Orginal Article

Preventing Possible Parasitic Skin Infections After an Earthquake: A Practical Recommendation

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Abstract

Aim: Two major earthquakes occurred in Türkiye on sixth February, 2023. Tens of thousands of homeless earthquake victims settled in dormitories across the country. Because this increases the risk of parasitic skin infections, we screened the earthquake victims who were placed in the student dormitory just in case of scabies and the pediculosis capitis epidemic. Here, we describe our screening and prevention strategies for parasitic skin epidemics.

Materials and Methods: We visited all rooms in the student dormitory and performed scabies and pediculosis capitis screening on February 15th to 24th, 2023. All the earthquake victims were questioned regarding signs and symptoms of scabies and pediculosis. If a person had symptoms such as night itching, he/she was examined with a dermoscope to evaluate burrows and lice. When the diagnosis was confirmed, treatment was given to those who were in the room and had contact with the people in the room. The prevalence of scabies and pediculosis was assessed at 5 months after screening.

Results: A total of 1,580 earthquake victims were screened, of which 167 (10.5%) cases of scabies and 67 (4.2%) cases of pediculosis capitis were detected during the screening. Only 42 new cases of scabies and 1 new case of pediculosis were detected among earthquake victims within 5 months after screening. There was a significant decrease in the percentage of parasitic skin infections, ranging from 10.5% to 2.8% for scabies and from 4.2% to 0.06%; respectively.

Conclusion: We believe that screening and detecting cases of scabies and pediculosis capitis and their contacts at an early stage prevented a possible epidemic in our city.

Keywords: Earthquake, scabies, pediculosis capitis

Introduction

Two devastating earthquakes with magnitudes of Mw 7.7 and Mw 7.6 centered in Kahramanmaraş occurred, affecting 11 provinces in the Eastern and Southeastern Anatolia regions of Türkiye on February 6th, 2023. A total of 14 million people living in Türkiye were affected by this disaster, and more than 50,000 people died. Additionally, 1.5 million people had to leave their homes and migrate to places outside the earthquake zone.[1]

Earthquakes are one of the deadliest natural events because they cause devastating consequences, such as loss of life and migration. Besides, earthquakes can create adverse conditions favorable to the emergence of infectious diseases. Oztaş et al.[2] examined the skin of 1,200 survivors, and the most common disease group was reported as parasitic infestations such as pediculosis capitis and scabies, with a rate of 6.5% in this

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population after the 1999 earthquake in Türkiye. Moreover, it has been observed that the prevalence of scabies has been increasing in Türkiye since the coronavirus disease-2019 (COVID-19) outbreak.[3]

We performed a scan for scabies and pediculosis capitis to prevent a possible epidemic among earthquake victims who were placed in student dormitories in our province after the disaster, predicting that an earthquake may cause an increase in parasitic diseases of the skin. In addition, it has been reported that early diagnosis, contact tracing, and early treatment are very important to prevent scabies during the earthquake period.[4] We quickly organized treatment and isolation conditions after screening for this reason. The aim of this study was to evaluate the success of our screening and to provide a guide recommendation for health professionals to prevent parasitic skin diseases.

Materials and Methods

We applied to start a screening program for parasitic diseases of the skin as a group of doctors to the Muğla Training and Research Hospital administration voluntarily to prevent contagious parasitic diseases after the earthquake. We performed scabies and pediculosis capitis screening among earthquake victims who were placed in the student dormitory in our city with a team of three dermatology specialists, two dermatology residents, and three family medicine residents on February 15th to 24th, 2023, after our application was accepted. Ethics committee approval was obtained from the Muğla Sıtkı Koçman University Local Ethics Committee for publishing the results of the scan (approval number: 77, date: 14.08.2023).

A team consisting of a dermatology specialist, a dermatology resident, and a family medicine resident visited all rooms in the dormitory one by one, questioning and examining the individuals staying in each room regarding their signs and symptoms every day for 10 days. People with positive complaints, such as night itching, and all contact points were examined with dermoscopy by a dermatology specialist who was the only person who performed dermoscopy on the team. Only cases in which the parasite was definitively detected by dermoscopy were confirmed to be positive for scabies and pediculosis capitis. When the people staying in the room could not be found, an announcement was made, or the room was re-visited, and the screening was later completed to include as many earthquake victims as possible in the dormitory.

Data such as room number, number of people in the room, and presence of scabies and/or pediculosis capitis were documented. The rooms in which positive cases and their contacts were detected were isolated from other rooms for 10 days. Patients with scabies or pediculosis capitis were informed in their rooms upon diagnosis, and the precautions and treatments to be taken were explained in detail. The scabies information forms that we had prepared were also given to the patients during this period. Appropriate medical treatments were delivered to the detected cases on the same day. An information form was given to the cleaning staff of each block in the dormitory to explain special considerations when washing the laundry. The screening was completed in 10 days, taking into account the average maturation time of scabies and lice mites.

The number of earthquake victim who applied to dermatology outpatient clinics and their reasons were examined retrospectively after they left the dormitory in August, 2023.

Statistical analysis

Data were analyzed using SPSS version 20.0 (IBM® Inc, Chicago, USA). Descriptive statistics were summarized as number, percentage, mean and standard deviation, and median and interquartile range.

Results

A total of 1,580 earthquake victims were screened in the student dormitory in our city on February 15th to 24th, 2023. Of these, 564 (35.6%) were women, 526 (33.2%) were men, and 490 (31%) were children (under 18 years old). A total of 167 (10.5%) scabies and 67 (4.2%) pediculosis capitis cases were detected in 10 days.

The treatment of detected cases and with their contacts was arranged in the dermatology outpatient clinic that was opened in the dormitory and was delivered to the patients on the same day. Treatment was delivered free of charge and quickly to a total of 416 people, including their contacts, and the participants were enabled to apply the treatment on the same days and repeat it within 10 days.

Three hundred and five earthquake victims were evaluated for various dermatological reasons in the dermatology outpatient clinic of our hospital within the following 5 months after screening. It was learned that a total of 1,665 earthquake victims stayed in dormitories. The number of earthquake victims identified as new cases in the post-screening period was 42 for scabies and 1 for pediculosis capitis. Therefore; the frequency of scabies and pediculosis capitis was calculated as 2.8% and 0.06%, respectively, in the 5-month period after the screening (Table 1).

Table 1. Results and epidemiological impact of parasite screening programs

	Scabies	Pediculosis capitis
Patient February 2023	167	67
New cases	42	1
Prevalence (February 2023)	10.5%	4.2%
Incidence (February to July 2023)	2.8%	0.06%

Discussion

Epidemics of parasitic infectious diseases may occur due to homelessness, overcrowding, poor living conditions, inadequate hygiene, difficulties accessing clean water and food, and problems accessing health care after an earthquake.[5] Bayramgürler et al.[6] found the incidence of infection and infestation to be high in the first three months after the earthquake due to damaged infrastructure and unhygienic living conditions. Many earthquake victims were hosted in our city, and some of them were placed in a student dormitory near our hospital after the February 6th, 2023, earthquake in Türkiye. We planned a screening program that started when the students first settled in the dormitories and lasted for 10 days. Almost everyone who resettled in dormitories was reached, and a total of 1,580 earthquake victims were screened in our scabies and pediculosis capitis screening program. In addition, earthquake survivors who arrived later were asked at the entrance of the dormitory whether they had hair or body itching, and if they did, the itchy person and all contacts were directed to the clinic established in the dormitory for treatment. Thus, we attempted to prevent the epidemic of parasitic skin infections reported in previous studies. We found that our screening program for the early detection and treatment of parasitic skin infestations reduced the incidence of this disease after 5 months.

Human scabies is a parasitic skin disease with severe itching caused by the mite *Sarcoptes scabiei var. hominis*. Clinically, itchy skin rash consisting of papules, vesicles, and sometimes nodules located in typical distribution areas, with increased itchiness at night, is typical. Detection of burrows formed in the epidermis by adult female mites is pathognomonic and sufficient for diagnosis.[7] Besides, human pediculosis, an infestation of the skin by lice, is a global public health problem. Pediculosis capitis is the most common lice infestation, and the most common clinical presentation is scalp itching. The diagnosis can be made by observing lice and nits on the scalp with the naked eye.[8] We used clinical findings and UV dermoscopes, which we used as "ball sign" to make an exact diagnosis of scabies and pediculosis capitis.[9]

Scabies can be seen in every country, however it is especially common in tropical countries with limited resources and in areas with high population density. It has been shown that the frequency of scabies increased by almost 3% between 2018 and 2019, and it has been stated that the tendency for outbreaks increased before the COVID-19 pandemic.[3] However, another study reported that the incidence of scabies and pediculosis increased more than two-fold compared with the previous year, in another study.[10] The frequency of scabies was found to be 10.5% and the frequency of pediculosis 4.2% was detected in our screening program. Although this rate is considerably higher than that reported before 2018, it supports the increase reported after the COVID-19 outbreak. However, after the screening, the incidence of scabies decreased to 2.8% and that of pediculosis capitis decreased to 0.06%, close to the general rates before the COVID-19 epidemic, indicating the success of screening.

Four hundred and sixteen earthquake victims were treated for scabies during our screening program. The positive cases were informed in detail about the disease, treatments, and precautions to be taken at the time of diagnosis, while they were still in the room. Individual-based treatment was arranged and delivered to the patients on the same day. 5% permethrin lotion, a ready-to-use lotion containing peru balm-sulfur-benzyl benzoate, and 200 µg/kg ivermectin tablets were used for the treatment of scabies, in accordance with the personal factors of the patients (age, pregnancy, breastfeeding, etc.). Because scabies in children are often not detected early or treated thoroughly, and children have close physical contact with other people, they can be a source of infection.[11] Thus, we preferred ivermectin tablets in the treatment of pediatric cases (>15 kg) to effectively use limited resources and control the disease in the more contagious group. We used fewer tablets than would be needed for adults and avoided the problem of applying too little topical treatment among children; we used our resources effectively to control the disease in this way. 1% permethrin shampoo was also used for the treatment of pediculosis capitis cases. Detailed information about how to apply the treatments was provided to the patients. Positive cases were detected and treated quickly, thus preventing a possible epidemic by limiting transmission with these benefits.

It was observed that some of the earthquake survivors living in dormitories had kinship relationships. Therefore, there could be more frequent contact between them, and they were more likely to come together in shared social environments. Informing relatives about our screening increased their awareness of the existence and transmission of parasitic diseases. Thus, we observed that screening provided benefits not only for detection and treatment but also for prevention.

Study limitations

One of the limitations of this study was the absence of recent studies on the prevalence rates of national scabies and

pediculosis. The decrease in incidence after screening could not be objectively compared with regional or national values for this reason. In addition, the rapid changes in the earthquake victim population in dormitories affected our assessments of incidence rates. This study could have been conducted more objectively with a larger and more stable population, taking into account the attack periods of the disease.

Conclusion

As a result, we conclude that our screening method was effective in controlling the disease quickly and preventing a possible parasitic epidemic. We believe that our findings can guide other health professionals in preventing possible outbreaks of parasitic skin infections during earthquakes.

Footnote

Ethics Committee Approval: Ethics committee approval was obtained from the Muğla Sıtkı Koçman University Local Ethics Committee for publishing the results of the scan (approval number: 77, date: 14.08.2023).

Informed Consent: Retrospective study.

Authorship Contributions

Concept: C.T.A., D.D., A.Y., B.A., T.A.K., S.D.P., E.T.A., B.F., F.D., A.K., E.N.Y., Design: C.T.A., D.D., A.Y., B.A., T.A.K., S.D.P., E.T.A., B.F., F.D., A.K., E.N.Y., Data Collection or Processing: C.T.A., D.D., A.Y., B.A., T.A.K., S.D.P., E.T.A., B.F., F.D., A.K., E.N.Y., Analysis or Interpretation: C.T.A., D.D., A.Y., B.A., T.A.K., S.D.P., E.T.A., B.F., F.D., A.K., E.N.Y., Literature Search: C.T.A., D.D., A.Y., B.A., T.A.K., S.D.P., E.T.A., B.F., F.D., A.K., E.N.Y., Writing: C.T.A., D.D., A.Y., B.A., T.A.K., S.D.P., E.T.A., B.F., F.D., A.K., E.N.Y.

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