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Relation between Neutrophil-to-lymphocyte ratio and ARDS patients at selected Hospitals in Indore

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Introduction

Over the world, millions of individuals are affected by acute respiratory distress syndrome (ARDS), and it is the leading cause of mortality in intensive care units (ICUs). ARDS epidemiology surveys have not received much attention in India. The fatality rate from ARDS among ICU patients in India varies greatly (22-100%), as shown by epidemiological studies done in Inore, Delhi, Lucknow and other regional cities. High death rates persist despite recent improvements in critical care models. Thus, ARDS remains a challenge for the field of critical care medicine.

As there are no curative treatments for ARDS other than reduced tidal volume breathing, a prognostic marker is very significant. Critically ill patients' outcomes have been evaluated using the Acute Physiology and Chronic Health Evaluation II (scores), as well as the Simplified Acute Physiology Score. Yet, these scores are not exclusive to ARDS. developed a method for assessing the probability of adverse outcomes in ARDS patients. Nonetheless, this model's implementation requires a great deal of nebulous variables and convoluted computations, and acquiring the required data presents some practical difficulties. Bedside ARDS score APPC is used only for patients with moderate to severe ARDS who are being ventilated using a protective mechanism. Biomarkers in ARDS patients have also been the subject of a number of studies. Yet, most current biomarker studies need unique patient biological samples, a select population of patients, and the incorporation of additional clinical data. Such an assessment is challenging because of the complexity and heterogeneity of the condition.

The function of inflammation in ARDS is well established, both in terms of its contribution to the disease and its significance in terms of prognosis and

symptomatology. There is a correlation between the pathophysiology of ARDS and the ratio of cytokines to chemokines. Systemic inflammation may be identified by measuring the neutrophil-to-lymphocyte ratio. Increased neutrophil infiltration may be associated with cytotoxicity, vascular stasis, and decreased inflammation in response to shifts in the ratio of pro-inflammatory to anti-inflammatory cytokines.

The NRL has been proved to be applicable to a variety of clinical issues by several research. A number of studies have shown that the NLR correlates with patients' clinical outcomes in the intensive care unit, indicating that the NLR may be used as a prognostic indicator. Those with severe sepsis or septic shock had an NLR correlation with 28-day death, according to another study. The NLR is advantageous for prognostic indications since it is simple, inexpensive, and widely available.

No simple, routine, or consistent risk factors for predicting the fate of ARDS patients have been identified as of yet. There is a lack of literature about the NLR and the prognosis of ARDS patients. The researchers behind this study wanted to see whether there was any predictive value in using the NLR for ARDS patients.

Methodology

The research was of an observational nature, and it was carried out in a variety of hospitals located in the city of Indore. The research required 200 samples, and those samples were chosen based on the inclusion criteria. There was a conscious decision made on who would participate. The following information was collected as baseline data: age, gender, APACHE II score, ARDS risk factors, medical history, ventilation status, and the findings of an experimental evaluation. There was also a search for information on survival rates inside the medical records. We gathered information on the patient's previous medical history, which included the procedures they had had, their history of smoking, and the existence of ailments such as cancer, cirrhosis of the liver, high blood pressure, and diabetes. Over the course of the experiment, we determined your oxygen saturation (PaO2), hematocrit (HCT), white blood cell (WBC) count,

neutrophil count, lymphocyte count, platelet count, as well as your sodium, potassium, blood urea nitrogen, creatine, and albumin levels. These experimental studies were described after a patient had been diagnosed with ARDS and had rested for 48 hours.

Results

Throughout the course of the examination, 58.2% of the total number of patients who participated in our study, which included a total of 200 people (100 males and 100 females), were found to have gone away. Twenty-five percent of the patients were former smokers at some point in their lives. Forty individuals were able to get invasive ventilation using a mechanical device. In this particular instance, pulmonary infection was the most common cause (42.5% of the cases). Aspiration (at a rate of 21.5%) and non-pulmonary sepsis (at a rate of 23.1%) followed as the next two most common diagnoses. The initial NLR median for all people was 15.2 at the beginning. The median APACHE II score at the time of the first evaluation was 18. There was a statistically significant difference between the two groups in terms of age, the use of invasive mechanical ventilation, the APACHE II score, cigarette smoking, and liver cirrhosis. Several parameters

measured in the laboratory, such as the neutrophil-to-lymphocyte ratio (NLR), the platelet count, salt, blood urea nitrogen (BUN), creatinine, and albumin, exhibited substantial degrees of variation. A statistically significant relationship was discovered between liver cirrhosis and age, survival, NLR, Cr, and PaO2/FIO2 when multiple linear regression was performed. We discovered that getting older, having cirrhosis of the liver, and having Cr were all factors that related to an increased risk. Throughout this period, the sole factor that was protective was the PaO2/FIO2 ratio. Also, a substantial association was found between ARDS patients and their neutrophil-to-lymphocyte ratio.

Conclusion

According to the findings of our research, an independent indicator of a poor prognosis in ARDS patients was a high NLR measured 48 hours after an ARDS diagnosis. Because of how convenient this marker is, there is a possibility that it will be employed in clinical practise. Furthermore discovered was the fact that

there was a significant correlation between ARDS patients and the neutrophil-to-lymphocyte ratio of their blood cells.

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