CORRELATION BETWEEN TOTAL NASAL SYMPTOM SCORE AND CLASSIFICATION OF RHINITIS ALLERGY BASED ON ARIA-WHO WITH ASTHMA COMORBIDITY AT PHC HOSPITAL IN SURABAYA

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ABSTRACT

Introduction: The prevalence of Rhinitis Allergy (RA) is quite high, reaching 32%. The incidence of RA is often associated with asthma, as many as 45% of asthmatics occur after RA, and as many as 20-50% of RA occur after asthma. If RA occurs together with asthma, it can exacerbate clinical symptoms for the patient. According to ARIA-WHO, RA is classified according to time, into intermittent and persistent, and based on the severity of symptoms and quality of life, divided into mild and moderate-severe. Currently, there is a short questionnaire, namely the Total Nasal Symptom Score (TNSS). TNSS is the sum of individual scores for each nasal symptom. Each symptom was measured using a score of 0 to 3.
Purpose: To determine the correlation between TNSS and RA classification based on ARIA-WHO with asthma comorbidity at PHC Hospital in Surabaya.
Method: This study used an observational analytic research design with a cross-sectional study design, with a sample size of 39. Statistical analysis was carried out using the Spearman Correlation test.
Result: From 39 samples, female (59%) and male (41%), the highest age group was 46-55 years (28.2%), the most allergy history was allergy to cold and dust (67.9%), the highest degree of TNSS was mild (43.6%) followed by moderate (33.3%), then severe (12.8%) and very mild (10.3%). The highest degree of RA was persistent moderate-severe (51.3%), followed by mild persistent (17.9%), followed by intermittent mild and intermittent moderate-severe (15.4%). Based on the analysis results that have been carried out using the Spearman correlation test, the results are $p = 0.000$ ($\alpha = <0.05$) and $r = 0.566$, showing a strong significant correlation.
Conclusion: There is a strong significant correlation between TNSS and RA classification based on ARIA-WHO in RA patients with asthma comorbidity.

Keyword: Rhinitis Allergy; Asthma; Total Nasal Symptom Score; ARIA-WHO

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INTRODUCTION

Rhinitis Allergy (RA) is an inflammation of the nasal mucosa caused by allergens attached to the nasal mucosa. IgE antibodies mediate inflammation that occurs in the nasal mucosa. Symptoms of RA appear in the form of symptoms of rhinorrhea, nasal congestion, itchy nose, and sneezing[1]. There is no national data on the prevalence of RA in Indonesia. Still, a study conducted in 2010 at the Department of Head and Neck-Surgery, General Hospital Dr. Hasan Sadikin in Bandung showed the prevalence of RA at 24.5%[2]. In general, RA is not a severe disease. Still, the clinical condition of RA often causes disturbances in the quality of life, among others due to sleep disturbances, social activities, and school and work productivity. This can lead to a decrease in productivity, which has a socio-economic impact[2].

Asthma is an inflammation of the respiratory tract that causes narrowing of the airways resulting in shortness of breath or difficulty breathing[3]. The association of RA with asthma has been recognized for decades. RA occurs in most patients with asthma, and a minority of RA patients have comorbid asthma[4]. RA precedes as many as 45% of asthmatics, and as many as 20-50% of RA are preceded by asthma. RA may have a role in the pathogenesis of asthma, so that RA may exacerbate asthma symptoms[4,5]. RA patients with comorbid asthma have poorer sleep quality because they suffer from shortness of breath. RA patients with comorbid asthma suffer more from depression and anxiety when compared to RA patients without comorbid asthma. RA patients with comorbid asthma have a poorer quality of life when compared to RA patients without comorbid asthma[6].

The classification of RA is based on Allergic Rhinitis and its Impact on Asthma from the World Health Organization (ARIA-WHO), classified according to time, the severity of symptoms, and quality of life. It was divided into intermittent if symptoms appeared less than four days per week or less than four weeks and persistent if symptoms occurred more than four days per week or more than four weeks. Meanwhile, the severity of symptoms and quality of life were divided into mild and moderate-severe[7].

The total nasal symptom score is a short questionnaire used to evaluate the severity of the main symptoms of RA that is widely used in various countries[8]. TNSS is the sum of individual scores for each nasal symptom. Each symptom was measured using a score (0-3). Score 0 if there are no symptoms, score 1 if symptoms are mild and easily tolerated, score 2 if symptoms interfere with activities but are still tolerable, score 3 if severe symptoms interfere with activities and cannot be tolerated[9]. This study was conducted to determine whether there is a correlation between TNSS and RA classification based on ARIA WHO and comorbid asthma.

METHOD

This study used an observational analytic research design with a cross-sectional study design. The research sample was determined prospectively by collecting data on RA patients at PHC Hospital in Surabaya. Patients will be given a TNSS questionnaire, RA classification based on ARIA WHO, asthma diagnosis criteria according to the Global Initiative for Asthma 2020, and Asthma Control Test. Then the researchers grouped the data on demographic aspects consisting of age, gender, chief complaint, TNSS, and RA classification based on ARIA WHO. The sampling method was carried out by non-probability sampling through consecutive sampling, where the sample was selected through the inclusion and exclusion criteria set by the researcher. The estimation of the sample size used is based on the Slovin formula. The total sample used was 39. Inclusion criteria in this study: 1. New case patients diagnosed with RA with comorbid asthma at the head and neck poly and pulmonary poly PHC Hospital Surabaya; 2. Aged between 15-64 years. Exclusion

criteria in this study: RA patients with comorbid asthma at the head and neck and pulmonary polyclinic at PHC Hospital Surabaya and comorbid rhinosinusitis, nasal polyps, otitis media, and atopic dermatitis. The data obtained will be analyzed using the Spearman correlation test with the SPSS program.

RESULTS

In this study, the highest TNSS result was a score of 12 for as many as two people, and the lowest TNSS result was a score of 1 for as many as two people. The average value of TNSS in this study was 6. The distribution of TNSS in this study was the most cases with mild degrees in 17 people with a percentage of 43.6%, followed by moderate degrees in 13 people with a percentage of 33.3%. The degree of severity of 5 people with a percentage of 12.8% and very mild degrees of 4 people with a percentage of 10.3% can be seen in Table 1.

Based on the results of this study, the highest classification of RA was obtained, namely persistent moderate-severe as many as 20 people with a percentage of 51.3%, followed by mild persistent as many as seven people with a percentage of 17.9%. Mild intermittent and moderate-severe intermittent as many as six people with a percentage of 15.4% can be seen in Table 2.

Based on the output in Table 3, it is known that the significance value is 0,000. The significance value is less than 0,05, meaning there is a significant correlation between the TNSS variables and the RA classification based on ARIA WHO. The correlation coefficient is 0,566, which means that the level of strength of the correlation between TNSS and the RA classification based on ARIA-WHO is said to be strong.

Table 1. Distribution of TNSS

TNSS	Total	Percentage
Very Mild	4	10,3%
Mild	17	43,6%
Moderate	13	33,3%
Severe	5	12,8%

Table 2. Distribution of ARIA WHO Classification

ARIA WHO Classification	Total	Percentage
Intermittent Mild	6	15,4%
Intermittent Moderate-Severe	6	15,4%
Persistent Mild	7	17,9%
Persistent Moderate-Severe	20	51,3%

Table 3. Correlation Of TNSS To Classification Of AR Based On ARIA WHO With Comorbid Asthma

AR Classification/ TNSS	Intermittent Mild	Intermittent Moderate-Severe	Persistent Mild	Persistent Moderate-Severe
Very Mild	3	1	0	0
Mild	3	4	4	6
Moderate	0	3	3	7
Severe	0	0	0	5
p	0,000			
r	0,566			

DISCUSSION

This study took 39 samples of patients who met the inclusion and exclusion criteria. The explanation of the correlation between TNSS and RA classification based on ARIA WHO with comorbid asthma can be seen in Table 2, which shows that by using the Spearman correlation test, a significance result of 0,000 ($p<0.05$) is obtained, which means that TNSS and RA classification based on ARIA WHO with comorbid asthma have a meaningful relationship. The correlation coefficient in this study is 0,566, which means the strength of the correlation between TNSS and RA classification based on WHO ARIA is said to be strong[10]. Denillia's research from 2019 supports this result, showing a significant result of 0,000 and a coefficient of 0,616[11]. In Arfah Lena's research, 2019, using the Kruskal Wallis test showed a

significant relationship (p<0,001) between TNSS and RA classification based on ARIA-WHO[12].

Limitations in this study: This study could not describe the population as a whole because the researchers only took sample data that matched the inclusion and exclusion criteria that had been set.

CONCLUSIONS

This study is entitled "Correlation between Total Nasal Symptom Score and Classification of Rhinitis Allergy based on ARIA-WHO with Asthma Comorbidity at PHC Hospital in Surabaya," carried out on 16 September-6 November 2021 with a total sample of 39 people. It can be concluded that the hypothesis of this study is accepted, that there is a strong significant correlation between TNSS and the classification of allergic rhinitis based on ARIA WHO.

ACKNOWLEDGMENT

The author thanks Dr. Wiyono Hadi, dr. Sp.T.H.T.K.L.(K) for his willingness to always take the time to help, guide, provide direction and input, and motivate during the research process. Thank you to PHC Hospital in Surabaya for providing the opportunity and permission to conduct this research. The authors also thank those who helped and supported the author in this research process.

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