

## Quality of Life Based on Autologous Serum Skin Test Result in Chronic Spontaneous Urticaria Patients

Mahvira Chow Liana Herman Adil<sup>1</sup>, Nopriyati Nopriyati<sup>2</sup>, Desi Oktariana<sup>3\*</sup>, Yuli Kurniawati<sup>2</sup>,  
Gita Dwi Prasasty<sup>4</sup>

<sup>1</sup>Medical Education Study Program, Faculty of Medicine, Universitas Sriwijaya, Palembang, Indonesia

<sup>2</sup>Departement of Dermatology and Venereology, Dr. Mohammad Hoesin Hospital, Palembang, Indonesia

<sup>3</sup>Departement of Clinical Pathology, Faculty of Medicine, Universitas Sriwijaya, Palembang, Indonesia

<sup>4</sup>Departement of Parasitology, Faculty of Medicine, Universitas Sriwijaya, Palembang, Indonesia

E-mail: desioktariana@fk.unsri.ac.id

### Abstract

Several studies regarding the quality of life of chronic spontaneous urticaria patients based on Autologous Serum Skin Test (ASST) results have shown a variety of results. This study aims to determine the correlation between the quality of life and ASST results in chronic spontaneous urticaria patients at Dermatology and Venereology (DV) Outpatient Clinic of Dr. Mohammad Hoesin Hospital Palembang. This analytic observational study with a cross-sectional design used secondary data in the form of medical records. 76 samples met the inclusion criteria from 110 samples of chronic spontaneous urticaria patients at DV outpatient clinic. The distribution of chronic spontaneous urticaria patients was highest 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%). The effect of chronic spontaneous urticaria on the decline in quality of life was mostly moderate (35.5%). The bivariate analysis between DLQI score and ASST results with a value of  $p = 0.307$  or  $p > 0.05$  showed no significant correlation between the quality of life and ASST results.

**Keywords:** Autologous Serum Skin Test, Chronic Spontaneous Urticaria, Quality of Life

### 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.<sup>1</sup> Unlike acute urticaria whose cause is known, the cause of chronic urticaria is unknown in most cases.<sup>2</sup>

Chronic urticaria is divided into chronic physical urticaria and chronic spontaneous urticaria. Physical chronic urticaria occurs due to the induction of external physical stimuli, such as scratches, sunlight, and pressure, whereas chronic spontaneous

urticaria occurs without induction.<sup>3</sup> In some patients with chronic spontaneous urticaria, autoantibodies are found in their serum, so it is called autoimmune urticaria, while others with no autoantibodies found in their serum are called chronic idiopathic urticaria.<sup>4</sup>

In most autoimmune urticaria patients, functional autoantibodies were found in the form of IgG antibodies against the  $\alpha$  subunit of high-affinity IgE receptors ( $Fc\epsilon R1\alpha$ ), while in others they were IgG antibodies against IgE. Cross-linking between IgG antibodies with  $Fc\epsilon R1\alpha$  or IgE will induce the 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.<sup>4</sup>

There are several tests to do to detect the presence of functional autoantibodies in the circulation such as the histamine release assay (HRA) and the autologous serum skin test (ASST). HRA is the gold standard in the diagnosis of autoimmune urticaria, but the examination procedure takes a long time. ASST has a sensitivity of 70% and specificity of 80% with a simple examination procedure and is more effective and efficient than the histamine release assay (HRA), so it is more widely used in research.<sup>5</sup>

A study on 1,091 chronic urticaria patients in Poland showed that 61.1% of patients had chronic spontaneous urticaria.<sup>6</sup> Another study stated that the quality of life for chronic urticaria patients was comparable to that of patients with coronary heart disease.<sup>7</sup> It means that the quality of life of chronic urticaria patients is much lower than that of patients with other chronic skin conditions.<sup>8</sup>

The quality of life of chronic spontaneous urticaria patients can be assessed using a dermatology life quality index (DLQI) questionnaire. The interpretation of the DLQI score describes the influence of skin disease on the patient's quality of life.<sup>9</sup>

Research on the quality of life of chronic spontaneous urticaria patients has been widely carried out with varying results that there are still differences of opinion among researchers. Caproni et al. reported chronic spontaneous urticaria patients with positive ASST had more severe clinical manifestations and thus had a lower quality of life than patients with negative ASST, whereas Jindal et al. showed the clinical manifestations of chronic spontaneous urticaria patients with positive and negative ASST results were indistinguishable.<sup>10</sup> This study aimed to determine the correlation between the

quality of life and ASST results of chronic spontaneous urticaria patients at Dermatology and Venereology (DV) Outpatient Clinic of Dr. Mohammad Hoesin Hospital Palembang.

## 2. Method

This research is an analytic observational study with a cross-sectional design. The research sample was taken using the total sampling method in the form of secondary data, which is the medical records of chronic spontaneous urticaria patients at DV Outpatient Clinic of Dr. Mohammad Hoesin Hospital Palembang during 2017–2019 including the data of age, gender, ASST results, and DLQI scores.

## 3. Results

A total of 76 research samples that fit the inclusion criteria were obtained from the medical records of chronic spontaneous urticaria patients at DV Outpatient Clinic of Dr. Mohammad Hoesin Hospital Palembang during 2017-2019. This study found that the distribution of chronic spontaneous urticaria patients was mostly in the 17-25 year age group and most are female.

**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%

In **Table 1**, it can be seen that distribution of chronic spontaneous urticaria by age sequentially from the most prevalent group, namely the group of 17-25 years

(23.7%), 26-35 years, and 46-55 years (17.1%), 36-45 years (15.8%), 56-65 years (13.2%), 12-16 years (9.2%), > 65 years (2.6%), and 6- 11 years with a sample size of 1 (1.3%). In this study, no samples were obtained in the 0-5 age group. Based on gender (**Table 2**), chronic spontaneous urticaria was more common in women (64.5%).

**Table 2. Distribution of chronic spontaneous urticaria by gender**

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

It can be seen in **Table 3**, as many as 36 samples (47.4%) showed positive ASST results (autoimmune/autoreactive urticaria), and 40 samples (52.6%) showed negative ASST results.

**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%

This research showed varying quality of life of chronic spontaneous urticaria patients. The distribution of chronic spontaneous urticaria patients based on the quality of life can be seen in **Table 4**. The results showed that the most impact of chronic spontaneous urticaria on quality of life was moderate (35.5%). A total of 26 samples (34.2%) showed that chronic spontaneous urticaria greatly affects the quality of life. Then as many as 18 samples (23.7%) showed that chronic spontaneous urticaria slightly affect/had little effect on the quality of life, and as many as 5 samples (6.6%) showed that chronic spontaneous urticaria very greatly affected the quality of life. In this study, no

sample group showed no effect of chronic spontaneous urticaria on quality of life.

**Table 4. Distribution of chronic spontaneous urticaria by the quality of life**

DLQI score	Frequency (N)	Percentage
0-1 (not affect)	0	0%
2-5 (slightly affect)	18	23,7%
6-10 (moderate affect)	27	35,5%
11-20 (greatly affect)	26	34,2%
21-30 (very greatly affect)	5	6,6%
Total	76	100%

The results of the bivariate analysis between DLQI score and ASST results (**Table 5**) using the Chi-Square test showed that there was no significant correlation between quality of life and ASST results in chronic spontaneous urticaria patients, meaning that there was no significant difference between the quality of life of patients who had positive ASST results and negative ASST results ( $p = 0.307$ ).

**Table 5. Correlation between quality of life and ASST result**

DLQI score category	ASST			
	Positive		Negative	
	n	%	n	%
Affect (0 – 10)	24	66,7	21	52,5
Greatly affect (>10)	12	33,3	19	47,5
Total	36	100	40	100

$p = 0,307$

## 4. Discussion

### 4.1 Age

Chronic spontaneous urticaria can occur in all age groups but is found mostly in the 17-25 year group. This result differs from the findings of Kumar et al. (2016), who received the highest number in the 21-30 year age group.<sup>5</sup> This difference in results could be due to differences in the categorization of the age groups used in the study. This study refers to the age categorization according to

the Ministry of Health (2009) which is divided into 9 age groups namely the group of 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. Whereas Kumar et al. grouping the study population into 6 age groups, namely the group of 1-10 years, 11-20 years, 21-30 years, 31-40 years, 41-50 years, and 51-60 years.

#### 4.2 Gender

Chronic spontaneous urticaria was found more frequently in women (64.5%), this result is close to the results of previous studies that chronic spontaneous urticaria was twice as common in women as in men.<sup>1,11</sup> This is related to differences in sex hormones, where in women, estrogen and progesterone levels are more dominant than dehydroepi-androsterone sulfate (DHEAS). The DHEAS hormone, which is dominant in men, has an immunomodulatory function and can prevent inflammation. This hormonal factor underlies women have a greater tendency to experience chronic spontaneous urticaria.<sup>12</sup>

#### 4.3 ASST

About 50% of chronic spontaneous urticaria patients have positive ASST results.<sup>2</sup> The results in this study are close to the results of previous studies with the percentage of chronic spontaneous urticaria samples with positive ASST results in RSUP Dr. Mohammad Hoesin Palembang, with an amount of 47.4%.

#### 4.4 Quality of life

Most patients feel that chronic spontaneous urticaria has a moderate effect on the quality of life. However, no literature describes the quality of life of patients with chronic spontaneous urticaria in general. The results of previous studies showed the majority of chronic spontaneous urticaria

patients experienced that the disease slightly affects their quality of life.<sup>13</sup> Assessment of quality of life with DLQI score is also highly subjective that it can cause varying results. Also, the absence of certainty about the cause of the disease for a long time can cause frustration in patients with chronic spontaneous urticaria in order to deal with the disease and its series of treatments. It can cause a decrease in patient quality of life in varying degrees.<sup>14</sup>

#### 4.5 Quality of life and ASST

The assessment of the correlation between the quality of life and ASST results also used the Continuity Correction correlation value because from the 2x2 cross-tabulation there were no cells that had an expected value less than 5. The analysis showed that the correlation between the quality of life (represented by DLQI score) and the ASST result was not meaningful, similar to Wibowo, et al. (2006) research result. However, the study of Dias, et al. (2016) showed different results, that patients with positive ASST got a heavier effect in a decrease of quality of life than patients with negative ASST.<sup>14</sup>

As previously explained, the assessment of the quality of life using the DLQI questionnaire is highly subjective because it can be influenced by various patient backgrounds, that the results of the interview will also vary widely.<sup>14</sup> Factors that can affect the decrease in the quality of life of patients include age, gender, and the patient's socioeconomic conditions.

The majority of chronic spontaneous urticaria patients are in the young adult age group. People in this age group have high levels of productivity and tend to have families. When a person experiences chronic spontaneous urticaria in their productive age, it will affect their life aspects, such as decreased performance at work, disrupted

leisure activities, and also discomfort in the family.<sup>14</sup>

Based on gender, women experience chronic spontaneous urticaria more often than men. Research in Brazil in 2011 showed that women tend to have a worse quality of life than men. This is associated with women's skin which tends to be more sensitive than men's. Besides, the low quality of life in women with chronic spontaneous urticaria is also related to the limitations in dress caused by chronic spontaneous urticaria they are experiencing. This is considered quite disturbing for women because women are more sensitive to changes in appearance.<sup>14</sup> People with low socioeconomic backgrounds usually have low levels of education. A person's education level not only affects a person's knowledge of a disease but also affects a person's level of health awareness, that people with low socioeconomic backgrounds and low education usually come to health services in more serious conditions due to a lack of knowledge about the disease they are experiencing and low awareness of their own health.<sup>15</sup>

## 5. Conclusion

The distribution of 76 chronic spontaneous urticaria patients at RSUP Dr. Mohammad Hoesin Palembang mostly are women (64.5%), aged 17-25 years (23.7%), had negative ASST results (52.6%), and experienced a moderate decrease in quality of life (35.5%). There is no significant correlation between the quality of life and ASST results in chronic spontaneous urticaria patients.

## 6. Research limitation

In this study, there were several limitations that researchers faced. First, there are many missing patient medical records in the medical record installation, that the

number of chronic spontaneous urticaria patients is not in accordance with the preliminary survey. Second, some of the data available in the medical record were incomplete, such as the DLQI score. Third, the minimal number of samples can affect the significance of the results so that they are not in accordance with the existing literature.

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