




ORIGINAL ARTICLE

Changing trends in dermatology practice during COVID-19 pandemic: A single tertiary center experience

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Abstract

The aim of this study was to evaluate the changing trends in dermatology clinical practice at a tertiary center during the coronavirus disease 2019 (COVID-19) pandemic. This retrospective cohort study was conducted on patients who were admitted to Ufuk University Hospital with dermatologic complaints/diseases before and during the pandemic. The patients were divided into two groups: (a) the pre-pandemic period (March-May 2019) and (b) the Pandemic period (March-May 2020). Demographic features, clinical characteristics, dermatologic diseases/complaints, dermatologic procedures/interventions, hospitalization rate, and use of biologic agents were compared between the two groups. Total number of hospital admissions have decreased from 1165 to 717. Admission rates for acne, dermatophytosis, and benign neoplasm of the skin significantly lower during the pandemic period (P values were .02, .04, and .006, respectively). Contact dermatitis, acne accompanying dermatitis, cicatricial hair loss, lichen planus, and zona zoster infection rates were significantly higher (P values were .007, <.001, .009, .04, and .03, respectively). Rates of biopsy and electrocautery procedures were decreased significantly (P values were <.001 and .002, respectively). The hospitalization rate was similar between the groups ($P = .51$). However, the use of biologic agents significantly decreased during the pandemic period ($P = .01$). Updated clinical protocols should be established for the new normal period in accordance with these findings.

KEYWORDS

changing clinical practice, COVID-19, dermatology, pandemic

1 | INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a serious health problem that has put the world on alert since the last days of 2019. It has not only changed our daily lives but also the clinical practice of health-care professionals.¹

Prominent changes in the clinical practice of various medical disciplines have been observed during the pandemic.²⁻⁵ Postponing elective procedures, reducing the number of hospital admissions, effective

use of telemedicine, implementation of strict triage protocols and obligatory use of personal-protective equipment were some of the major regulations performed by the health authorities in this extraordinary period. Moreover, some hospitals have been turned to pandemic centers and health-care professionals from various medical branches were assigned to these specific centers to overcome the pandemic.²⁻⁵

Governments all over the world have also made radical arrangements to control this deadly outbreak. Lock-down, social isolation,

home-working, and obligatory use of personal protective equipment were the most common precautions taken by the states.^{6,7} Depending on the mentioned factors dermatology practice has also changed during the pandemic.⁸⁻¹¹ Reduction of face-to-face consultations, extensive use of teledermatology, uncertainty in the use of immunosuppressive/immunomodulating systemic therapies, and decreasing rates of cosmetic procedures were the main reported changes in the routine clinical practice of dermatologists during COVID-19 outbreak.⁸⁻¹¹ Furthermore, there are studies in the literature indicating cutaneous manifestations of COVID-19 which may also affect dermatology practice.¹²⁻¹⁴

In our opinion assessment of changing trends in the dermatology practice during the pandemic period will enlighten the health-care professionals to establish more efficient health policies in the new normal period. Thus, experiences of tertiary health-care centers are valuable and they may enlighten the health authorities to make new management protocols in the near future.

This study aims to evaluate the changing trends in dermatology clinical practice at a tertiary center during the pandemic.

2 | MATERIALS AND METHODS

This retrospective cohort study was conducted on patients who were admitted to the Department of Dermatology and Venereology, Ufuk University Hospital with dermatologic complaints/diseases before and during the pandemic. The required data were obtained from the electronic database of Ufuk University Hospital. The study protocol was approved by the Ministry of Health Ankara City Hospital and the Turkish Ministry of Health (E1-20-843 and 04T23_13_45, respectively).

All consecutive cases who were admitted to the dermatology department between 01.03.2019-31.05.2019 and 01.03.2020-31.05.2020 were included in this study. Patients who were admitted to the hospital at another period were excluded. The patients were divided into two groups according to the time interval they were admitted to the hospital: (a) pre-pandemic period (March-May 2019) and (b) pandemic period (March-May 2020). As dermatologic complaints/diseases may be affected by seasonal changes, the authors investigated the same study months just 1 year before and during the pandemic. Age groups (<20, 20-65, >65 years), gender, number of hospital admissions, number of dermatologic complaints/diseases, type of dermatologic complaints/diseases, dermatologic procedures/interventions, hospitalization rate and use of biologic agents were compared between the two groups.

Department of Dermatology and Venereology, Ufuk University Hospital is a tertiary health-care center in the capital of Turkey serving approximately 7000 patients per year. It is an advanced referral center accepting patients not only from the capital but also from other regions of Turkey. Various complex procedures from

cosmetology to dermatologic surgery were performed in this institution.

Turkey has been fighting against the COVID-19 pandemic since the first confirmed case was reported on 11 March 2020. The Turkish government has taken serious precautions like lock-down, social isolation, home-working, and obligatory use of masks according to the recommendations of the COVID-19 scientific committee. One of the most prominent regulations in the daily-life of people was the obligatory home-staying for the young (<20 years) and the elderly (>65 years) in our country.¹⁵ For this reason, three age categories were defined for the patients in this study (<20, 20-65, >65 years) to assess the effect of COVID-19 regulations on dermatologic clinical practice.

Statistical analyses were performed with Statistical Package for the Social Sciences (SPSS.22, IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.). Categorical variables were compared using the chi-square test. A *P* value of <.05 was considered statistically significant.

3 | RESULTS

The total number of hospital admissions have decreased from 1165 to 717 in the pandemic period compared to the pre-pandemic period. Study groups were similar in terms of age and gender (*P* values were .71 and .62, respectively). A significantly higher number of hospital admissions were observed in the pre-pandemic group (*P* < .001). A significant increase in the number of dermatologic complaints/diseases was found in the pandemic group (*P* < .001). The demographic features and clinical characteristics of the patients were summarized in Table 1.

Comparison of dermatologic diseases/complaints between the pandemic and pre-pandemic period as shown in Table 2. Admission rates for acne, dermatophytosis, and benign neoplasm of the skin significantly lower during the pandemic period (*P* values were .02, .04, and .006, respectively). On the other hand, contact dermatitis, acne accompanying dermatitis, cicatricial hair loss, lichen planus, and zona zoster infection rates were significantly higher during the pandemic period (*P* values were .007, <.001, .009, .04, and .03, respectively). Two groups were comparable for the remaining complaints/diseases.

Comparison of dermatologic procedures/interventions between the pandemic and pre-pandemic period was shown in Table 3. Rates of biopsy and electrocautery procedures were decreased significantly in the pandemic group (*P* values were <.001 and .002, respectively).

Comparison of hospitalization rate and use of biologic agents between the pandemic and pre-pandemic period was shown in Table 4. The hospitalization rate was similar between the groups (*P* = .51). However, the use of biologic agents significantly decreased during the pandemic period (*P* = .01).

TABLE 1 Demographic features and clinical characteristics of the patients

Variables	Pre-pandemic (March–May 2019) (n = 1165)	Pandemic (March–May 2020) (n = 717)	P value
Age group (n, %)			.71
<20 years	209 (17.9%)	123 (17.2%)	
20–65 years	815 (70%)	514 (71.7%)	
>65 years	141 (12.1%)	80 (11.2%)	
Gender (n, %)			.62
Female	767 (65.8%)	464 (64.8%)	
Male	398 (34.2%)	252 (35.2%)	
Number of hospital admissions (n, %)			<.001
1	1058 (90.8%)	657 (91.6%)	
2	75 (6.4%)	58 (8.1%)	
3	32 (2.7%)	2 (0.3%)	
Number of dermatologic diseases/complaints (n, %)			<.001
1	979 (84%)	523 (72.9%)	
2	168 (14.4%)	178 (24.8%)	
3	18 (1.6%)	14 (2.2%)	

4 | DISCUSSION

Coronavirus disease 2019 (COVID-19) has led to significant changes in the field of dermatology.^{8–11} However, our knowledge is still very limited, and more data is necessary to reach more precise results. Thus, experiences of tertiary centers are worthy to update the clinical approach of dermatologists. The present study indicated some major changes in the dermatology clinical practice during the COVID-19 pandemic. Firstly, hospital admissions decreased significantly during the pandemic period. On the other hand, the number of dermatologic complaints/diseases upon hospital admission was increased. Secondly, a significant reduction in the percentage of cases with acne, dermatophytosis, and benign neoplasm of the skin was observed during the pandemic. However, rates of contact dermatitis, acne accompanying dermatitis, cicatricial hair loss, lichen planus, and zona zoster infection were significantly higher during the pandemic. Thirdly, rates of biopsy and electrocautery procedures were decreased significantly in the pandemic group. Lastly, the use of biologic agents significantly decreased during the pandemic period while the hospitalization rate remained similar. These findings indicated that relatively trivial complaints/diseases were tolerated by the patients and elective procedures had a decreasing trend during the pandemic period. Moreover, the rate of biologic agent use significantly decreased most probably due to the concerns of both the physicians and the patients. These findings were mostly compatible with the current literature.^{8–11}

The Turkish government has made strict regulations since the early days of the pandemic. The young (<20 years) and elderly (>65 years) were obligated to stay at home except for special circumstances. Additionally, some hospitals were turned into

pandemic centers and the majority of dermatologists were assigned to these centers.¹⁵ However, the demographic features of the patients were similar before and during the pandemic in the present study. This finding was most probably due to the characteristic of our institution. Dermatology Department of Ufuk University Hospital has been serving dermatology patients since the beginning of the pandemic and a multidisciplinary special outpatient clinic was established for suspected COVID-19 patients. Thus, the profile of the patients in this institution has remained similar during the pandemic.

International organizations and committees have made recommendations for the optimal management of dermatologic care during the COVID-19 pandemic.^{16–19} Nearly all of them reached an agreement on some major points like postponing elective procedures, more frequent use of tele dermatology, assessing the potential risk of biologic agents/immunosuppressive therapies, and taking necessary precautions for the prevention of disease transmission.^{16–19} Another important issue was the change in health-care policy during the pandemic. Lock-down, social distancing, application of triage protocols, assignment of dermatology specialists in pandemic centers, and patients' hesitation to hospital admission all affected the clinical practice of dermatologists.¹⁵

Morbilloform rash, pernio-like acral lesions, livedo-like/retiform purpura/necrotic vascular lesions, urticaria, and vesicular (varicella-like) eruptions were reported as the cutaneous manifestations of COVID-19 in the literature.^{12–14,20,21} Furthermore, COVID-19 may cause a multisystem inflammatory syndrome in children presenting with an erythematous, polymorphic rash, erythema, and/or firm induration of hands and feet, oral mucositis, and conjunctivitis, along with systemic, laboratory,

TABLE 2 Comparison of dermatologic diseases/complaints between the pandemic and pre-pandemic period

Variables	Pre-pandemic (March–May 2019) (n = 1165)	Pandemic (March–May 2020) (n = 717)	P value
Acne	283 (23.4%)	141 (19.7%)	.02
Dermatophytosis	114 (9.8%)	51 (7.1%)	.04
Benign neoplasm of the skin	87 (7.5%)	31 (4.3%)	.006
Contact dermatitis	67 (5.8%)	71 (9.9%)	.007
Wart	59 (5.1%)	42 (5.9%)	.45
Psoriasis	52 (4.5%)	21 (2.9%)	.09
Rosacea	51 (4.4%)	19 (2.6%)	.06
Non-scarring alopecia/hair loss	57 (4.9%)	32 (4.5%)	.67
Nail disorders with/without onychomycosis	54 (4.6%)	33 (4.6%)	.97
Pruritus	37 (3.1%)	34 (4.7%)	.08
Urticaria	30 (2.6%)	18 (2.5%)	.93
Xeroderma	29 (2.5%)	15 (2.1%)	.57
Seborrheic dermatitis	27 (2.3%)	20 (2.8%)	.52
Cutaneous infection and infestation	21 (1.8%)	21 (2.9%)	.10
Melasma/postinflammatory hyperpigmentation	21 (1.8)	8 (1.1%)	.24
Atopic dermatitis	17 (1.5%)	12 (1.2%)	.71
Malign neoplasm of the skin	15 (1.3%)	5 (0.7%)	.22
Aphthous stomatitis	15 (1.3%)	8 (1.1%)	.74
Acne and dermatitis	13 (1.1%)	44 (6.1%)	<.001
Nevus/ephelid/lentigo	13 (1.1%)	4 (0.6%)	.21
Bullous dermatitis	10 (0.9%)	6 (0.8%)	.96
Vitiligo	10 (0.9%)	9 (1.3%)	.52
Actinic keratosis	6 (0.5%)	5 (0.6%)	.61
Behçet's disease	9 (0.8%)	3 (0.4%)	.34
Drug eruption, leukocytoclastic vasculitis and reactive dermatosis	11 (0.9%)	6 (0.8%)	.81
Cicatricial hair loss	0 (0%)	6 (0.8%)	.009
Pityriasis rosea	5 (0.4%)	3 (0.4%)	.97
Lichen planus	5 (0.4%)	9 (1.3%)	.04
Atrophic disorders of the skin, Connective tissue disease	10 (0.9%)	5 (0.7%)	.70
Hidradenitis suppurativa	4 (0.3%)	2 (0.3%)	.80
Herpes simplex infection	9 (0.8%)	9 (1.3%)	.29
Zona zoster infection	12 (1%)	16 (2.2%)	.03
Others	12 (1%)	9 (1.3%)	.65

TABLE 3 Comparison of dermatologic procedures/interventions between the pandemic and pre-pandemic period

Variables	Pre-pandemic (March–May 2019) (n = 1165)	Pandemic (March–May 2020) (n = 717)	P value
Cryotherapy	86 (7.4%)	37 (5.2%)	.058
Biopsy	66 (5.7%)	13 (1.8%)	<.001
Electrocautery	16 (1.4%)	0 (0%)	.002
Intralesional injection	25 (2.1%)	7 (0.9%)	.18
Patch/prick test	6 (0.5%)	0 (0%)	.054

and imaging findings of atypical, severe Kawasaki disease.²² None of the mentioned lesions were observed in the present study. In our opinion, patients with COVID-19 infection admitted

to the hospital with more common complaints like fever, cough, dyspnea, and fatigue rather than cutaneous manifestations. Moreover, new dermatologic lesions like personal protective

TABLE 4 Comparison of hospitalization rate and use of biologic agents between the pandemic and pre-pandemic period

Variables	Pre-pandemic (March–May 2019) (n = 1165)	Pandemic (March–May 2020) (n = 717)	P value
Hospitalization rate (%)	20 (1.7%)	9 (1.1%)	.51
Use of biologic agents (%)	25 (2.1%)	5 (0.6%)	.01

equipment-induced skin injury and hand hygiene-related dermatitis.^{23,24} Higher rates of contact dermatitis and acne accompanying dermatitis during the pandemic in this study were consistent with the previous studies.^{23,24} Spending long hours wearing personal protective equipment, higher rates of handwashing, and glove use seem to be the main factors behind the mentioned pathologies. Interestingly, higher rates of cicatricial hair loss, lichen planus, and herpes simplex infection were observed in the present study. There are articles in the literature reporting a possible association of lichen planus and herpes zoster with COVID-19.^{25,26} Although it is difficult to reach conclusive results with relatively limited data, these cutaneous lesions may have an association with COVID-19.

The effect of biologic agents and immunosuppressive therapies during the COVID-19 pandemic is controversial. Although these medications may be continued in patients without COVID-19 infection who are already taking them, the physicians should be cautious in suspected/confirmed cases. Furthermore, the risk and benefit ratio should be balanced before starting these drugs during the pandemic.^{9,17} The decreasing trend in biologic agent use in the present study was most probably due to the concerns related to COVID-19 infection. Furthermore, similar hospitalization rates between the two groups reflected the application of standardized protocols for dermatologic diseases before and during the pandemic.

The strengths of the present study were homogeneity of the patient population, single-center experience and a large number of cases. However, retrospective design was the main limitation.

In conclusion, the COVID-19 pandemic seems to have a significant effect on dermatology practice. Updated clinical protocols should be established for the new normal period in accordance with these findings.

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CONFLICT OF INTEREST

The authors declare no conflict of interest in this study.

AUTHOR CONTRIBUTION STATEMENT

Efsun Tanacan: study design, data collection, preparation of the original draft, statistical analysis, Gulhan Aksoy Sarac: Data collection, manuscript writing, M. Can Emeksiz: literature review, manuscript writing, Didem Dincer Rota: critical review, manuscript writing, F. Gulru Erdogan: supervision, manuscript writing.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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