Received: 04 July 2024 / Accepted: 23 September 2024 / Published online: 31 October 2024

DOI 10.34689/SH.2024.26.5.012

UDC 616-001.49:595.462

EFFECT OF SEASONAL CHANGES ON SCORPION POISON

Hatice Aslı Bedel[1], https://orcid.org/0000-0001-6711-4430

Cihan Bedel[2], https://orcid.org/0000-0002-3823-2929

Fatih Selvi[2], https://orcid.org/0000-0002-9701-9714

Ökkeş Zortuk[3], https://orcid.org/0000-0001-6776-2702

Yusuf Karancı[2], https://orcid.org/0000-0003-0230-2187

[1] Department of Pharmacology, Suleyman Demirel University, Faculty of Pharmacy, Isparta, Turkey;
[2] Department of Emergency Medicine, Health Science University Antalya Training and Research Hospital, Antalya, Turkey;
[3] Department of Emergency Medicine, Hatay Defne State Hospital, Hatay, Turkey.

Abstract

Aim: The incidence of scorpion stings is significantly influenced by seasonal weather patterns, with climate variables playing a crucial role in the prevalence of scorpionism. The rationale behind conducting this study is the dearth of literature examining the relationship between scorpion envenomation and climate and weather conditions.

Materials and Methods: This study consists of scorpion envenomation patients who applied to the emergency department of a tertiary university hospital between 01.01.2023 and 31.12.2023. The study recorded the weather conditions of patients on the days they were admitted to the hospital. The data collected included daily average air temperature (in Celsius), dew point (in Celsius), humidity (as a percentage), weather condition (fair, cloudy, windy, or rainy), wind speed (in rpm), pressure (in inches) obtained via the API where previous data is stored, and precipitation (in inches).

Results: 87 of the patients who applied to the emergency department in 2023 applied due to scorpion stings and the prevalence was determined as 0.023%. While the average temperature of the 50 days in which scorpion stings were detected was 27.78±5.96, the average temperature of the days in which no scorpion stings were observed was determined as 21.27±7.88 and the average temperature was observed to be significantly higher on the days in which scorpion stings were observed ($p<0.001$). In the comparison made according to the seasons, it was determined that 46% of the scorpion sting cases were seen in the autumn season, while 34% were observed in the winter months.

Conclusion. Climate change may increase the risk of being stung by scorpion envenomation. Scorpion activity is affected by weather conditions.

Keywords: *Scorpion, Seasonality, climate, Scorpion sting.*

Резюме

ВЛИЯНИЕ СЕЗОННЫХ ИЗМЕНЕНИЙ НА ЯД СКОРПИОНА

Хатидже Аслы Бедел[1], https://orcid.org/0000-0001-6711-4430

Джихан Бедел[2], https://orcid.org/0000-0002-3823-2929

Фатих Сельви[2], https://orcid.org/0000-0002-9701-9714

Оккеш Зортук[3], https://orcid.org/0000-0001-6776-2702

Юсуф Каранджи[2] https://orcid.org/0000-0003-0230-2187

[1] Кафедра фармакологии, Университет Сулеймана Демиреля, Фармацевтический факультет, г. Испарта, Турция;
[2] Кафедра неотложной медицины, Учебно-исследовательская больница Университета медицинских наук Антальи, г. Анталья, Турция;
[3] Кафедра неотложной медицины, Государственная больница Хатай Дефне, г. Хатай, Турция.

Цель: Частота укусов скорпионов в значительной степени зависит от сезонных погодных условий, при этом климатические переменные играют решающую роль в распространенности скорпионизма. Обоснованием проведения данного исследования является нехватка литературы, изучающей связь между отравлением скорпионом и климатическими и погодными условиями.

Материалы и методы: Исследованы пациенты с отравлением от укуса скорпиона, которые обратились в отделение неотложной помощи университетской больницы третьего уровня в период с 01.01.2023 по 31.12.2023. В исследовании также регистрировались погодные условия в дни поступления пациента в больницу. Собранные данные включали среднесуточную температуру воздуха (в градусах Цельсия), точку росы (в градусах Цельсия), влажность (в процентах), погодные условия (ясно, облачно, ветрено или дождливо), скорость ветра (в об/мин), давление (в дюймах), полученное через API, где хранятся предыдущие данные, и осадки (в дюймах).

Результаты: 87 пациентов, обратившихся в отделение неотложной помощи в 2023 году, обратились из-за укусов скорпиона, и распространенность была определена как 0,023%. В то время как средняя температура за 50 дней, в течение которых были обнаружены укусы скорпионов, составила 27,78±5,96, средняя температура в дни, в которые укусы скорпионов не наблюдались, была определена как 21,27±7,88, и средняя температура была значительно выше в дни, в которые были обнаружены укусы скорпионов (p<0,001). При сравнении, проведенном по сезонам, было установлено, что 46% случаев укусов скорпионов были зафиксированы в осенний сезон, а 34% — в зимние месяцы.

Заключение. Изменение климата может увеличить риск укусов и отравления скорпионом. На активность скорпионов влияют погодные условия.

Ключевые слова: *скорпион, сезонность, климат, укус скорпиона.*

Түйіндеме

МАУСЫМДЫҚ ӨЗГЕРІСТЕРДІҢ СКОРПИОННЫҢ УЫНА ӘСЕРІ

Хатидже Аслы Бедел[1], https://orcid.org/0000-0001-6711-4430
Джихан Бедел[2], https://orcid.org/0000-0002-3823-2929
Фатих Сельви[2], https://orcid.org/0000-0002-9701-9714
Оккеш Зортук[3], https://orcid.org/0000-0001-6776-2702
Юсуф Каранджи[2] https://orcid.org/0000-0003-0230-2187

[1] Фармакология кафедрасы, Сүлейман Демирел университеті, Фармация факультеті, Испарта қ., Түркия;
[2] Шұғыл медицина кафедрасы, Анталия медицина ғылымдары университетінің оқу-зерттеу ауруханасы, Анталия қ., Түркия;
[3] Жедел медициналық көмек кафедрасы, Хатай Дефне мемлекеттік ауруханасы, Хатай қ., Түркия.

Мақсаты: шаяндардың шағу жиілігі көбінесе маусымдық ауа-райына байланысты, Климаттық айнымалылар скорпионизмнің таралуында шешуші рөл атқарады. Бұл зерттеудің негіздемесі Скорпионмен улану мен климат пен ауа-райының арасындағы байланысты зерттейтін әдебиеттердің жетіспеушілігі болып табылады.

Материалдар мен әдістер: бұл зерттеу 01.01.2023 және 31.12.2023 жылдар аралығында үшінші деңгейдегі университеттік ауруханаға жедел жәрдем бөліміне барған Скорпионмен уланған науқастардан тұрады. Зерттеу пациенттердің ауруханаға түскен күндеріндегі ауа-райы жағдайларын тіркеді. Жиналған мәліметтерге ауаның орташа тәуліктік температурасы (Цельсий бойынша), шық нүктесі (Цельсий бойынша), ылғалдылық (пайызбен), ауа-райы жағдайлары (ашық, бұлтты, желді немесе жаңбырлы), желдің жылдамдығы (айн/мин), қысым (дюймен) API арқылы алынған, мұнда алдыңғы мәліметтер сақталады деректер және жауын-шашын (дюймен).

Нәтижелер: 2023 жылы жедел жәрдем бөліміне барған 87 пациент шаян шағуына байланысты жүгінді және таралуы 0,023% деп анықталды. Шаянның шағуы анықталған 50 күндегі орташа температура 27,78±5,96 болса, шаянның шағуы байқалмаған күндердегі орташа температура 21,27±7,88 деп анықталды және шаянның шағуы табылған күндерде орташа температура айтарлықтай жоғары болды (p<0,001). Жыл мезгілдерін салыстыру кезінде Скорпион шағу жағдайларының 46% - ы күз мезгілінде, ал 34% - ы қыс айларында тіркелгені анықталды.

Қорытынды. Климаттың өзгеруі Скорпионның шағуы мен улану қаупін арттыруы мүмкін. Шаяндардың белсенділігіне ауа-райы мен әлеуметтік-экономикалық факторлар әсер етеді. (Алып тастау керек пе?)

Түйінді сөздер: *скорпион, маусымдық, климат, скорпионның шағуы.*

For citation / Для цитирования / Дәйексөз үшін:

Bedel H.-A., Bedel C., Selvi F., Zortuk Ö., Karancı Yu. Effect of Seasonal Changes on scorpion poison // *Nauka i Zdravookhranenie* [Science & Healthcare]. 2024. Vol.26 (5), pp. 93-98. *doi 10.34689/SH.2024.26.5.012*

Бедел Х.-А., Бедел Дж., Сельви Ф., Зортук О., Каранджи Ю. Влияние сезонных изменений на яд скорпиона // Наука и Здравоохранение. 2024. Т.26 (5). С. 93-98. *doi 10.34689/SH.2024.26.5.012*

Бедел Х.-А., Бедел Дж., Сельви Ф., Зортук О., Каранджи Ю. Маусымдық өзгерістердің скорпионның уына әсері // Ғылым және Денсаулық сақтау. 2024. Т.26 (5). Б. 93-98. *doi 10.34689/SH.2024.26.5.012*

Introduction

The incidence of scorpion stings is significantly influenced by seasonal weather patterns, with climate variables playing a crucial role in the prevalence of scorpionism, or scorpion poisoning [1]. Scorpions are thermophilic organisms, meaning they thrive in warm environments, and their activity is closely linked to temperature and other climatic conditions. As global temperatures rise and weather patterns become more variable, it is anticipated that the distribution and frequency of scorpion stings will undergo a transformation, potentially elevating the risk of envenomation in specific regions [2]. This relationship between scorpion activity and climate is corroborated by a substantial body of evidence derived from studies conducted in a range of geographical locations [3].

The relationship between temperature and scorpion activity is a well-documented phenomenon. Scorpions are more active in warmer temperatures, which leads to an increased incidence of stings during hot seasons. For example, in Iran, the highest incidence of scorpion stings occurs during the summer months, with a notable correlation between elevated temperatures and increased sting rates [2,4].

In Mexico, regions with the highest temperatures exhibited a 9.8% increase in scorpion sting cases for each 1°C rise in temperature [5]. In Algeria, temperature was identified as the most significant climatic factor affecting scorpion sting rates, with predictive models demonstrating a strong correlation between temperature increases and sting incidence [6,7]. The influence of humidity and precipitation on scorpion stings is a complex one. Generally, increased humidity and precipitation lead to a reduction in stings, as these conditions are less favourable for scorpion activity [2,8]. In France, scorpion events were linked to environmental conditions such as temperature and precipitation, although no direct correlation was found between climatic conditions and the severity of envenomation [9]. The rationale behind conducting this study is the dearth of literature examining the relationship between scorpion envenomation and climate and weather conditions.

Metods

Meteorological Data

This study consists of scorpion envenomation patients who applied to the emergency department of a tertiary university hospital between 01.01.2023 and 31.12.2023. Cases were retrieved from the hospital information management system according to ICD-10 codes.

The study recorded the weather conditions of patients on the days they were admitted to the hospital. The data collected included daily average air temperature (in Celsius), dew point (in Celsius), humidity (as a percentage), weather condition (fair, cloudy, windy, or rainy), wind speed (in rpm), pressure (in inches) obtained via the API where previous data is stored, and precipitation (in inches). This data was then matched with the patients. The data source for this study was the WaterGround website (https://www.wunderground.com). The study included data from the Murtapaşa region of Antalya (zip code: 07030), where the hospital is located.

Statistical Analysis

SPSS version 27 (IBM co, USA) was used in the analysis of the data bank prepared from meteorological data and case numbers, while Graphpad Prism 9 program was used in the creation of figures. Data were classified according to their types. Categorical data were defined as percentage and frequency. Chi-square test was applied in the comparison of categorical data. Distribution analysis was performed in the definition of numerical data. Data conforming to normal distribution were stated as mean ± Standard deviation, and t-test was applied between them. Data not conforming to normal distribution were stated as median, minimum-maximum, and non-parametric test was applied between them. Data with p value below 0.05 were accepted as significant.

Results

87 of the patients who applied to the emergency department in 2023 applied due to scorpion stings and the prevalence was determined as 0.023%. While the average temperature of the 50 days in which scorpion stings were detected was 27.78±5.96, the average temperature of the days in which no scorpion stings were observed was determined as 21.27±7.88 and the average temperature was observed to be significantly higher on the days in which scorpion stings were observed (p<0.001). Table 1 shows the relationship between meteorological changes in the seasons and scorpion stings. No significant relationship was observed between the change in weather conditions and scorpion stings (p=0.132). Table 2 shows the relationship between weather conditions and scorpion stings.

Table 1.

Seasonal changes on scorpion stings.

	Free (n=315)	Sting (n=50)	p-Value
Temperature (mean±SD)	21.27±7.88	27.78±5.96	<0.001
Dew Point (mean±SD)	10.48±7.46	15.06±6.31	<0.001
Humidity (mean±SD)	54.74±21.25	51.08±22.27	0.380
Wind Speed (mean±SD)	13.63±8.28	12.64±5.72	0.020
Wind Gust (median, min-max)	0 (0-61)	0 (0-0)	0.424
Pressure (mean±SD)	1007.76±6.03	1004.24±4.50	0.014

Table 2.

Condition changes on scorpion stings.

	Free (n=315)	Sting (n=50)	p-Value
Fair	153 (%48.6)	30 (%60)	0.132
Windy	14 (%4.4)	0	
Rainy	19 (%6)	3 (%6)	
Cloudy	129 (%41)	17 (%34)	

In the comparison made according to the seasons, it was determined that 46% of the scorpion sting cases were seen in the autumn season, while 34% were observed in the winter months. A significant difference was observed between the frequency of scorpion stings and the seasons ($p<0.001$) (Figure 1).

The month in which scorpion stings were most frequently seen was June, and a significant difference was observed in the distribution of cases between the months ($p<0.001$) (Figure 2).

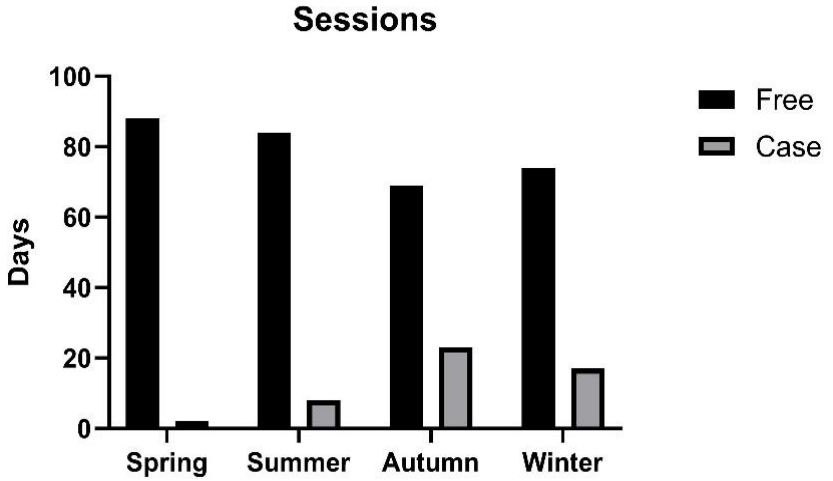

Figure 1. Frequency and seasonal distribution of scorpion stings.

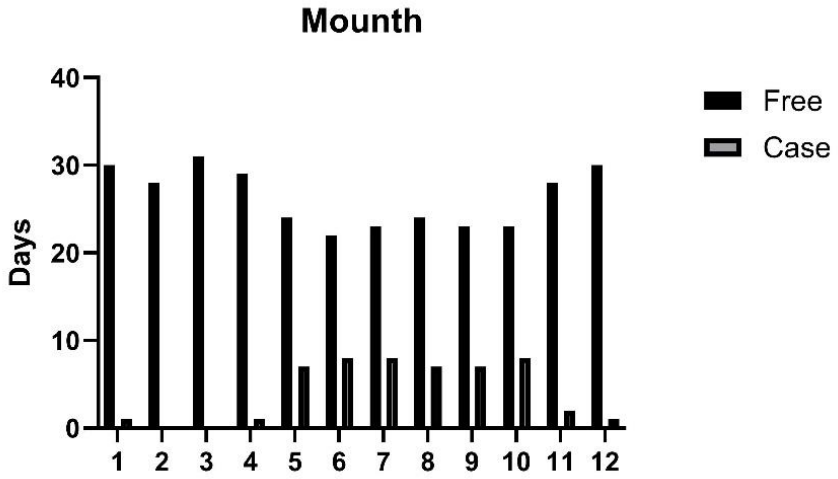

Figure 2. Frequency of scorpion stings and distribution by months.

Discussion

The relationship between scorpion poisoning and climate is a complex interplay of ecological, behavioral, and environmental factors. Scorpions, being thermophilic organisms, are highly sensitive to climate conditions, which significantly influence their activity and the incidence of envenomation [10,11]. In this study we conducted on climate conditions and scorpion poisoning in the region, we found the average temperature of the 50 days in which scorpion stings were detected was 27.78±5.96, the average temperature of the days in which no scorpion stings were observed was determined as 21.27±7.88 and the average temperature was observed to be significantly higher on the days in which scorpion stings were observed.

Scorpion poisoning, or envenomation, represents a significant public health concern, particularly in tropical and subtropical regions. The clinical manifestations of scorpion poisoning are diverse, encompassing a spectrum from mild

local symptoms to severe systemic effects [12]. These effects may include cardiotoxicity and neurological complications. The severity of scorpion envenomation is contingent upon a number of factors, including the species of scorpion, the quantity of venom injected, and the age and health status of the victim. The following sections provide a comprehensive account of scorpion poisoning, its epidemiology, clinical manifestations, and treatment strategies [13]. Scorpion envenomation is a significant public health issue in several regions around the world, with the highest prevalence observed in North Africa, India, Mexico, and the Middle East [14,15]. In Algeria, for instance, approximately 50,000 cases are reported annually, with a notable increase during the summer months. The age group most affected is 15-49 years, although children aged 5-14 have the highest mortality rates [15]. Scorpion stings can result in severe complications, including cardiovascular and neurological effects. In Morocco, scorpion stings account for 60% of all poisonings, with severe cases leading to ischaemic strokes in children [16]. The cardiotoxic effects of the venom can cause acute pulmonary oedema and cardiogenic shock, with a condition known as Takotsubo cardiomyopathy being a common outcome [17]. A novel biomarker, MR-proANP, has demonstrated potential in predicting heart failure in children following a scorpion sting, outperforming traditional markers such as troponin. Treatment strategies encompass symptomatic management and, in select cases, the utilisation of antivenom [18].

Scorpions are known to flourish in warm environments, and there is a growing body of evidence suggesting that rising temperatures are associated with increased scorpion activity and a corresponding rise in the incidence of stings. In Morelos, Mexico, a 1°C increase in temperature was associated with a 9.8% rise in scorpion sting cases in the hottest regions [5]. In Iran, higher temperatures, coupled with increased evaporation and sunshine duration, were found to be associated with a greater incidence of scorpion stings, particularly during the summer months [2]. In a study by Chowell, they found that the incidence of stings is approximately three per 1,000 individuals per year in the municipalities of Colima and Villa de Álvarez, while in the remainder of the municipalities, the incidence is approximately 18–30 per 1,000 individuals per year. The region experiences minimal precipitation, and the incidence of stings is low during the winter months when the minimum temperature drops below 16°C [19]. In a study by Needleman, they found that temperature extremes and changes to climatic norms may have a dramatic effect on venomous terrestrial species. As climate change affects the distribution, populations [20]. In Algeria, temperature was identified as the primary climatic factor influencing scorpion sting incidence, with precipitation being a less significant factor [6]. The impact of climate on scorpion envenomation differs between regions. In Brazil, scorpion accidents were concentrated in tropical climates and urbanised areas, indicating that both environmental and human factors contribute to the incidence of stings [21]. In France, scorpion events have been linked to environmental conditions, including temperature and sunshine. For example, the specific species Buthus occitanus has been observed to require warmer and drier environments [22]. The socioeconomic status of affected populations can influence the management and outcomes of scorpion envenomation. In rural India, for instance, the limited availability of antivenom and the tendency to seek treatment from traditional healers can contribute to an exacerbation of the health impact of scorpion stings [23]. The application of predictive models based on climate data, as demonstrated in Algeria, has the potential to inform public health planning and resource allocation, thereby mitigating the effects of scorpionism [6]. In our study comparison made according to the seasons, it was determined that 46% of the scorpion sting cases were seen in the autumn season, while 34% were observed in the winter months. A significant difference was observed between the frequency of scorpion stings and the seasons.

There are some limitations in our study, the first of which is that it is a retrospective study. We also accept that there may be some changes in climate conditions instantly and minute by minute. We also accept that there may be minimal errors since weather information is obtained through the system. Prospective multicenter studies are needed.

Conclusion

Climate change may increase the risk of scorpion envenomation. Scorpion activity is affected by weather conditions.

Authors' contributions. *All co-authors contributed to the publication, search and analysis of literature sources.*

Funding. *.None*

Conflict of interest. *The authors declare that none of the sections of this article have been published in the open press and are not under consideration by other publishers.*

References:

1. *Nour Eldin A., Sakr M., Khater A.* Study of hematological parameters in patients with scorpion envenomation presented to the poison control center of ain Shams University Hospitals. *Ain Shams Journal of Forensic Medicine and Clinical Toxicology*, 2022. 38(1), 92-102.

2. *Ghorbani A., Mansouri B., Baradaran M.* Effects of climate variables on the incidence of scorpion stings in Iran for five years. Journal of Venomous Animals and Toxins including Tropical Diseases. 2021. 27, e20200110.

3. *Vaucel J.A., Larréché S., Paradis C., Labadie M., Courtois A., Grenet G., Kallel H.* Relationship between scorpion stings events and environmental conditions in mainland France. Journal of medical entomology, 2021. 58(6), 2146-2153.

4. *Zenia S., L'Hadj M., Selmane S.* A Hybrid Approach Based on Seasonal Autoregressive Integrated Moving Average and Neural Network Autoregressive Models to Predict Scorpion Sting Incidence in El Oued Province, Algeria, From 2005 to 2020. Journal of Research in Health Sciences, 2023. 23(3), e00586.

5. *Hurtado-Díaz M., Guzmán-Ontiveros J., Arias-Medellín L.A., Hernández-Cadena L., Moreno-Banda G.L., Rodriguez-Dozal S.L., Riojas-Rodríguez H.* Influence of increasing temperature on the scorpion sting incidence by

climatic regions. International Journal of Climatology, 2018. 38(5), 2167-2173.

6. *Selmane S., L'hadj M.* Regression analysis on scorpion envenomation and climate variables in M'Sila province, Algeria from 2001 to 2010. International Journal of Mathematics Trends and Technology-IJMTT, 2014. 13. P.9-27.

7. *Zenia S., L'Hadj M., Selmane S.* A Hybrid Approach Based on Seasonal Autoregressive Integrated Moving Average and Neural Network Autoregressive Models to Predict Scorpion Sting Incidence in El Oued Province, Algeria, From 2005 to 2020. Journal of Research in Health Sciences, 2023. 23(3), e00586.

8. *Ebrahimi V., Hamdami E., Moemenbellah-Fard M. D., Jahromi S.E.* Predictive determinants of scorpion stings in a tropical zone of south Iran: use of mixed seasonal autoregressive moving average model. Journal of venomous animals and toxins including tropical diseases, 2017. 23, 39.

9. *Vaucel J.A., Larréché S., Paradis C., Labadie M., Courtois A., Grenet G., Kallel H.* Relationship between scorpion stings events and environmental conditions in mainland France. Journal of medical entomology, 2021. 58(6), 2146-2153.

10. Rafinejad J., Shahi M., Navidpour S., Jahanifard E., Hanafi-Bojd A.A. Effect of climate change on spatial distribution of scorpions of significant public health importance in Iran. Asian Pacific Journal of Tropical Medicine, 2020. 13(11), 503-514.

11. *El Hidan M.A., Kahime K., Laaradia M.A., Bouimeja B., Aabadi F., Mansour, A.A., Chait A.* Climate change, scorpion ecology, and envenomation: what are the links? In Research anthology on environmental and societal impacts of climate change. IGI Global. 2022. pp. 975-989.

12. *Sadine S.E., Souilem Z., Belgaid Y., Chedad A., Djelloud-Souilem Z., Chebihi B., Zebsa R.* Effects of climate on scorpion diversity in arid ecosystems of the Sahara Desert of Algeria. Diversity, 2023. 15(4), 541.

13. *Agourram Z., Zegrari R., Kettani A., Badaoui B., Mkamel M.* Environmental Determinants of Venom Variability in Captive Scorpions: A Comprehensive Analysis of Diet, Temperature, and Humidity Effects. Toxicon, 2024. 108151.

14. *Aboumaad B., Iba N., Dersi N.* L'envenimation scorpionique au Maroc: scorpions du genre Androctonus, Buthus et Hottentota. Bulletin de la Société de pathologie exotique, 2014. 1(107), 39-47.

15. *Hellal H., Guerinik M., Griene L., Laid Y., Mesbah S., Merad R., Alamir B.* Données épidémiologiques sur l'envenimation scorpionique en Algérie. Bulletin de la Société de pathologie exotique, 2012. 1-5.??

16. *Bibiche Y., Berdai A., Labib S., Harandou M.* Envenimation scorpionique compliqué d'un accident vasculaire cérébral ischemique. The Pan African Medical Journal, 2015. 20. P.210-217.

17. *Abroug F., Ouanes-Besbes L., Tilouche N., Elatrous S.* Scorpion envenomation: state of the art. Intensive care medicine, 2020. 46(3), 401-410.

18. *Mahmoud E.* Mıd-regıonal pro atrıal natrıuretıc peptıde (mr-proanp) as a novel bıomarker for early predıctıon of cardıac ınjury followıng scorpıon stıng among chıldren. The egyptian journal of forensic sciences and applied toxicology, 2022. 22(2), 35-46.

19. *Chowell G., Hyman J.M., Díaz-Dueñas P., Hengartner N.W.* Predicting scorpion sting incidence in an endemic region using climatological variables. International Journal of Environmental Health Research, 2005. 15(6), 425-435.

20. *Needleman R.K., Neylan I.P., Erickson T.* Potential Environmental and Ecological Effects of Global Climate Change on Venomous Terrestrial Species in the Wilderness. Wilderness & Environmental Medicine. 2018. 29(2):226-238

21. *Gardim G.S., Antonio A.C.P., Pugliesi E.A.* Spatial Analysis of Scorpion Accidents in Brazil: Its Relation to Climate and Urbanization. Advances in Cartography and GIScience of the ICA, 2023. 4, 7.

22. *Vaucel J.A., Larréché S., Paradis C., Labadie M., Courtois A., Grenet G., Kallel H.* Relationship between scorpion stings events and environmental conditions in mainland France. Journal of medical entomology, 2021. 58(6), 2146-2153.

23. *Lakhkar B.B., Patil M.M., Patil S.V.* Scorpion Sting Envenomation in Children: A Literature Review. Indian J Trauma Emerg Pediatr, 2016. 8(2), 119-123.

Corresponding author:
Bedel Cihan, MD, Health Science University Antalya Training And Research Hospital, https://orcid.org/0000-0002-3823-2929
Address: postal zip code: 07100, Kazım Karabekir Street, Muratpaşa, Antalya, Turkey.
E-mail: cihanbedel@hotmail.com
Phone: +905075641254, Fax: +902422494487