



Disease Severity Based on Autologous Serum Skin Test Result in Chronic Spontaneous Urticaria Patients at Dermatology and Venereology Outpatient Clinic of Dr. Mohammad Hoesin General Hospital Palembang

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ABSTRACT

Studies on the severity of chronic spontaneous urticaria based on the results of the Autologous Serum Skin Test (ASST) have been done before, but the results vary so there are still differences of opinion among some researchers. This study aims to determine the correlation between disease severity and ASST results in chronic spontaneous urticaria patients at the Dermatology and Venereology (DV) Polyclinic of Dr. Mohammad Hoesin (RSMH) Palembang. The type of this study is analytic observational with cross-sectional design which used secondary data in the form of medical records. There were 110 samples of chronic spontaneous urticaria patients at the DV clinic and it is 76 samples that met the inclusion criteria. The highest distribution of chronic spontaneous urticaria patients was in the 17-25 year age group (23.7%) and the female group (64.5%). The majority of chronic spontaneous urticaria patients had negative ASST results (52.6%) and mild disease activity (63.2%). Bivariate analysis showed no significant correlation between urticaria activity (UAS7 score) and ASST results with a value of $p = 0.287$ or $p > 0.05$.

1. Introduction

Urticaria is a vascular reaction of the skin in the form of local edema (wheal) surrounded by a red halo (flare) and accompanied by itching, stinging, or a stabbing sensation. Urticaria that lasts less than 6 weeks is called acute urticaria, urticaria that lasts 6 weeks or more with attacks that occur at least 2 times a week is called chronic urticaria.¹ Unlike acute urticaria whose cause is known, the cause of chronic urticaria is unknown in most cases.²

Chronic urticaria is divided into chronic physical urticaria and chronic spontaneous urticaria. Physical

chronic urticaria occurs due to induction of external physical stimuli, such as scratches, sunlight, cold, heat, and pressure, whereas chronic spontaneous urticaria occurs without induction.³ Some patients with chronic spontaneous urticaria have autoantibodies in their serum, so it is called autoimmune urticaria, while others with no autoantibodies found in their serum are called chronic idiopathic urticaria.⁴

In most of autoimmune urticaria patients, functional autoantibodies were found in the form of IgG antibodies against the α subunit of high affinity IgE

receptors (FcεRIα), while in others they were IgG antibodies against IgE. Cross-linking between IgG antibodies with FcεRIα or IgE will induce release of vasoactive mediators through the activation and degranulation of basophils or mast cells. The release of vasoactive mediators by basophils or mast cells leads to increased vascular permeability resulting in clinical manifestations of urticaria.⁴

The presence of functional autoantibodies in the circulation can be detected through various tests, including histamine release assay (HRA) and autologous serum skin test (ASST). HRA examination is the gold standard in the diagnosis of autoimmune urticaria, but the examination procedure takes a longer time than ASST. ASST examination has a simple examination procedure, and is more effective and efficient than the histamine release assay (HRA). In addition, ASST has a sensitivity of 70% and a specificity of 80%. This is what makes ASST more frequently used in various studies.⁵

The results of a study in Poland on 1,091 chronic urticaria patients showed that 35.1% of patients had physical / induced chronic urticaria and 61.1% of patients had chronic spontaneous urticaria, while 3.8% had both. The prevalence of urticaria is found more in women, which is about 65% of the population. This is related to the incidence of autoimmune diseases that is more common in women than men.⁶

An overview of the severity of urticaria can be seen through the urticaria activity score (UAS), which is a score that describes the symptoms of wheal and pruritus of urticaria patients for seven days so it is called UAS7.⁷

Research on the severity of chronic spontaneous urticaria patients based on ASST results has been widely carried out, but the results of these studies are varied that there are still differences of opinion among researchers. Caproni et al. reported that chronic spontaneous urticaria patients with positive ASST results had more severe clinical manifestations, whereas the results of the study by Jindal et al. showed that the clinical manifestations of chronic spontaneous

urticaria patients with positive and negative ASST results were indistinguishable.⁸ This study was aimed to determine the correlation between disease severity and ASST results in chronic spontaneous urticaria patients at the Dermatology and Venereology (DV) Polyclinic of Dr. Mohammad Hoesin Palembang (RSUP MH).

2. Method

This research is an analytic observational study with a cross sectional design. The research sample was taken using a total sampling method in the form of secondary data, which is the medical records of chronic spontaneous urticaria patients at the DV Polyclinic at MH Palembang Hospital for the period 2017-2019 consist of age, gender, ASST results, and UAS7 scores.

3. Result

A total of 76 research samples that fit the inclusion criteria were obtained from the medical records of chronic spontaneous urticaria patients at the DV Polyclinic RSUP MH for the period 2017-2019. In this study, it was found that the distribution of chronic spontaneous urticaria patients was mostly in the 17-25 year age group and female gender.

Table 1 contains data on the distribution of chronic spontaneous urticaria by age, from the most prevalent in the 17-25 year old group (23.7%), the 26-35 year group and the 46-55 year group (17.1%), the 36-45 years (15.8%), 56-65 years (13.2%), 12-16 years (9.2%), >65 years (2.6%), and 6-11 groups year with the amount of 1 sample (1.3%). In this study, no samples were obtained in the 0-5 year age group. In Table 2, there are distribution data which shows that chronic spontaneous urticaria is more common in women (64.5%).

Based on the data in Table 3, it was found that 36 samples (47.4%) had positive ASST results (autoimmune / autoreactive urticaria) and 40 samples (52.6%) had negative ASST results.

Table 4 shows the distribution data of chronic spontaneous urticaria based on urticaria disease activity as described by UAS7 score. Most of the

samples showed mild urticaria activity (63.2%), 21 of 76 samples (27.6%) showed moderate urticaria activity, and 7 of 76 samples (9.2%) showed severe urticaria activity.

In Table 5, it can be seen that the results of the bivariate analysis between the UAS7 score category and the ASST results were processed using cross tabulation 2x2 with the Chi Square test. From the data

analysis, it was found that there was no significant correlation between urticaria disease activity (UAS7 score) and ASST results in chronic spontaneous urticaria patients ($p = 0.287$), that there was no significant difference in disease activity between chronic spontaneous urticaria patients with positive ASST and negative ASST.

Table 1. Distribution of chronic spontaneous urticaria by age

Age group	Frequency (N)	Percentage (%)
0 – 5 years	0	0 %
6 – 11 years	1	1.3 %
12 – 16 years	7	9.2 %
17 – 25 years	18	23.7 %
26 – 35 years	13	17.1 %
36 – 45 years	12	15.8 %
46 – 55 years	13	17.1 %
56 – 65 years	10	13.2 %
> 65 years	2	2.6 %
Total	76	100 %

Table 2. Distribution of chronic spontaneous urticaria by gender

Gender	Frequency (N)	Percentage (%)
Male	27	35.5 %
Female	49	64.5 %
Total	76	100 %

Table 3. Distribution of chronic spontaneous urticaria by ASST result

ASST	Frequency (N)	Percentage (%)
Positive	36	47.4 %
Negative	40	52.6 %
Total	76	100 %

Table 4. Distribution of chronic spontaneous urticaria by disease severity

UAS7 score	Frequency (n)	Percentage (%)
0 (controlled)	0	0 %
1 – 14 (mild)	48	63.2 %
15 – 28 (moderate)	21	27.6 %

29 – 42 (severe)	7	9.2 %
Total	76	100 %

Table 5. Correlation between urticaria activity score with ASST result

Category of UAS7 score	ASST			
	Positive		Negative	
	n	%	n	%
Controlled-mild	20	55.6	28	70
Moderate-severe	16	44.4	12	30
Total	36	100	40	100

p = 0.287

4. Discussion

Age

Chronic spontaneous urticaria can be experienced by all age groups but is found mostly in the 17-25 year age group. The results of this study differ from the findings of Kumar et al. (2016) that stated the highest number of chronic spontaneous urticaria was found in the 21-30 year age group.⁵

This difference in results could be due to differences in reference sources for the division of the age groups used in the study. This study refers to the age division according to the Ministry of Health (2009) which is divided into 9 age groups, namely the age group 0-5 years, 6-11 years, 12-16 years, 17-25 years, 26-35 years, 36-45 years, 46-55 years, 56-65 years, and >65 years. Meanwhile Kumar, et al. grouped the study population into 6 age groups, namely the age group 1-10 years, 11-20 years, 21-30 years, 31-40 years, 41-50 years, and 51-60 years.

Gender

Chronic spontaneous urticaria was more common in women (64.5%), this result is closer to the results of previous studies that chronic spontaneous urticaria was more common in women than men with a ratio of 2: 1.^{1,9} This is based on differences in sex hormones between women and men. In women, estrogen and progesterone are more dominant than dehydroepiandrosterone sulfate (DHEAS). In men, the DHEAS hormone is dominant. The DHEAS hormone

can prevent inflammation and has a function as an immunomodulator. This hormonal factor causes a tendency for women to experience chronic spontaneous urticaria more often than men.¹⁰

ASST

The results of this study found that 47.4% of the samples of chronic spontaneous urticaria at Dr. Mohammad Hoesin Hospital Palembang has a positive ASST result. This percentage indicates that the results of this study are close to the results of previous studies which stated that as many as 50% of chronic spontaneous urticaria patients had positive ASST results.²

Urticaria activity score

The results of this study are consistent with the results of the study by Dias et al. (2016) that most patients have mild disease activity, but it is different from the research results of Hawro et al. (2018) that the majority of chronic spontaneous urticaria patients have moderate disease activity.^{7,11} The difference in the results of this study caused by the assessment of urticaria disease activity with a UAS7 score which is highly subjective. The doctor will ask the patient about their edema and pruritus to obtain UAS7 score and the answers that appear will vary widely based on each patient's perception of their complaint. This subjectivity can be influenced by the patient's educational, economic, social, and cultural

background.⁷

Urticaria activity score and ASST

The assessment of the correlation between urticaria activity and ASST results used the Continuity Correction correlation value because from the 2x2 cross tabulation there were no cells that had an expectation value less than 5. The analysis showed that the correlation between urticaria activity (represented by UAS7 score) and ASST results was not meaningful, consistent with the research results of Jindal, et al. (2017). However, in contrast to Caproni et al. which in his study found that chronic spontaneous urticaria patients with positive ASST results had more severe clinical manifestations than those who had negative ASST.⁸ Several studies which agree with Caproni, et al. reported that the majority of chronic spontaneous urticaria patients who have a positive ASST result usually have other autoimmune diseases as well, such as autoimmune thyroid disease (Hashimoto's disease), so this condition can worsen the patient's disease activity.¹²

The difference in the results of this study can be caused by the minimal number of research samples. Positive ASST results (according to the ASST positivity criteria of the Sabroe method) are also usually found in patients with active urticaria conditions, whereas in this study the highest number of samples was found in the mild urticaria activity group.⁵ This could affect the results of the analysis regarding the correlation between UAS7 scores and ASST results in this study.

In addition, there are only two indicators assessed in UAS7, namely the effect of pruritus on daily activities and the amount of edema. There are another instrument that can also assess urticaria disease severity, one of which is the total urticaria severity score (TUSS), which is a score that assesses the number and size of edema, pruritus intensity, persistent duration, frequency of appearance of symptoms, and frequency of use of antihistamines.¹³ Thus, the UAS7 assessment is less specific to describe the condition of chronic spontaneous urticaria patients and it can affect the results of the analysis in the study.

It is also necessary to repeat reviews to see if the findings change over time in order to assess the association between ASST results and UAS7 scores in chronic spontaneous urticaria patients.⁸

Research limitations

In this study, there were several limitations that the researchers faced. First, there are so many patient medical records at the Medical Record Installation which are lost, so the number of chronic spontaneous urticaria patients is not in accordance with the preliminary survey. Second, some of the available data on medical records are incomplete, such as UAS7 scores. Third, the minimal number of samples can affect the significance of the results so that they are not in accordance with the existing literature.

5. Conclusion

The distribution of 76 chronic spontaneous urticaria patients at Mohammad Hoesin General Hospital Palembang, was mostly women (64.5%), aged 17-25 years (23.7%), had negative ASST results (52.6%), and had mild disease activity (63.2%). There is no significant correlation between urticaria disease activity and ASST results in chronic spontaneous urticaria patients.

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