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Effects of the early period of the COVID-19 pandemic on psoriatic disease severity and treatment

COVID-19 pandemisi erken döneminin psoriazis hastalarının hastalık şiddeti ve tedavileri üzerine etkileri

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Abstract

Background and Design: The coronavirus disease-2019 (COVID-19) pandemic caused unexpected and drastic changes in the modus operandi of global healthcare. Psoriasis is a dermatosis that necessitates the provision of special healthcare services in dermatology clinics, due to its severe effects on quality of life and its socioeconomic consequences. This study aimed to identify pandemic-related problems experienced by psoriasis patients followed up in our outpatient clinic, thereby revealing the effects of the COVID-19 pandemic on these patients.
Materials and Methods: This study included 64 patients with plaque psoriasis who were followed up at the Psoriasis Outpatient Clinic of Aydın Adnan Menderes University Faculty of Medicine, Department of Dermatology 6 months before and after the start of the pandemic in Turkey. A questionnaire was used to inquire how the patients were affected by the pandemic; median Psoriasis Area and Severity Index (PASI) scores and number of hospital visits were compared with pre-pandemic values.
Results: Thirty-six patients (56.3%) stated that the pandemic had no effect on their disease, 20 patients (31.3%) reported a deterioration of their disease. The most common reasons thought to aggravate disease were pandemic-related stress and changes in treatment regimen. Treatment of 43 patients (67.2%) remained the same during the pandemic. There was a change in treatment in 21 patients (32.8%). The median number of patient visits to our outpatient clinic was 3 before the pandemic, which dropped to 2 during the first 6 months of the pandemic ($p<0.001$). PASI scores were compared on an individual basis, and 30 patients (46.9%) in the study group had an increase in their median PASI scores during the pandemic.
Conclusion: The COVID-19 pandemic led to fewer patient visits to the hospital and difficulties in managing patient compliance to treatment. Our study showed that approximately half the psoriatic patients being treated had an increase in the severity of their disease during the COVID-19 pandemic. A considerable percentage of these patients linked this deterioration with the pandemic.
Keywords: COVID-19, pandemic, psoriasis

Öz

Amaç: Beklenmedik bir şekilde ortaya çıkan koronavirüs hastalığı-2019 (COVID-19) pandemisi sağlık sistemi işleyişinde değişikliklere neden olmuştur. Psoriazis kronik seyri, yaşam kalitesini ciddi anlamda etkilemesi ve hastalığın yüksek sosyo-ekonomik önem arz etmesi nedeniyle dermatoloji polikliniklerinin özel sağlık hizmeti sunumu gerektiren bir durumudur. Çalışmamızda polikliniğimizde takipli olan psoriazis hastalarının pandemi nedeniyle yaşadığı aksaklıkları, tedavilerine uyumlarını belirleyerek COVID-19 pandemisinin hastalar üzerindeki etkilerinin ortaya konması amaçlanmıştır.
Gereç ve Yöntem: Çalışmaya Aydın Adnan Menderes Üniversitesi Tıp Fakültesi, Deri ve Zührevi Hastalıkları Psoriazis Takip Polikliniği'ne 18.03.2020 tarihi öncesi 6 ayda ve aynı tarihten 6 ay sonrasına kadar olan süreçte başvuran ve takibine devam edilen 64 plak tip psoriazis hastası alınmıştır. Hastalara sorulan anket soruları ile pandemiden nasıl etkilendikleri değerlendirilirken, pandemi döneminde medyan psoriazis alan şiddet indeksi (PAŞİ) değerleri, ortalama hastane başvuru sayıları retrospektif dosya taraması yapılarak pandemi öncesi değerleriyle karşılaştırılmıştır.

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Bulgular: Hastaların anket sorularına verdikleri yanıtlarda 36 hasta (%56,3) pandemi sürecinin hastalıkları üzerine etkisi olmadığını, 20 hasta (%31,3) ise hastalık şiddetinde artış olduğunu belirtmiştir. Psoriazisi şiddetlendirdiği düşünülen en sık nedenler pandemi süreci ilişkili stres ve tedavi değişiklikleri olmuştur. Pandemi sürecinde 43 hastanın (%67,2) tedavisi aynı kalırken, 21 hastada (%32,8) tedavi değişikliği olduğu kaydedilmiştir. Pandemi öncesi hastaların takip polikliniğine geliş sayılarının medyan değeri 3 iken pandeminin ilk 6 ayında 2'ye düştüğü saptanmıştır (p<0,001). Bireysel olarak karşılaştırılan PAŞİ değerlerinde çalışma grubunda 30 hastanın (%46,9) pandemi sonrası medyan PAŞİ değerinde artış olduğu görülmüştür.

Sonuç: COVID-19 pandemisi hastaların hastane başvurularında azalma ve tedavi davranışlarını yönetmede zorluklara neden olmuştur. Çalışmamızda takip olguların yaklaşık yarısında COVID-19 pandemisi döneminde hastalık şiddeti artmıştır. Bu hastaların azımsanamayacak bir oranı hastalık şiddetinde artıştaki tetiklenmeyi pandemi ile ilişkilendirmiştir.

Anahtar Kelimeler: COVID-19, pandemi, psoriazis

Introduction

In December 2019, it was found that the severe acute respiratory syndrome-coronavirus-2 (SARS-COV-2) caused the coronavirus disease-2019 (COVID-19), which progressed with respiratory system symptoms. The World Health Organization (WHO) announced this disease as a pandemic on 11 March 2020[1]. On 18 March 2020, the Ministry of Health switched to pandemic working order due to the COVID-19 pandemic. Changes such as decreased number of outpatient clinics, postponement of invasive and non-invasive procedures except for emergency cases, and restrictions on patient hospitalizations affected dermatology and other medical disciplines[2].

Psoriasis comprises a considerable portion of outpatient clinic admissions due to its chronic progression, serious effects on quality of life, and socio-economic consequences. Use of many systemic treatments including immunosuppressive therapies and biological agents, when necessary, shows us the importance of monitoring these patients in regular intervals. The monitoring of these patients was disrupted, their treatments became irregular and changes occurred in the severity of disease during the COVID-19 pandemic, which emerged unexpectedly and when admissions to hospitals were restricted[3]. Our study aimed to identify the troubles experienced by the psoriasis patients being treated in our outpatient clinic due to the pandemic and their compliance with treatment, thereby revealing the effects of the COVID-19 pandemic on the patients.

Materials and Methods

With a Health Services General Directorate Scientific Research Application Form (2020-10-27T17_56_10), approval was obtained from Republic of Türkiye Ministry of Health for this study. This study was approved by Non-interventional Clinical Research Ethics Committee Aydın Adnan Menderes University Faculty of Medicine (approval number: 12, date: 01.10.2020).

Identification of study groups and preparation of a database: Since the date of transition to a pandemic work order was 18 March 2020 in our country, we set this date as the limit when specifying "before" and "during" the pandemic periods. The study was planned as a single-site and cross-sectional study. All of the patients diagnosed with psoriasis who were being monitored at the Psoriasis Treatment Outpatient Clinic of the Dermatology and Venereology Department, Aydın Adnan Menderes University Faculty of Medicine in the 6-month period before 18/03/2020 (between 18/09/2019 and 18/03/2020) were identified to form a group of psoriasis patients treated before the pandemic. With the patients who were being monitored in the 6-month period after the same date (between 19/03/2020 and 19/09/2020), another group of psoriasis patients treated during the pandemic was formed. Patient consents were obtained using an informed consent form.

The responses of the patients to the questionnaire items during the pandemic were used to assess the effects of the pandemic on treatment modalities and disease management. The psoriasis patient files and the hospital information system were reviewed retrospectively to calculate the median psoriasis area and severity index (PASI) values of the patients and the mean number of hospital admissions. The dates of their first visits, the therapies they used, and/or changes in their therapies were recorded. The post-treatment PASI values before and after the pandemic were compared.

Statistical Analysis

The data were analysed on the SPSS 21.0 statistics program. Whether the continuous variables had a normal distribution was explored with visual (histogram and probability graphs) and analytic (Kolmogorov-Smirnov/Shapiro-Wilk tests) methods. Descriptive statistics were shown as means and standard deviations in normally distributed data and as minimums, maximums, and medians (25.-75. percentile) in not normally distributed data. The chi-square test was used to show the relationships between the categorical variables. In independent groups, the t-test was used for the comparison of parametric continuous variables, and the Wilcoxon test for the comparison of non-parametric variables. Statistical significance was set at $p<0.05$.

Results

A total of 196 patients in the last 6 months before the transition to the pandemic study order, and 117 patients in the first 6 months thereafter applied to our psoriasis treatment outpatient clinic. There was a 40.3% decrease in the number of patients. Ninety-four patients presented to our treatment outpatient clinic in both periods. After a review of the files of these patients, 17 patients were excluded from the study because there were missing parts in their patient examination information, 4 patients because a subject informed consent form could not be obtained, 3 patients because they stated they could not come due to various reasons other than the pandemic, and 1 patient due to a psychiatric disorder. A review of the data of the remaining 69 psoriasis patients showed that 64 had plaque-type psoriasis; 5 patients were excluded from the data group because they did not have plaque psoriasis and a PASI score could not be calculated for them. Thus, data analysis was performed with 64 patients.

Of the 64 patients in the study group, 29 (45.3%) were female and 35 (54.7%) male, with a mean age of 54,0±12,4 (minimum-maximum: 22-78) years. Twelve (18.2%) patients were >65 years of age. Of the patients in the study group, 37 (57.8%) had at least one comorbidity.

The most common comorbidities were obesity in 27 patients (42.2%), hypertension in 18 patients (28.1%), and diabetes mellitus in 11 patients (17.2%). The number of patients with psoriatic arthritis in the study group was 19 (29.7%). None of the patients in the study group had a COVID-19 infection between 19 March 2020 and 19 September 2020.

The responses given by the patients to the questions asked in the questionnaire to assess the effect of the pandemic on their disease and treatment revealed that 56.3% of the patients believed the pandemic did not affect their disease, while 31.3% believed the severity of their disease increased. The most common belief about the cause of exacerbated psoriasis was pandemic-related stress and changes in treatment followed by employment and/or financial problems. During the pandemic, 43 patients (67.2%) had changes in their treatment and 21 patients (32.8%) had no changes. While the treatments of 10 patients (47.6%) were modified by us, 11 patients (52.4%) discontinued their treatment on their own or took their medication dose in longer intervals. When the patients who changed their treatment on their own were asked about the reason, approximately half stated they had problems with access to physician/hospital/medication.

Due to an increase in disease severity with the existing topical therapy, a new systemic therapy was started in 4 of the 10 patients whose treatment was changed by us. As a systemic treatment, one patient was started methotrexate, one patient acitretin, one patient IL-17 inhibitor, and the other patient tumour necrosis factor-alpha (TNF-α) inhibitor. Their systemic treatments were discontinued due to remission in 3 of the 4 patients and due to pregnancy in one patient. While using an interleukin-17 (IL-17) inhibitor, the pregnant patient switched to a topical therapy. Since the disease could not be brought under control, however, a narrow band ultraviolet B therapy was added. One of the 3 patients in remission were using acitretin, one methotrexate, and the other TNF-α inhibitor, and they switched to topical therapy. As the complaints of the patient using the TNF-α inhibitor increased later, their previous therapy was restarted. The doses of two patients, one using methotrexate and the other acitretin, were increased due to insufficient response.

The therapies received by the 64 patients in the study group in a 6-month period before and after the pandemic are shown in Figure 1. Since the examination times and frequencies of the patients receiving phototherapy were different from those of the patients coming to the treatment outpatient clinic, they were not included in this figure. Only the patient who switched to phototherapy due to pregnancy was included in the graphic.

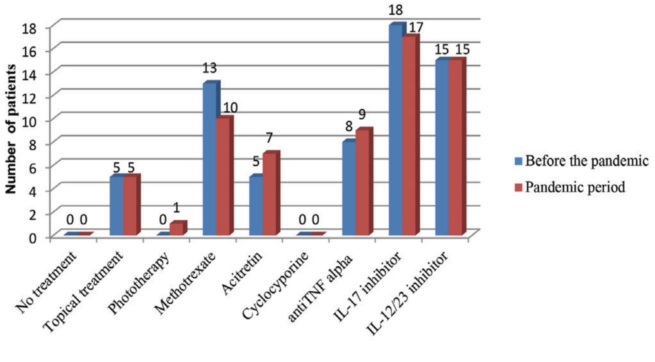

Figure 1. Treatments received by patients in the study group before and during the pandemic

When we compared the number of patient visits to the treatment outpatient clinic before the pandemic and in the first 6 months of the pandemic, we found that the median value was 3 before the pandemic and 2 during the pandemic (p<0.001). The first admissions of most of the patients to our treatment outpatient clinic after the pandemic were between month 4 and month 6 (Figure 2). When the first admission dates were evaluated, no difference in gender was found among the patients, and looking at the first admission dates by age groups, only one patient aged 65 and over (8.3%) was found to present within the first 3 months. It was found that 91.7% of the patients presented to the clinic starting from month 4 (p=0.027).

No significant difference was found between the PASI scores of the patients in the study group before and after the pandemic (p=0,593). While the median before the pandemic PASI score of all patients was 1.28 (minimum-maximum: 0-8.4), their median after the pandemic PASI score turned out to be 1.50 (minimum-maximum: 0-14.6).

The change in disease severity was assessed separately by comparing the before the pandemic and during the pandemic median values of the PASI scores obtained individually at patient admission. In this assessment, changes exceeding 10% between the median PASI scores were classified as an increase or decrease in disease severity. The disease severity was considered as having remained the same in changes of less than 10%. Accordingly, the group of 30 patients (46.9%) who had an increase in their median PASI scores after the pandemic was found to be the most weighted group in the study (Table 1).

When the patient responses to the question "What do you think is the effect of the pandemic on your disease?" in the questionnaire and the changes in disease severity calculated by the dermatologists based on the PASI scores were compared, only the patients whose response was "There was an increase in the severity of my disease" actually had an increase in the severity of their disease (p<0.001). No correlation was found between the disease severity of the patients who thought there

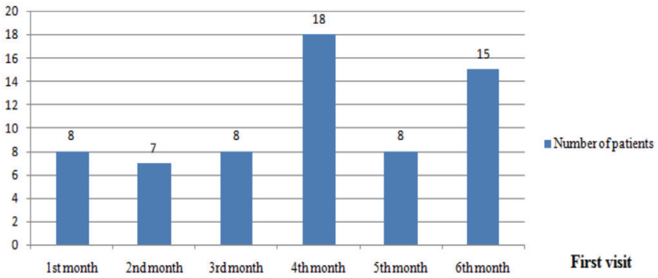

Figure 2. First visit dates of patients during the pandemic

Table 1. Evaluation of changes in disease severity according to median PASI values

Disease severity	Number (n=64)	%
Decrease	21	32.8
No change	13	20.3
Increase	30	46.9

PASI: Psoriasis area and severity index

was no change or a decrease in their disease severity as calculated by us.

Looking at the responses of the 30 patients whose disease severity was found to increase to the question "What do you think is the effect of the pandemic on your disease?", 12 patients responded as "There was no change in the severity of my disease", 1 patient as "The severity of my disease decreased", and 17 patients as "There was an increase in the severity of my disease". The responses of these 17 patients to the question "If you think there is an increase in the severity of your disease, what do you think was the potential triggering factor? (You can mark more than one choice)", showed that 8 (33.3%) responded as pandemic-related stress, 8 (33.3%) as change in the treatment, 5 (20.8%) as work/financial problems, and 3 (12.5%) as infections other than COVID-19.

Discussion

The COVID-19 pandemic affected and changed our lives in many ways. Extraordinary measures were taken worldwide, some to reorganize the healthcare system and others to reshape social life and individual behaviours in order to prevent the spread of the disease and reduce the rate of deaths associated with the disease[4,5]. The changes made in the routine practice to bring the disease under control have also affected the dermatology practice. The recommended changes in the routine practice included postponing non-emergency outpatient clinic visits, limiting surgical procedures to emergency cases, postponing cosmetic procedures, limiting hospitalizations to patients with severe disease not responding to outpatient treatments, and using telemedicine and virtual methods for the monitoring and treatment of non-emergency patients[6].

Limitations of physical activities and increase in the time spent at home as a result of the aggressive isolation and restriction measures taken by governments had unfavourable effects on people's moods and psychology. It has been suggested that this might have a role in worsening the natural progression of chronic inflammatory skin diseases. Particularly in patient groups that have psoriasis, hidradenitis suppurativa, atopic dermatitis, bullous diseases, etc., for which immunomodulatory/immunosuppressive therapies are used, treatments were disrupted for reasons such as the fear of contracting COVID-19 infection and being unable to go to previously planned appointments[7]. For the monitoring of these special patient groups during the pandemic, it was necessary to develop new strategies such as social media, communication instruments, and telemedicine to help them continue with or change their treatments[8,9].

Being one of the chronic inflammatory diseases, psoriasis is among the groups requiring special care in dermatology outpatient clinics and regular monitoring of these patients is very important. On 24 May 2014, the WHO announced psoriasis as a non-infectious condition requiring special healthcare service due to its high disease burden, chronic progression, serious impact on quality of life, and severe socioeconomic consequences[10]. A considerable portion of psoriasis patients need prescription therapies and this creates a major demand for healthcare service[11]. For this reason, seeing patients with psoriasis in outpatient clinics other than their routine dermatology outpatient clinics, recording their contact information and being able to contact them when necessary, arranging the appointment system different from the normal, spending more time for them, and monitoring them more closely are important for bringing their disease under control and improving their quality of life.

Psoriasis is a disease accompanied by multiple morbidities. Increased prevalence of comorbidities in patients with severe psoriasis, such as obesity, hypertension, diabetes, and cardiovascular disease, which are also risk factors for the severity of COVID-19 disease, make this particular patient group vulnerable[12]. Many systemic therapies used for psoriasis are also thought to increase the risk of severe infection. Patients using immunosuppressive/immunomodulatory agents who are thought to be more vulnerable in the early periods of the pandemic were recommended to adopt risk-reducing behaviours such as social distancing as proposed by the WHO as well as more strict measures such as social isolation including from their households[13].

The data of the patients of our treatment outpatient clinic showed that 57.8% had at least one comorbidity. Looking at the pre-pandemic therapies, 13 patients (20.3%) received methotrexate, 8 patients (12.5%) TNF-α inhibitor, and 33 patients (51.6%) either IL-17 or IL-12/23 inhibitors. This data suggests that most of the psoriasis patients treated by our outpatient clinic were in the risk group.

The responses given by the patients to the questions asked in the questionnaire to assess the effect of the pandemic on their disease and treatment revealed that a high percentage (56.3%) of the patients believed the pandemic did not affect their disease and 12.5% that the severity of their disease decreased. We think our patients were affected less by the pandemic because they were previously being treated by our outpatient clinic, they could easily reach our department by phone and obtain information when necessary, and they had awareness about their disease.

Due to the effect of "stay at home" calls and the fear of contracting infection in the early periods of the pandemic, there was a significant decrease in the frequency of patient visits to the treatment outpatient clinic in the first 6 months after the onset of the pandemic compared to the pre-pandemic period. The patients were also found to visit the treatment outpatient clinic more after month 4 and thereafter in the first 6-month period of the pandemic. Gender was not found to be a factor affecting visits, but age had an effect on visits. The fact that our older patients visited at the later stages of the first 6-month period of the pandemic could be because they were more self-protective and more hesitant about hospital visits.

We also discovered that none of the 64 patients included in the study had COVID-19 infection within the first 6-month period following the onset of the pandemic. Most of our psoriasis patients (54 patients-84.3%) were using a biological agent or an immunosuppressive agent. The reason why our patients did not have a COVID-19 infection may be that they could have paid more attention to social isolation and personal protection measures due to the therapies they were using. Low rates of patient visits to the treatment outpatient clinic in the first 3 months and the decrease in hospital visits compared to pre-pandemic period are the other findings supporting this situation.

No changes occurred in the treatment of most of the study group patients during the pandemic. Nearly half of the patients who changed their treatment on their own experienced problems in accessing physician/hospital/medication due to the strict measures taken, lockdowns, flexible working hours, and the panic experienced at the beginning of the pandemic. Patients' changing the treatment on their own is a behaviour harbouring serious potential hazards. Restrictions on the means of communication and transportation also affected this. To prevent such a situation, it is important to ensure patient compliance with the treatment and follow-up during the pandemic.

Emotional stress is a triggering factor for the onset and exacerbation of psoriasis[3]. Strain, anxiety, loss of morale, and similar emotions caused by the COVID-19 pandemic may increase the number of psoriasis patients' visits to dermatology outpatient clinics. Since a patient group that was already coming for a follow-up before the pandemic was included in our study, data on whether there was an increase in general psoriasis patient visits could not be obtained. A web-based survey exploring the effects of restrictions on open air activities and loss of income on the patients with psoriasis showed that 43.7% of 926 patients had moderate to severe worsening in their disease during the COVID-19 pandemic. Similarly, our study found more than 10% increase in the PASI scores of 46.9% of our patients with psoriasis and the patients linked this to the pandemic. It has been reported that restriction of outdoor activities and loss of income are positively correlated with worsening of psoriasis, stress, anxiety, and depression[3,14]. It has also been reported that noncompliance with the psoriasis treatment during the pandemic is associated not only with the exacerbation of the disease, but also with perceived stress, anxiety and depression symptoms, stressing the importance of patient education and communication[15].

Of the 17 patients whose severity of disease was found to increase and who stated that the severity of their disease increased, 33.3% thought that pandemic-related stress, 33.3% changes in the treatment, 20.8% work/financial problems, and 12.5% non-COVID-19 infections triggered their disease. However, considering that pandemic-related stress and changes in the treatment led to the failure to come to the treatment outpatient clinic, and therefore, was indirectly associated with the pandemic, and the work or financial problems could again be linked to the economic troubles experienced during the pandemic, a considerable number of patients linked the triggering factor for the increase in disease severity to the pandemic.

Considering all these, it can be said that disease management and treatment behaviours of our patients were also affected favourably or unfavourably due to the emotional stress and anxiety caused by the pandemic, which is consistent with the published data. Besides positive impacts such as lack of unnecessary visits to hospitals and paying attention to self-protective measures, negative impacts have also been observed, such as problems in accessing physician/hospital/medication and some patients changing their treatment on their own.

Study Limitations

A major limitation of the study is that it evaluated the short-term effects at the beginning of the pandemic. The study does not give the opportunity for us to observe whether these effects would continue to increase in time or would diminish due to adaptation mechanisms. Another major limitation is that our study was conducted before the rollout of vaccines. The effects of vaccines on psoriasis patients and changes in patient and physician behaviours in the post-vaccination period could not have been covered in our study. Another limitation is that since the patients on phototherapy were excluded from PASI assessments and completion of questionnaires, no inferences could be made regarding phototherapy during the pandemic. Finally, not all treatment modalities could be compared individually due to the small number of patients and the short study period.

Conclusion

The COVID-19 pandemic led to exacerbations and difficulties in disease management in patients with psoriasis due to patients' inability to access adequate healthcare services and the stress, anxiety, etc. arising from pandemic-related loss of income and restrictions on social activities. It should be kept in mind that suspending or sudden discontinuation of treatment especially in patients receiving biological and systemic therapies may result in uncontrolled psoriasis flare-ups and declining quality of life. Patients changing their therapy on their own may involve serious dangers. Even patients who were under follow-up in the outpatient clinic and were personally known by the physicians made a treatment change decision on their own. In such emergency or extraordinary situations, it may be useful to establish phone lines in public institutions to contact the patients or to facilitate reaching the physician using video applications so that patient follow-ups are not interrupted. In this respect, these services should be placed in an official channel (invoicing the service rendered, forwarding prescriptions or similar official documents) and a legal basis for tele-dermatology should be established. Providing patients with informative booklets and preparing patient schools allowing one-on-one communication may enable patients to be more prepared as to how they should act in extraordinary circumstances.

Ethics

Ethics Committee Approval: This study was approved by Non-interventional Clinical Research Ethics Committee Aydın Adnan Menderes University Faculty of Medicine (approval number: 12, date: 01.10.2020).

Informed Consent: Patient consents were obtained using an informed consent form.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: F.N., E.Ş., Concept: F.N., E.Ş., Design: F.N., E.Ş., M.U., M.G., Data Collection or Processing: F.N., E.Ş., Analysis or Interpretation: F.N., E.Ş., M.U., M.G., Literature Search: F.N., E.Ş., Writing: F.N., E.Ş., M.U., M.G.,

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