue oxygenation, which is one of the causes of acute respiratory distress syndrome (ARDS). These changes are caused by the release of pro-inflammatory mediators, plasmatic proteins, and proteases into the alveolar space associated with ongoing edema, as well as oxidative products that ultimately result in severe inhibition of the surfactant system. This study aims to predict the incidence of acute respiratory distress syndrome (ARDS) through human neutrophil elastase levels. This study examines the relationship between plasma elastase levels as a predictor of the incidence of ARDS in thoracic trauma patients in Malang. This study is an observational cohort study. Data analysis uses the Pearson correlation test and ROC curve (receiver operating characteristic curve). It can be concluded that there is a significant ($p= 0.000$, $r= -0.988$) relationship between elastase levels and BGA-3. If the value of elastase levels is limited to 23.79 ± 3.95, the patient will experience mild ARDS. While if the value of elastase levels is limited to 57.68 ± 18.55, in the future, the patient will experience moderate ARDS. Meanwhile, if the elastase level is between 107.85 ± 5.04, the patient will likely experience severe ARDS. Neutrophil elastase levels correlate with the degree of severity of ARDS incidence.

Keywords : ARDS, human neutrophil elastase, severity, thoracic trauma
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