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RESEARCH ARTICLE

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Assessing Post-Earthquake Living Conditions and Quality of Life in Chronic Spontaneous Urticaria Patients: Container Houses vs. Pre-Existing Buildings

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ABSTRACT

Objective: After the devastating earthquake in Türkiye on February 6, 2023, the majority of the local population had to live in containers or damaged houses, causing stress that could lead to the development of chronic spontaneous urticaria (CSU) in some patients. The objective of this study was to evaluate the effects of living in pre-existing buildings or container houses on CSU.

Materials and Methods: CSU patients whose symptoms initiated in the earthquake zone were included. Urticaria Control Test (UCT), Chronic Urticaria-Quality-of-Life questionnaires (CU-QoL), and the Overall Dry-Skin- Score (ODS) were utilized.

Results: A total of 16 patients diagnosed with CSU after the earthquake, with nine living in containers and seven in pre-existing buildings, were included. In the comparison of patients staying in pre-existing buildings and containers, a greater adverse impact on the quality of life scores was observed in those staying in pre-existing buildings although there was no statistical difference in UCT and ODS scores between the groups (container; median: 30.4 [10.8-40.7], building; median: 43.4 [35.8-50], p=0.02).

Conclusion: Earthquakes and associated stress may emerge as risk factors for the development of CSU, and the stress of living in damaged houses may negatively affect the quality of life in CSU patients.

Keywords: Earthquake, chronic spontaneous urticaria, container home

INTRODUCTION

On February 6, 2023, consecutive earthquakes that occurred in the Kahramanmaraş province of Türkiye caused enormous destruction, especially in the Pazarcık and Elbistan districts. These earthquakes, with magnitudes of 7.8 and 7.5 respectively, left the local people homeless and compelled many people to shelter in container houses or damaged houses. Adıyaman is one of the cities located in the southeast of Türkiye, adjacent to Kahramanmaraş, and was significantly affected by the recent earthquakes.

The difficult life conditions that emerged after the earthquake affected the health of many people, and among these effects, the development of chronic spontaneous urticaria (CSU), an entity known to be mostly triggered by psychological stress factors, is particularly noteworthy. CSU is a recurring skin condition characterized by itchy wheals on various parts of the body (1). The traumatic experience of an earthquake may be considered a potential trigger for the onset of chronic skin disorders, particularly acute and chronic spontaneous urticaria (2).

In the literature, pruritus and urticaria are seen as some of the most common skin disorders after earthquakes (3). In the study conducted by Bhattarai et al. after the Nepal earthquake in 2015, the most common disease in patients evaluated in the dermatology clinic after the earthquake

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was urticaria/pruritus as seen in 20% of the patients, followed by eczema with 19.2% (4). Similar results were demonstrated in observational studies published after the Düzce earthquake that occurred in northwestern Türkiye in 1999. In the data presented by Oztas et al., newly developing urticaria after the earthquake was shown to be a common clinical entity, and the reasons were considered to be changing weather conditions, contact with new plastic materials, and psychological stress (5). However, there is insufficient data on how post-earthquake conditions affect the severity of urticaria and the quality of life of the patients.

The objective of the current study was to evaluate the urticaria activity and quality of life of newly diagnosed CSU patients living in the earthquake region and to examine the potential effects of living conditions.

MATERIALS and METHODS

Patients newly diagnosed with chronic spontaneous urticaria (CSU), residing in the earthquake zone, with symptoms persisting for at least 6 weeks, and presenting to the Adıyaman Training and Research Hospital's Allergy Clinic within the first 6 months after the earthquake, were included in the study.

The Urticaria Control Test (UCT) and Chronic Urticaria Quality of Life questionnaires, which provide reliable measurements in the diagnosis and follow-up of urticaria, were used to evaluate urticaria activity and its impact on the quality of life. The UCT comprises four questions completed by patients, evaluating the control of disease signs and symptoms, quality of life, treatment effectiveness, and overall disease control over the preceding four weeks. Each question is graded on a scale of 0 to 4, and the total score is obtained by summing the scores of these four questions. A UCT score ranges from 0 (indicating no control) to 16 (reflecting full control). A score of ≥12 suggests well-controlled urticaria, whereas a score of ≤11 indicates poor disease control (6, 7).

The CU-QoL Questionnaire comprises 23 items designed to assess six dimensions of health-related quality of life. These dimensions include pruritus, swelling, impact on daily activities, sleep disturbances, limitations, and appearance, with responses rated on a five-point scale. Scores for each dimension are calculated through a linear transformation, with each scale ranging from a minimum score of 0 to a maximum score of 100. A higher score indicates a greater negative impact on the quality of life (8, 9).

The Overall Dry Skin Score (ODS) was applied to assess skin dryness expected to develop due to changing water infrastructure and chlorination systems. ODS as a standardized assessment tool employs a five-point scale ranging from 0 (indicating the absence of dry skin) to 4 (reflecting the presence of severe scales, roughness, inflammation, and cracks) to clinically appraise the severity of dry skin. Total Immunoglobulin E (IgE), D-dimer, anti-thyroid peroxidase antibodies (anti-TPO), C-reactive protein (CRP), thyroid-stimulating hormone (TSH), and eosinophil count values were analyzed to explore potential causes and assess prognosis.

The patients were categorized into two groups and assessed based on their residency, either in a pre-existing building or in a container house (Figure 1).

Figure 1. Container houses allocated in the earthquake zone.

The study data were analyzed using IBM SPSS Statistics, version 25.0 software (IBM Corp., Armonk, NY, USA). The normality of continuous variables was assessed using the Kolmogorov-Smirnov test. Normally distributed variables were presented as mean ± standard deviation (SD), while non-normally distributed variables were represented as median (lower - upper quartile) values. Categorical variables were presented as numbers (n) and percentages (%). Demographic characteristics, including age, CSU duration, UCT, ODS, and CU-QoL scores, were compared between groups using the Mann-Whitney U test. Gender distributions were compared using the Chi-square test.

The study was approved by the Ethics Committee of the University (Approval No: 2023/2-21) and all participants gave written consent to be included in the study.

RESULTS

A total of 16 patients newly diagnosed with CSU in the Training and Research Hospital Allergy Unit after the earthquake were included in the study. The median (IQR) age of the patients was 46.5 [26.5-54.5], and 12 (75%) were women (Table I). Regarding comorbidities, 2 (12.5%) patients had allergic rhinitis, 3 (18.8%) patients had hypertension, 2 (12.5%) had diabetes, 2 (12.5%) had hypothyroidism, 1 (6.3%) had rheumatological disease, 1 (6.3%) had a cardiac condition, and 1 (6.3%) patient had a psychiatric condition. There was no significant difference in terms of comorbidities between the two groups staying in the preexisting building and the container. In this study, which was conducted six months after the earthquake, the median CSU duration of the patients was 4 [4-5] months. Nine of the patients were staying in the container and 7 of them were staying in the pre-existing buildings.

The patients' median UCT score was 6.5 [4-11]. The UCT score of those staying in the preexisting building was 7 [3-11], and the UCT score of those staying in the container was 6 [5-9]. There was no statistically significant difference between the UCT scores of the groups (p=0.97).

In the overall dry skin score evaluation, the median (IQR) ODS score of the patients was generally 1 [1-2.75], while the median ODS score of those staying in the preexisting building was 1 [1-3], and the median ODS score of those staying in the container was 1 [1-2] (p=0.42). In the comparison of patients staying in the preexisting buildings and the containers, there was no significant difference in the values of Total IgE, D-dimer, anti-TPO, CRP, TSH, and eosinophil count between the groups.

In the comparison of CU-QoL scores, the overall CU-QoL scores of the patients were 37.4 [21.1-43.2], while the CU-QoL score of those staying in the pre-existing buildings was observed to be median (IQR) 43.4 [35.8-50], and the CU-QoL score of those staying in the container was found to be median (IQR) 30.4 [10.8-40.7]. Although there was no statistical difference in UCT and ODS scores between the two groups, there was a greater impact on the overall quality of life score in those staying inside the pre-existing buildings (p=0.02). In the CU-QoL subgroup analysis, there was a slightly significant difference in the 'activities' subgroup, and those living in buildings tended to be more affected in this subgroup (container, median: 29.16% [5-70.83], pre-existing building; median: 58.3 % [25-79.16], p=0.05).

DISCUSSION

This study reveals that earthquakes and the intense stress they cause are essential risk factors for CSU patients living in the earthquake area. In particular, living in container houses was associated with better quality of life scores, contrary to expectations. This indicates that earthquakes can have complex and diverse impacts

Table I: Comparison of patients staying in pre-existing buildings and container houses.

Variables	Total, (n=16)	Pre-existing building group, (n=7)	Container house group, (n=9)	p-value
Age, median (IQR), years	46.5 (26.5-54.5)	48 (26-61)	30 (25.5-50)	0.39
Female gender, n (%)	12 (75)	7 (100)	5 (55.5)	0.08
CSU duration, median (IQR), months	4 (4-5)	4 (3-5)	4 (4-4.5)	0.95
UCT score, median (IQR)	6.5 (4-11)	7 (3-11)	6 (5-9)	0.97
ODS score, median (IQR)	1 (1-2.75)	1 (1-3)	1 (1-2)	0.42
CU-QoL score %, median (IQR)	37.4 (21.1-43.2)	43.4 (35.8-50)	30.4 (10.8-40.7)	**0.02**

CSU: Chronic spontaneous urticaria, **CU-QoL:** Chronic urticaria quality of life, **IQR:** Interquartile range, **ODS:** Overall skin dryness score, **UCT:** Urticaria control test

on individuals' quality of life. Continuing to live in damaged houses causes a decrease in the quality of life in CSU patients. This indicates that the fear and restrictions created by the earthquake may lead to adverse psychosocial effects in these patients. In this context, it should be emphasized that the accommodation of urticaria patients living in earthquake zones is an important factor that should be taken into consideration in the treatment and support processes.

In our study, it is intriguing that patients residing in pre-existing buildings exhibited lower quality of life scores compared to those living in container houses. There are some studies in the literature examining living conditions after the earthquake. In a study published on the living conditions after the earthquake in the Marche region of Italy in 1997, participants living in dachas and containers were evaluated with questionnaires and it was observed that those living in dachas were not less satisfied than their undamaged homes (10). While our study did not assess the extent of damage to the houses, it is important to note that the fear of indoor earthquakes remains prevalent, particularly as many buildings in the city were affected by the earthquake. This study was conducted shortly after the earthquake, further emphasizing the ongoing concerns surrounding seismic activity. Such concerns are believed to contribute to the decreased quality of life experienced by individuals residing in preexisting buildings.

In our study, CU-QoL was particularly affected in the 'activities' subdomain. This subgroup includes work, physical activity, sleep, leisure time, social relations, and eating behavior. Notably, sleep problems were observed at a higher rate in patients living in pre-existing buildings. Similarly, this situation may be related to post-traumatic stress disorder. Although container houses do not provide as comfortable an environment as buildings, they may cause less stress due to the safety they provide against earthquakes.

No significant difference was detected in urticaria activities between those staying in the container houses and the pre-existing buildings. This could be attributed to the limited size of the patient sample. There is a need for studies with larger numbers of participants examining the urticaria activity scores of both populations.

Our study has some limitations. Initially, the limited number of patients may lead to certain results not being statistically significant and could constrain the generalizability of the findings. However, considering these patients are newly diagnosed with CSU following the earthquake, the number of cases in the short term after the earthquake is not particularly insufficient. Secondly, although the current study compares the quality of life between patients in container houses and pre-existing buildings, it does not provide a detailed analysis of the specific living conditions or structural integrity of the buildings. Factors such as building damage severity or access to amenities could significantly impact patients' quality of life. Lastly, although the study acknowledges the presence of comorbidities among patients, it does not thoroughly explore other potential confounding variables such as socioeconomic status, access to healthcare, or psychological factors, which could influence both urticaria activity and quality of life outcomes. However, our study is valuable as it is the first study presented from the region that investigates the living conditions of the region after the earthquake and the effects of natural disasters on the diagnosis and incidence of CSU.

In conclusion, the stress and living conditions resulting from earthquakes may contribute to the development of diseases associated with immunological responses, such as CSU. Additionally, residing in structurally compromised houses may exacerbate this impact, leading to a decline in quality of life. In this context, patients should be evaluated and treated with a holistic approach.

Conflict of Interest

The authors declare that there is no conflict of interest.

Authorship Contributions

Concept: **Ozge Can Bostan,** Design: **Ozge Can Bostan, Sefer Aslan,** Data collection or processing: **Ozge Can Bostan, Sefer Aslan, Mehmet Sirik,** Analysis or Interpretation: **Ozge Can Bostan,** Literature search: **Ozge Can Bostan,** Writing: **Ozge Can Bostan,** Approval: **Ozge Can Bostan, Sefer Aslan, Mehmet Sirik.**

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