

VITAL SIGNS IN PATIENTS WITH BRONCHIAL ASTHMA

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ANNOTATION: Bronchial asthma is a chronic respiratory condition characterized by reversible airway obstruction, inflammation, and bronchial hyperresponsiveness. While vital signs are crucial indicators of a patient's overall health, they play a particularly significant role in assessing and managing patients with bronchial asthma.

KEY WORDS: Asthma, Emergencies, Monitoring, Physiologic, Vital Signs.

Asthma is a disease with a high incidence that, if left untreated, can have serious detrimental outcomes on health and overall well-being, especially in Indonesia. Patients who are having an asthma attack must be treated 1-3 quickly or it can result in death. Asthma attacks are a huge health burden for patients and a financial and 4,5 human burden on public health services. They are most common in patients with asthma, but they can appear as the first sign of needing medical attention. Although the severity of asthma is generally associated with more attacks, each asthma attack is associated with the same risk of attack. Asthma attacks are important predictors of the occurrence of asthmatic health conditions in the future. Asthma management guidelines emphasize the importance of maintaining asthma control and reducing the risk of future attacks. Methods of managing asthma attacks have not changed much. Monitoring is one of the pillars of asthma patient management, enabling patients to properly assess their health and take appropriate action.

The main goal of asthma treatment is to use monitoring as a risk reduction strategy in severe asthma attacks. A risk assessment based on a history of asthma attacks and a list of clinical risk factors is currently recommended. However, many of these prognostic factors are either unchangeable or difficult to change, making it difficult to identify and measure the main risk factor before starting treatment. On the other hand, some risk factors can be modified, such as symptoms and lung function, so in this case monitoring of pulmonary function and other clinical signs is important when an asthma attack occurs. This study aims to analyze the relationship of vital signs of patients experiencing acute asthmatic episodes when given treatment in the emergency room.

Cross-sectional study was carried out at the emergency department of Ansari Saleh hospital, in Banjarmasin, Indonesia from July to August 2019.

Ethical committee of Health Research Ethics Committee, Politeknik Kesehatan Banjarmasin (HREC-PKB) had approved the study formally. Moreover, signed informed consent had been taken from all the participants and the objective of the study had been explained to them. During the study period, patients with acute asthmatic episode presenting to the emergency department were randomly selected to be observed in this study. The sample size was calculated with a 5% margin of error using the assumption that severe asthma occurs in 15%. The required minimum sample size was 195.9, which was increased to 220 after 12% of non-respondents were included. In this study, the researcher used the following inclusion criteria: adult patients with age greater than 15 years, willingness to participate in the study by signing an informed consent, and respondents with asthmatic episode that did not require intensive care unit.

A detailed clinical examination and medical history was obtained. The socio-demographics of the patients along with clinical characteristics such as vital signs, systolic blood pressure, diastolic blood pressure, pulse rate, respiratory rate, and body temperature were noted. As for the severity of an asthmatic episode, study participants were classified into three categories, namely mild, moderate

and severe. This classification was based on the frequency of the occurrence of 9 symptoms of asthma. Data entry and analysis were done using a Statistical Package for Social Sciences (SPSS) version 20.0. Mean \pm SD were computed for quantitative variables like, age (years), respiration rate (/minute), body temperature ($^{\circ}$ C), systolic blood pressure (mmhg), diastolic blood pressure (mmhg), and heart rate (/minute) while frequency and percentages were computed for categorical variables. Inferential statistics were explored using Chi-square test and One-way ANOVA to compare asthmatic episodes with demographic and clinical characteristics of the patients.

The p-value of ≤ 0.05 was considered statistically significant. RESULTS Of 220 asthma attack patients, the mean age was 30.6 ± 9.7 years. There were 92 (41.8%) males and 128 (58.2%) females. Most of the patients reported abnormal respiration rate 166 (75.4%), normal body temperature in 189 (85.9%), normal blood pressure 159 (72.3%) and normal heart rate 111 (50.5%). The asthmatic episodes showed that the majority of the patients reported a moderate level of episode 109 (49.5%), while 66 (30.0%) reported mild and 45 (20.5%) reported severe asthmatic episode. The mean respiratory rate during asthmatic episode was 23.1 ± 7.86 breaths/minute, body temperature was 36.8 ± 0.43 $^{\circ}$ C, systolic blood pressure was 113.8 ± 21.3 mmhg, diastolic blood pressure was 81.4 ± 11.5 mmhg, and heart rate was 103.5 ± 24.7 beats/minute. Moderate level of asthmatic attack was found more prevalent in patients aged as compared to patients >30 aged 30 i.e., 62 (56.9%) vs. 47 (42.3%). Similarly, the \leq average asthmatic attack was found greater in female patients as compared to male patients i.e., 80 (62.5%) vs. 29 (31.5%). Furthermore, these two variables, age, and gender were found to be significantly associated with asthmatic episodes Table 3 represents changes in the vital signs of patients when experiencing asthma attacks. Mean respiration and heart rate significantly increased among different levels of an asthma attack respectively. While performing multiple comparisons, it was found that mean respiration and heart rate also differ significantly among all three group comparisons. The rest of the variables reported in table 3, did not show any significant mean difference among asthmatic episodes.

In the current study, most patients have an increased pulse rate. This shows that compensation occurs to balance the supply of oxygen to organs and body tissues against hypoxaemic conditions and prevent hypoxia. This is in accordance with various studies that show that there is a relationship between body temperature and acute asthma attacks where during an asthma attack the body experiences inflammation, especially in the upper respiratory tract which is characterized by an increase in body temperature. This of course will also further worsen the patient's condition and the patient will be increasingly anxious and tired of dealing with this condition. The findings of current study revealed that the majority of respondents experienced abnormal respiratory rate correlating with the severity of an asthmatic episodes. Respiratory rate is an important factor in respiratory dysfunction in patients with bronchial asthma, which correlates with the pathophysiological changes occurring during asthmatic episode.

Variations in respiratory rate can also indicate laryngeal dysfunction. In severe asthma, laryngeal dysfunction impairs respiration and phonation. This necessitates detection and treatment in order to reduce the impact on asthma symptoms. Problems with the immune system related to IL-5 and IL-5R α so that patients can be given Anti-IL-165 and anti-IL-5R α to treat asthma attacks. Even breathing frequency monitoring in asthmatics is now more sophisticated and more specific using current technological advances such as using in vitro biomimetics, machine learning algorithms, and spiroarterio cardio rhythmography. The findings of the current study showed the patient's body temperature in relation to the severity of an asthmatic episode. Numerous studies have reported that body temperature is an important clinical sign that correlates with the severity of an asthma attack. A higher risk of re-admission and severity were linked to high temperatures. Repeated reception revealed a greater sensitivity to high summer temperatures.

REFERENCES:

1. Kotwani A, Chhabra SK. Effect of patient education and standard treatment guidelines on asthma control: an intervention trial. WHO South East Asia J Public Health 2012;
2. American Lung Association. Asthma Risk Factors American Lung Association [Internet]. 2018. Available from: <https://www.lung.org/lung-health-and-diseases/lung-disease-lookup/asthma/symptoms-causes-risk-factors/asthma-risk-factors>.
3. Global Asthma Network. The Global Asthma Report. Vol 5. Auckland, New Zealand 2018.
4. Couillard S, Steyerberg E, Beasley R, Pavord I. Blood eosinophils, fractional exhaled nitric oxide and the risk of asthma attacks in randomised controlled trials: protocol for a systemic review and control arm patient-level meta-analysis for clinical prediction modelling.
5. Fletcher M, van Der Molen T, Lenney W, Boucot I, Aggarwal B, Pizzichini E. Primary Care Management of Asthma Exacerbations or Attacks: Impact of the COVID-19 Pandemic. Adv Ther [Internet] 2022;
6. Couillard S, Laugerud A, Jabeen M, Ramakrishnan S, Melhorn J, Hinks T, et al. Derivation of a prototype asthma attack risk scale centred on blood eosinophils and exhaled nitric oxide.
7. Couillard S, Do WIH, Beasley R, Hinks TS, Pavord ID. Predicting the benefits of type-2 targeted anti-inflammatory treatment with the prototype Oxford Asthma Attack Risk Scale (ORACLE). ERJ Open Res