

### Abstract

## THE CORRELATION BETWEEN LEUKOCYTOSIS AND HYPOALBUMINEMIA WITH PNEUMONIA IN STROKE PATIENTS IN DR. SARDJITO HOSPITAL YOGYAKARTA

**Background:** Stroke is the one of the most common cause of death in the world. Pneumonia is one of many stroke complications that may lead to mortality. Leukocytosis and hypoalbuminemia are known to have a role in pneumonia. An established correlation is needed so that practitioners can be aware of the severity of possible causes of leukocytosis and hypoalbuminemia such as infection and manage them accordingly so as to prevent pneumonia from occurring.

**Objective:** To determine the relationship between leukocytosis and / or hypoalbuminemia with pneumonia in stroke patients in Dr. Sardjito Hospital Yogyakarta

**Method:** The study design is retrospective cross sectional study. The secondary data are Case Report Form (CRF) of stroke patients with pneumonia taken from the Stroke Unit of Dr. Sardjito Hospital Yogyakarta ranging from January 2013 to December 2014. A total of 144 subjects met all the criteria for this study. The data was analyzed using Chi-Square test, Fisher's Exact Test or Pearson's Chi-Square Test and logistic regression to obtain the Odds Ratio (OR) in order to evaluate the correlation between leukocytosis ( $\geq 10000 / \text{mm}^3$ ) and /or hypoalbuminemia ( $< 3.5 \text{ g/dL}$ ) with pneumonia in stroke patients. The confounding factors were analyzed as well.

**Result:** Out of 144 patients, only 22 had pneumonia. Out of which, 9 has leukocytosis only, 3 has hypoalbuminemia only and 5 had both. Chi-Square test showed that the correlation is not significant with pneumonia ( $p=0.381$ ,  $p=0.755$ , and  $p=0.308$  respectively). The odds of retracting pneumonia with leukocytosis ( $\text{OR}=0.800$ , 95% CI 0.163-3.916,  $p=0.381$ ), hypoalbuminemia ( $\text{OR}=0.822$ , 95% CI 0.246-2.744,  $p=0.755$ ), or both ( $\text{OR}=0.343$ , 95% CI 0.048-2.470,  $p=0.308$ ) was also not significant. The confounding factors analyzed in this study includes age, gender, dysphagia, dysarthria, abnormal chest radiography, decrease consciousness, NIHSS, MMSE, BI, GCS and the use of mechanical ventilator. Among these, the ones that are significant towards pneumonia are decrease consciousness ( $p=0.001$ ), NIHSS ( $p=0.000$ ), and GCS ( $p=0.001$ ).

**Conclusion:** There is no correlation between leukocytosis and or hypoalbuminemia with pneumonia in stroke patients.

**Keywords:** Stroke, Leukocytosis, Hypoalbuminemia, Pneumonia