Clinical, Cosmetic and Investigational Dermatology

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ORIGINAL RESEARCH

Investigation of Consultations Requested by Dermatology Inpatient

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Background: Although dedicated dermatology wards have been closed in some countries, they continue to exist in others. Inpatient consultations requested from dermatologists have been investigated widely. However, those requested by dermatologists have been taken into consideration only in a few studies.

Objective: This study aimed to investigate such consultations, particularly in the context of diagnoses, reasons, and consulting specialties.

Methods: Patients admitted to the dermatology ward of a tertiary hospital in Turkey between January 2019 and August 2021 were retrospectively analyzed.

Results: The most common diagnoses were non-pustular psoriasis (11.5%), pruritus (10.9%), and urticaria (10.6%) in 548 admissions with a median length of stay of 15.1 days. There were 1712 consultations. Their number per admission was positively correlated with patient's age and length of stay. Highest numbers were observed in admissions with a diagnosis of bullous pemphigoid, leg ulcers, lupus erythematosus, pustular psoriasis, hidradenitis suppurativa, and pemphigus. Reasons for consultation were management of comorbidity (53.8%), evaluation for drug precaution (19.1%), investigation for etiology (12.8%), evaluation for systemic involvement (6.0%), taking treatment advice (5.4%), obtaining biopsy (3.0%), and differential diagnosis (1.9%).

Conclusion: Our findings showed that the number of consultations per admission was high, and the most common reason for consultation was comorbidity, indicating that, practically, there are no more pure dermatological patients. Therefore, if dedicated dermatology wards will continue to exist, in order to lower the number of consultations so length of stay, dermatologist should be trained in a manner so that they have more knowledge about common comorbidities.

Keywords: inpatient dermatology, consultation, ward, length of stay, comorbidity

Introduction

Inpatient dermatology consultations requested by other specialties have been the subject of many studies. The most common requesting specialities were found to be medical specialities such as internal medicine and hematology/oncology.[1–3] In most studies, the top three dermatologic disorders diagnosed by dermatologists were infections, inflammatory diseases such as dermatitis, and drug reactions.[1,2,4] In a study done in a veterans affairs hospital, drug reactions were replaced by skin neoplasms in this list.[5]

Only a few studies mentioned consultations requested from other specialties for patients admitted to the dermatology wards. The rate of such consultations was found to be 54% of patients in a study which was conducted at a tertiary hospital in Australia during 2011 and involved 97 patients aged 1–93.[6] Such consultations were requested in 63% of 1746 admissions in a study which was conducted at a tertiary hospital in India during a three-year period between 2014 and 2017 and involved 1664 patients aged 0–91.[7] The top two specialties were pediatrics and immunology in an Australian study, and endocrinology and internal medicine in an Indian study. However, these studies did not examine the reasons for such consultations or the distribution of these reasons according to diagnoses and specialities.

Received: 14 October 2024
Accepted: 30 December 2024
Published: 7 January 2025

Objective

In fact, to develop strategies for more effective care of hospitalized dermatological patients, it will be useful to uncover such reasons and their distributions. So, we purposed to review number of and reasons for consultations in patients admitted to our dermatological ward with respect to diagnoses and specialties.

Materials and Methods

We retrospectively analyzed the electronic medical records of patients admitted to our dermatological ward at the tertiary hospital of the University of Çukurova (Adana, Turkey) between January 2019 and August 2021. Patients staying as a day-case for therapeutic purposes were excluded. The following data were extracted from these records: patient age and sex, primary diagnosis for stay, attending physician, length of stay, reasons for consultations, consulting specialties, and number of imaging tests. In calculation of number of consultations, the number of different specialities was used. In other words, even if a patient was consulted to a given speciality more than once, for such a consultation, we added only 1 to the number of consultations. However, if a specialty was consulted for more than one reason, all reasons were included in the analysis.

Consultations had been requested to obtain a biopsy, make a differential diagnosis, investigate etiologies, detect systemic involvement, detect and solve problems related to special drug usage, obtain advice for treatment, and manage comorbidities or complications. So, reasons were grouped into seven categories. These were labeled with "biopsy", "diagnosis", "etiology", "systemic involvement", "drug precaution", "treatment advice", and "comorbidity", respectively.

Statistical analysis was done in R software.[8] Associations with number of consultations were evaluated using Mann–Whitney *U*-test for "patient's gender", Spearman's rank correlation test for "patient's age" and "length of stay", and Kruskal–Wallis test for "primary diagnosis for stay" and "attending physician". Spearman's rank correlation test was also used to assess the associations between the number of medical or surgical consultations and the number of imaging tests. By using the chi-square test, reasons for all consultations were compared to reasons for consultations requested from each specialty and reasons for consultations requested in admissions with each diagnosis in terms of frequency.

Results

We found 548 admissions belonging to 473 patients in the records of the period examined in the present study. Four hundred fifteen patients had one admission; 44 patients, two admissions; 12 patients, three admissions; 1 patient, four admissions; and 1 patient, five admissions. If a patient had multiple admissions, primary diagnosis for stay, consultations, and their reasons were separately evaluated for each admission. However, the age in the first admission was used to be patient's age for analysis. Thirty-four patients were younger than 18 years old. Two hundred thirty-one patients were males; and 242, females.

Mean and median length of stay were 15.1 (SD ± 13.8) days and 11.5 (interquartile range [IQR], 6–19) days, respectively. The top five primary diagnoses for stay were non-pustular psoriasis, prurigo/pruritus, urticaria/angioedema, bullous pemphigoid, and pemphigus (Table 1). The median length of stay was equal to or greater than 19 days for some diagnoses, namely pemphigus, cutaneous leishmaniasis, pyoderma gangrenosum, bullous pemphigoid, and leg ulcers. There were seven attending physicians.

We detected 1712 consultations requested from other specialties. The number of consultations per admission ranged from 0 to 16 (median, 3; IQR, 1–5). Of the 548 admissions, 14.1% had no consultation, 17.7% had one consultation, 17.0% had two consultations, 13.9% had three consultations, 12.0% had four consultations, 8.0% had five consultations, and 17.3% had six or more consultations (Figure 1). Consultations occurred 3.1 times per admission on average.

Consultations had been requested more commonly by medical specialties than by surgical specialties (1259 vs 453) (Table 2). The top three medical specialties were infectious diseases, hematology, and psychiatry. The top three surgical specialties were ophthalmology, otorhinolaryngology, and general surgery or gynecology. There were 1051 imaging tests. The number of imaging tests per admission ranged from 0 to 9 (median, 2; IQR, 1–3). This number was positively correlated with both the number of medical consultations ($r = 0.58$, $p < 0.001$) and surgical consultations ($r = 0.36$, $p < 0.001$).

Table 1 Frequencies of Diagnoses in 548 Admissions Along with Median Number of Consultations, Median Length of Stay, and Frequencies of Reasons for Consultations

Diagnosis	Frequencies (%)	Median Number of Consultations	Median Length of Stay (Day)	Frequencies of Reasons (%)[a]						
				Comorbidity	Drug Precaution	Etiology	Systemic Involvement	Treatment Advice	Biopsy	Diagnosis
Psoriasis (non-pustular)	11.5	3	12	50.3	*37.9*	0.6	*16.4*	–	1.7	–
Prurigo/Pruritus	10.9	2	9	46.6	0.6	*47.7*	–	1.7	2.9	0.6
Urticaria/Angioedema	10.6	2	7	57.1	4.5	*31.2*	6.2	0.9	–	–
Bullous pemphigoid	9.3	6	19	*59.9*	*25.2*	11.9	3.7	0.3	0.7	–
Pemphigus	8.0	4	25.5	54.1	*37.3*	6.4	4.1	0.9	1.4	–
Dermatitis	7.8	1	10	*70.1*	10.4	2.6	–	2.6	*7.8*	*6.5*
Pyoderma	5.8	2	11.5	44.9	2.6	1.3	1.3	*38.5*	1.3	*10.3*
Hidradenitis suppurativa	4.2	4	14	40.0	*41.3*	–	1.3	*22.7*	–	–
Vasculitis	3.6	3	11.5	61.8	3.9	13.2	*18.4*	1.3	1.3	–
Cutaneous leishmaniasis	3.3	1.5	21.5	45.5	*33.3*	–	3.0	*15.2*	3.0	3.0
Scabies	3.3	0	5	–	–	–	–	–	–	–
Drug eruption	2.7	2	7	66.7	–	–	7.4	–	7.4	*18.5*
Pustular psoriasis	2.6	5	17.5	*67.1*	24.3	1.4	7.1	–	1.4	–
Erythema multiforme	2.0	1	7	42.9	14.3	*35.7*	–	–	7.1	–
Pyoderma gangrenosum	1.6	3	21	56.4	7.7	20.5	–	5.1	5.1	5.1
Dermatophytosis	1.5	0	8.5	50.0	–	–	–	*50.0*	–	–
Panniculitis	1.1	2.5	9.5	46.7	16.7	23.3	–	–	*13.3*	–
Leg ulcer	0.9	5	19	57.7	–	23.1	–	11.5	7.7	3.8
Lupus erythematosus	0.9	5	14	31.6	26.3	–	*36.8*	–	5.3	–
Herpes zoster	0.9	3	6	55.6	–	–	5.6	*38.9*	–	–
Lymphoproliferative	0.9	2	9	31.2	–	–	*43.8*	*18.8*	*12.5*	–
Others	6.4	3	11	49.6	8.3	8.3	6.0	10.5	10.5	6.8
All diagnoses	–	3	11.5	53.8	19.1	12.8	6.0	5.4	3.0	1.9

Note: [a]Frequencies which were significantly higher than those of all diagnosis were written in italic font.

https://doi.org/10.2147/CCID.S500827

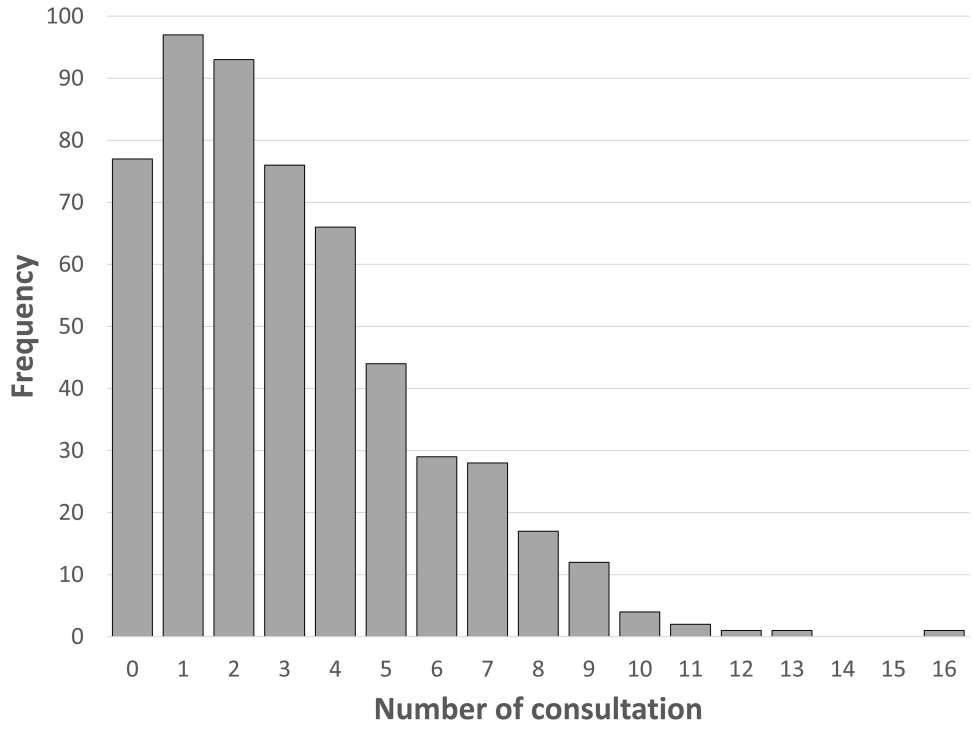

Figure 1 Frequency of consultation number.

The median number of consultations was 3 (IQR, 1–4) in male patients and 3 (IQR, 1–5) in female patients. So, there was no difference between males and females in terms of number of consultations ($p > 0.05$). The number of consultations positively correlated with age ($r = 0.26$, $p < 0.001$) and length of stay ($r = 0.61$, $p < 0.001$) (Figure 2). There were admissions with a diagnosis of scabies in which no consultation had been requested. In contrast, the median number of consultations was greater than 3 in admissions with a diagnosis of bullous pemphigoid, leg ulcer, lupus erythematosus, pustular psoriasis, hidradenitis suppurativa, and pemphigus (Table 1). The median number of

Table 2 Frequencies of Consultations for Each Speciality in 548 Admissions Along with Frequencies of Reasons

Section[a]	Frequencies of Consultations (%)	Frequencies of Reasons (%)[b]						
		Comorbidity	Drug Precaution	Etiology	Systemic Involvement	Treatment Advice	Biopsy	Diagnosis
Medical specialities								
Infectious diseases	44.9	*65.9*	14.6	1.2	–	*20.7*	–	2.4
Hematology	39.6	23.0	13.4	*58.5*	3.7	–	–	2.3
Psychiatry	20.8	58.8	–	*40.4*	–	0.9	–	–
Physical medicine	19.3	17.9	*83.0*	–	–	–	–	–
Endocrinology	17.9	*92.9*	6.1	1.0	–	–	–	–
Rheumatology	15.9	14.9	*28.7*	5.7	*54.0*	1.1	–	4.6
Nephrology	13.5	*90.5*	6.8	1.4	–	2.7	–	–
Cardiology	12.6	*79.7*	21.7	–	–	–	–	–
Pulmonology	12.2	*70.1*	20.9	6.0	–	–	–	3.0
Gastroenterology	10.9	*83.3*	15.0	3.3	–	–	–	–
Neurology	10.8	*88.1*	1.7	1.7	3.4	3.4	–	1.7
Oncology	3.6	50.0	10.0	25.0	15.0	5.0	–	–

(*Continued*)

Table 2 (Continued).

Section[a]	Frequencies of Consultations (%)	Frequencies of Reasons (%)[b]						
		Comorbidity	Drug Precaution	Etiology	Systemic Involvement	Treatment Advice	Biopsy	Diagnosis
Surgical specialities								
Ophthalmology	24.5	32.1	*62.7*	–	6.7	–	0.7	–
Otorhinolaryngology	14.1	51.9	–	6.5	*31.2*	–	*11.7*	–
General surgery	8.2	66.7	2.2	2.2	–	11.1	*17.8*	–
Gynecology	8.2	*68.9*	6.7	22.2	–	–	2.2	–
Urology	5.8	*90.6*	3.1	3.1	–	3.1	–	–
Plastic surgery	5.7	12.9	–	–	–	*22.6*	*64.5*	–
Orthopedic surgery	4.6	40.0	–	–	–	8.0	8.0	*44.0*
Cardiovascular surgery	3.5	52.6	–	26.3	–	*15.8*	–	*10.5*
Algology	3.1	41.2	–	–	–	*58.8*	–	–
All sections	–	53.8	19.1	12.8	6.0	5.4	3.0	1.9

Notes: [a]Pediatric specialities, medical genetics, intensive care, anesthesiology, neurosurgery, reanimation, and pediatric surgery consultations were not included in this table, since their frequencies were low, namely 0.2–2.4%. [b]Frequencies which were significantly higher than those of all sections were written in italic font.

consultations differed significantly between diagnostic groups ($p < 0.001$). This figure ranged from 2 to 5 according to the attending physician, and the difference was statistically significant ($p < 0.001$).

There were two different reasons for 34 of the 1712 consultations, and the total number of reasons was 1746. The frequency of reasons in the 1712 consultations was as follows: comorbidity, 53.8%; drug precaution, 19.1%; etiology, 12.8%; systemic involvement, 6.0%; treatment advice, 5.4%; biopsy, 3.0%; and diagnosis, 1.9%. From a different perspective, their frequencies in the 548 admissions were 65.0%, 31.8%, 28.3%, 17.0%, 13.7%, 7.1%, and 5.3%, respectively.

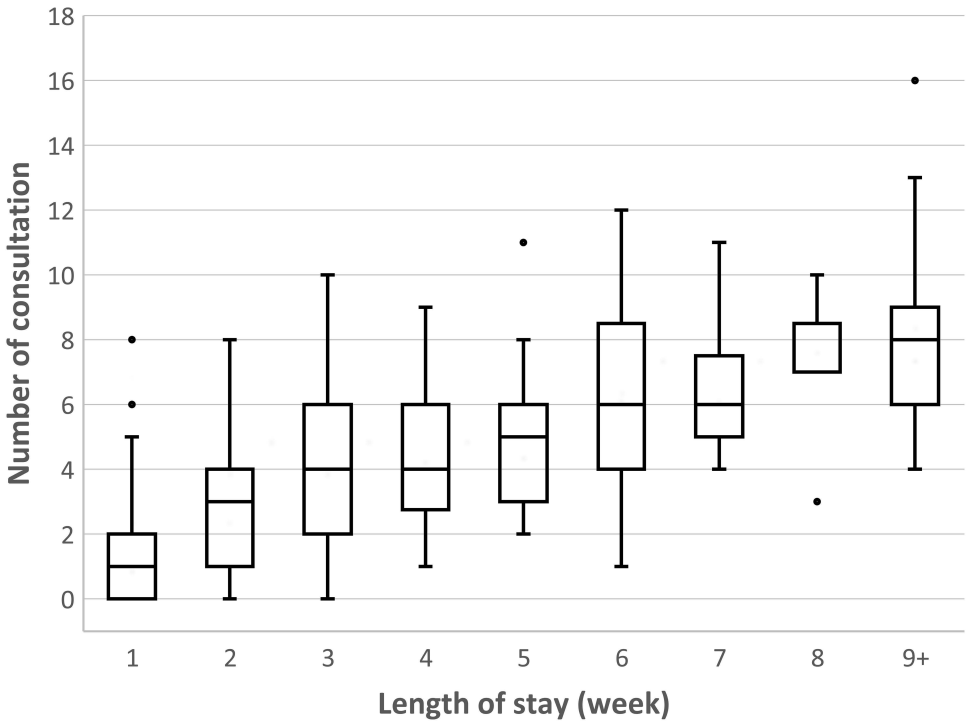

Figure 2 Relationship between length of stay and number of consultations.

https://doi.org/10.2147/CCID.S500827

Comorbidity was a reason more frequently than the above general rate in consultations of admissions with diagnosis of dermatitis, pustular psoriasis, and bullous pemphigoid (Table 1). Drug precaution was such a reason for hidradenitis suppurativa, non-pustular psoriasis, pemphigus, cutaneous leishmaniasis, and bullous pemphigoid. Similarly, prominent reason was etiology for prurigo/pruritus, erythema multiforme, and urticaria/angioedema; systemic involvement for lymphoproliferative disease, lupus erythematosus, vasculitis, and non-pustular psoriasis; treatment advice for dermatophytosis, herpes zoster, pyoderma, hidradenitis suppurativa, lymphoproliferative disease, and cutaneous leishmaniasis; biopsy for panniculitis, lymphoproliferative disease, and dermatitis; and diagnosis for drug eruption, pyoderma, and dermatitis.

Comorbidity was a reason more frequently than the above general rate in consultations requested from endocrinology, urology, nephrology, neurology, gastroenterology, cardiology, pulmonology, gynecology, and infectious diseases (Table 2). Drug precaution was such a reason in physical medicine, ophthalmology, and rheumatology consultations. Similarly, prominent reason was etiology for hematology and psychiatry; systemic involvement for rheumatology and otorhinolaryngology; treatment advice for algology, plastic surgery, infectious diseases, and cardiovascular surgery; and diagnosis for orthopedic surgery and cardiovascular surgery. Naturally, biopsy was a reason only in the surgical consultations.

Discussion

The length of stay has been expressed as either the mean or median in studies dealing with admissions to dermatology wards. Its mean has been reported to range from 6.8 to 22.2 days.[7,9–12] Its median has been reported to range from 3 to 11 days.[13–16] Our mean was in the middle of the above range, whereas our median was slightly over the upper limit of the above range. Therefore, our dermatological ward's stays could be accepted to be longer than those of most studies. In spite of longer durations, decubitus ulcer was not developed in any patient during stay in our ward. However, the primary diagnosis for stay was decubitus ulcer in two patients. We managed them together with plastic surgery specialists.

According to overall evaluation of studies from Asia,[7,9,10,12] America,[11,15,16] and Europe,[13,14] skin infections are the most common primary diagnosis for stay in dermatology wards. They are followed by autoimmune bullous diseases, psoriasis, and dermatitis. In contrast to studies from Asia, neoplastic skin diseases may also be at the top of the list of most common primary diagnoses for stay in studies from America[15,16] and Europe.[13,14] If we regroup our findings in Table 1, autoimmune bullous diseases, skin infections, and psoriasis will be at the top of the list, as in the aforementioned studies. On the other hand, prurigo/pruritus and urticaria/angioedema will retain their top positions in the list, in contrary to other studies. This discrepancy can be explained by our preferences. To shorten the time, we prefer to carry out many investigations necessary for the etiological evaluation of prurigo, pruritus, or chronic urticaria by hospitalizing the patient. We also prefer to hospitalize patients with acute urticaria due to the risk of life-threatening angioedema.

In our study, the length of stay was longer for autoimmune bullous diseases (namely pemphigus and bullous pemphigoid), ulcerative skin diseases (namely pyoderma gangrenosum and leg ulcers), and cutaneous leishmaniasis. Studies from Spain,[14] Pakistan,[9] and Brazil[11,16] also reported that autoimmune bullous diseases caused a length of stay above the mean or median. Studies from the United Kingdom[13] and Brazil[11,16] have also reported that ulcerative skin diseases caused a length of stay above the mean or median. Such a longer stay was also observed for cutaneous leishmaniasis in studies from Pakistan[9] and Brazil.[16] We hospitalize patients with cutaneous leishmaniasis almost exclusively for parenteral treatments lasting at least 15 days.

One of the main results of the present study was the number of consultations. We found that at least one consultation had been requested from other specialties in 86% of the 548 admissions, and the total number of consultations was 1712. These values were markedly higher than those of previously reported studies. In a study from Australia, it has been found that only 54% of 97 patients required consultations and total number of consultations was 91.[6] In a study from India, it has been found that only 63% of 1746 admissions required consultations and total number of consultations was 1736.[7] This difference could be partly explained by age distribution. Both studies included more pediatric patients than in our study. Adults usually have more comorbidities than children; therefore, more consultations may be required in adults. Another explanation for this difference may be that the tendency to consult other specialists may vary among

dermatologists from different countries, as we observed that the median number of consultations was significantly different among our attending physicians.

The most frequently consulted specialties were infectious diseases in our study, pediatrics in the study from Australia,[6] and endocrinology in the study from India.[7] However, these two studies are similar to our study in that, in dermatology wards, the number of medical consultations exceeded the number of surgical consultations.

Although we did not observe a difference between the admissions of male and female patients in terms of number of consultations, we found that this number increased with age. However, a study investigating the variability of inpatient consultation practices by general medicine attendings showed that patients aged 76 years and older had received fewer consultations than patients aged 48 years and younger.[17] This finding was interpreted by its authors as a more conservative practice in older patients. On the other hand, a study investigating consultation patterns in general medical services of two tertiary hospitals showed that the mean age (59 years) of patients with one or more consultations was significantly greater than that (56 years) of patients without a consultation.[18] Moreover, a study investigating variation in inpatient consultation among older adults showed that the rate ratio of additional consultation was significantly higher in the age groups of 71–75, 76–80, and 81–85 years, as compared to the age group of 66–70 years.[19]

In our study, the number of consultations was also influenced by the primary diagnosis for stay. Its median value was higher for bullous pemphigoid, leg ulcers, lupus erythematosus, pustular psoriasis, hidradenitis suppurativa, and pemphigus. We could explain the higher median for bullous pemphigoid, pemphigus, and hidradenitis suppurativa with assessments before starting systemic therapies; for leg ulcer with etiological investigations; for lupus erythematosus with assessment of systemic involvement; and for pustular psoriasis with comorbidities.

Other main results of the present study were frequencies of reasons for consultations and their variability by consulting specialities and by primary diagnoses for stay. The most common reason was comorbidity which was observed in 53.8% among consultations and in 65.0% among admissions. This finding indicates that most patients hospitalized in a dermatology ward are no more "pure dermatological patients."

When reviewing our frequencies of reasons according to diagnoses, one may be confused at first glance since comorbidity, biopsy, and differential diagnosis were more frequent reasons in consultations requested for patients with dermatitis than in all consultations. Comorbidity was a relatively more frequent reason since etiological investigation by other specialists, assessment of systemic involvement, and taking treatment advice from other specialists are not necessary for dermatitis. If we face a differential diagnosis between dermatitis and mycosis fungoides, before results of skin biopsies, we prefer to ask a biopsy of enlarged lymph nodes from surgical specialties and to request hematological and/or oncological evaluation.

Our frequencies of reasons according to consulting specialities can be easily explained by the usual dermatological practice. For example, if a patient will start a long-course use of systemic corticosteroids, the patient should be evaluated for osteoporosis and cataract. Therefore, physical medicine and ophthalmology consultations should be requested.

According to our study, the number of consultations was positively associated with length of stay. Numbers of both medical and surgical consultations were also positively associated with the number of imaging tests. Therefore, an increase in consultations leads to prolonged hospital stays, as stated even in the 1970s.[20] Moreover, both prolonged hospital stays and increased imaging tests result in higher costs to the healthcare systems.

Whereas dedicated dermatology wards are still available in some countries such as Turkey and India,[7] starting from the last two decades of the twentieth century, such wards have decreased in the United States.[21] In 2018, it has been stated that only two units, one at the Mayo Clinic and the other at the University of Miami, remained in this country.[22] Recently, the best model of inpatient care for skin diseases in the United Kingdom has been questioned.[23] For dermatological patients with multiple comorbidities, the following have been recommended: (1) admission to a general medical ward or to a specialist elderly care ward and (2) visits by a dermatology team. This paradigm shift gave birth to a new hospitalist laboring consultative dermatology.[24] Such a hospitalist from Singapore has described the hospital-based dermatology to be blood and sweat instead of "a glamorous field".[25] He has warned about a risk that if dermatologists are not interested in hospital-based dermatology, this field, even whole dermatology, will be absorbed by other specialities.

On the other hand, there are also opposing opinions regarding the closure of dermatology wards. In 2013, the authors reported their experience with dermatology inpatient hospital services at the Mayo Clinic from 2000 to 2010 using the subtitle "Why a primary dermatology inpatient service?".[15] They thought that admission to a dermatology ward to be important because of need for specialized care. In an opinion article published in 2017 and written by Spanish dermatologists, resident training in dermatology was also accepted as a reason for the presence of a dermatology ward.[21] In a study published in 2021 and again done by Spanish dermatologists, patients with skin diseases admitted to dermatology wards were compared to those admitted to non-dermatology wards.[26] The former patients were found to have a lower risk of readmission and a shortened hospital stay.

Limitation of the present study is that it was a single center study and the study period was relatively short. Moreover, this period was within the COVID-19 pandemic era, so reasons for consultations might be affected by this pandemic.

In our opinion, dermatology wards should continue to serve patients with skin disease. However, dermatologists should be trained to cope by themselves with comorbidities, at least with the most commonly seen ones, to reduce requests for consultations from other specialties, thus prolonging hospital stays and costs to health care systems. Such training requires restructuring the specialty of dermatology so that dermatologists who will not only manage ambulatory patients but also hospitalized patients should gain more knowledge and experience in general medicine.

Ethics Statement

The study was approved by Medical Ethics Committee of the Cukurova University Medical School (approval no. 66/2022). Informed consent was obtained from each patient. This study was conducted in accordance with the principles of the Declaration of Helsinki.

Funding

There is no funding to report.

Disclosure

The authors report no conflicts of interest in this work. All authors are in agreement with the contents and submission of this manuscript.

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