CLINICAL SCIENCE

Inpatient dermatological consultations in a university hospital

Suzana Mancusi, Cyro Festa Neto

Dermatology Department, Hospital das Clinicas, Faculdade de Medicina, Universidade de São Paulo, São Paulo, SP, Brazil.

INTRODUCTION: Dermatology is primarily an outpatient specialty, but it also plays an important role in the care of inpatients.

METHODS: We conducted a prospective study that recorded data from inpatient dermatology consultation request forms over a period of four months. The study evaluated 313 requests that led to 566 visits, 86 biopsies, 35 laboratory exams, 41 direct microscopic studies, 18 direct immunofluorescence analyses, 14 skin cultures and a few other exams.

RESULTS: The most frequent requesting service was internal medicine (24%), followed by neurology (12%), cardiology (11%), infectious diseases and pediatrics (8% each) and psychiatry and general surgery (6% each). The most frequent diagnostic groups were infectious diseases (25%, divided into fungal infections (13%), bacterial infections (7%) and viral infections (5%)), eczemas (15%) and drug reactions (14%). To our knowledge, this is the first study to attempt to evaluate the impact of the consultations by asking multiple-choice questions that were analyzed by the authors. In 31% of the cases, the consultation was considered extremely relevant because it aided in managing the disease that led to admission or treated a potentially severe dermatological disease. In 58% of the cases, the consultation was considered important because it facilitated diagnosis and/or treatment of a dermatological disease that was unrelated to the reason for admission.

KEYWORDS: Dermatology; Hospitals; General/statistics and numerical data; Inpatients/statistics and numerical data; Diagnosis; Differential; Referral and Consultation/statistics and numerical data.

Mancusi S, Neto CF. Inpatient dermatological consultations in a university hospital. Clinics. 2010;65(9):851-855.

Received for publication on April 15, 2010; **First review publication on** May 4, 2010; **Accepted for publication on** June 15, 2010

E-mail: suzymancusi@gmail.com

Tel.: 55 11 3079-4011

INTRODUCTION

Dermatology is primarily an outpatient clinical and surgical specialty, but it also plays important roles in the care of inpatients who are admitted to dermatology beds and other services.[1-3] With the advent of effective and more cosmetically acceptable creams and phototherapy, the patterns of inpatient care are undergoing changes; in addition, the introduction of oral immunosuppressive agents has broadened the scope of outpatient therapy.[3] As a result of the changing conditions of medical care, the number of patients admitted to dermatology services is decreasing, while the value of dermatologists as consultants within the hospital setting is increasing.[1] Approximately 20% of the general population have skin diseases that are treated by local or systemic therapies, and therefore, it seems clear that inpatients would suffer numerous skin complaints regardless of the disease that led to hospitalization.[1]

MATERIALS AND METHODS

We conducted a prospective study that recorded data from hospital dermatology consultation request forms over a period of four months (from November 2009 to February 2010). These data included the demographics of each patient for whom the consultation was requested, the requesting service, the provisional dermatological diagnosis of the referring service, the diagnostic tests performed, the date when the consultation were requested, the date of the first visit, the number of visits, the need for follow-up by any dermatology department, the final dermatological diagnosis, the number of visits per patient and two multiple-choice questions that were analyzed by the authors to evaluate the impact of each consultation. These data were systematically entered into a database for further analysis.

RESULTS

We evaluated 313 requests for consultation that led to 566 visits, 86 biopsies, 35 laboratory exams, 41 direct microscopic studies, 18 direct immunofluorescence analyses, 14 skin cultures, 8 requests for evaluation from other clinics, 5 ultrasonographies and 3 other procedures (dermatoscopy, radiography(RX) and indirect immunofluorescence analysis). For 169 consultations (54%), complaints were resolved

with a single visit, 89 consultations (28%) required two visits, and 55 consultations (17%) required 3 or more visits. The patient group comprised 51% females and 49% males and demonstrated an average age of 45 yrs (SD = 22). The average number of visits per request was 1.8. The average delay between the consultation request and the consultation visit was 0.45 days.

The most frequent requesting services were internal medicine (24% of requests), neurology (12%), cardiology (11%), infectious diseases and pediatrics (8% each), psychiatry and general surgery (6% each), oncology and obstetrics (4% each) and other clinics (19%) (Table 1). Consultations were requested for 84% of nursery patients and 16% of patients in intensive care units. Regarding the physicians who requested the consultations, 55% presented diagnosis hypotheses, and 33% provided correct hypotheses. The most frequent diagnosis hypotheses were drug reactions (16%), 81% of which were correct. In addition, 19% of the physicians had started treatment for skin conditions before requesting consultations.

With respect to the examined patients, 7% were already patients in the department of dermatology at the university hospital, 4% had undergone dermatological follow-up visits in a basic unit heath care, and 89% had undergone no dermatological follow-up visits. Regarding the patient complaints that led to the consultation requests, 64% had occurred prior to admission, and 36% occurred after admission; 17% of the patients were admitted in a hospital bed because of their skin conditions.

Table 1 - Referral services and most frequent diagnosis by service.

Service	Total	%	First diagnosis by service	n	% of total consultations
Internal medicine	76	24	Infectious and parasitic diseases	20	6.3
			Fungal infection	9	2.8
			Bacterial infection	8	2.5
			Herpes infection	3	0.9
Neurology	36	12	Drug reactions	11	3.5
Cardiology	33	11	Eczematous diseases	8	2.5
			Contact dermatitis	4	1.2
			Stasis dermatitis	2	0.6
			Atopic dermatitis	1	0.3
			Xerosis	1	0.3
Infectious diseases	25	8	Infectious and parasitic diseases	10	3.1
			Fungal infections	5	1.5
			Herpes infections	5	1.5
Pediatrics	24	8	Eczematous diseases	5	1.5
			Atopic dermatitis	4	1.2
			Seborrheic dermatitis	1	0.3
Psychiatry	20	6	Eczematous diseases	6	1.9
			Contact dermatitis	2	0.6
			Atopic dermatitis	2	0.6
			Seborrheic dermatitis	1	0.3
			Lichen simplex chronicus	1	0.3
General surgery	19	6	Drug reactions	8	2.5
Oncology	12	4	Infectious and parasitic diseases	5	1.5
			Bacterial infection	4	1.2
			Fungal infection	1	0.3
Obstetrics and gynecology	14		Eczematous diseases	6	1.9
			Seborrheic dermatitis	2	0.6
			Atopic dermatitis	1	0.3
			Contact dermatitis	1	0.3
			Stasis dermatitis	1	0.3
Rheumatology	9	3	Connective tissue diseases	5	1.5
			Dermatomyositis	2	0.6
			Nonspecific connective tissue diseases	3	0.9
Endocrinology	8	3	Infectious and parasitic diseases	3	0.9
			Bacterial infection	2	0.6
			Fungal infection	1	0.3
Hematology	8	3	Drug reactions	3	0.9
Urology	7	2	Infectious and parasitic diseases	3	0.9
			Scabiosis	2	0.6
			Bacterial infections	1	0.3
Orthopedics	5	2	Drug reaction	2	0.6
Pulmonology	4	1	Acne eruption/bullous disease/psoriasis/drug reaction	1/1/1/1	0.3/0.3/0.3
Nephrology	4	1	Pruritus	2	0.6
Gastrosurgery	3	1	Eczematous diseases	2	0.6
			Seborrheic dermatitis	1	0.3
			Contact dermatitis	1	0.3
Immunology	3	1	Connective tissue diseases	2	0.6
			Lupus Erythematosus	1	0.3
			Nonspecific connective tissue diseases	1	0.3
Others: otorhinolaryngologist, plastic, vascular	3	1	Fungal infections	2	0.6

Table 2 - Dermatological Diagnoses.

Disease	Total	%	Disease	Total	%
Infectious and parasitic diseases	84	26.8	Connective tissue diseases	15	4.7
Fungal infections	40	12.7	Lupus erythematosus	5	1.5
Bacterial infections	25	7.9	Dermatomyositis	4	1.2
Viral infections	17	5.4	Nonspecific Connective tissue diseases	6	1.9
Scabiosis	2	0.6			
Pediculosis	1	0.3	Psoriasis	9	2.8
Chagas disease	1	0.3	Traumatic diseases	9	2.8
Eczematous diseases	52	16.6	Vasculopathy diseases	8	2.5
Contact dermatitis	20	6.3	Pruritus	6	1.9
Atopic dermatitis	8	2.5	Bullous diseases	5	1.5
Stasis dermatitis	8	2.5	Ecchymosis	5	1.5
Seborrheic dermatitis	7	2.2	Neurotic excoriations	4	1.2
Lichen simplex chronicus	6	1.9	Acne eruptions	4	1.2
Xerosis	3	0.9	Alopecia Areata	3	0.9
Drug reactions	44	14.0	Chronic skin ulcers	3	0.9
Neoplasms	21	6.7	Darier's Disease	2	0.6
Benign neoplasms	14	4.4	Zinc Deficiency	2	0.6
Metastases to the skin	4	1.2	Unable to reach diagnosisbefore discharge	15	4.7
Malignant skin neoplasms	3	0.9			
			Others	20	6.3

The most frequent diagnostic groups were infectious diseases (26.8%, divided into fungal infections (13%), bacterial infections (7.9%) and viral infections (5.4%)), eczemas (16.6%), drug reactions (14%), and other, less frequent, diagnoses, as shown in Table 2. Among the consultations, 19% found skin manifestations due to systemic diseases, and in 7% of the requests, the consultation aided in the diagnosis of a systemic disease. In addition, 19% of the complaints were found to be skin side effects of systemic treatments. Regarding the treatments suggested by the consultations, 17% of the requests required no treatment, 10% needed further investigation before beginning a specific treatment, 27% needed topical treatments, 45% required systemic treatments, and 2% were transferred to a dermatology bed for closer monitoring and treatment.

On discharge, 30% of the patients were advised to attend a follow-up visit with the dermatology service of the discharging hospital, 9% of the patients were advised to attend a follow-up visit with a dermatologist from a basic heath care unit, and 61% did not require a follow-up visit.

To evaluate the impact of the consultations, several questions were asked about each consultation (Table 3), and the answers were analyzed by the authors. For the question ''what was the relevance of the consultation for the admited patient,'' the most frequent answer was ''important, it aided in a diagnosis and/or treatment of a dermatologic disease that was unrelated to the reason for admission'' in 58% of cases; in 31% of cases, the consultation was considered extremely relevant because it helped to achieve a diagnosis and/or modified the treatment of the disease that led to admission. When asked whether patient treatment would be affected negatively if there was no dermatological consultation available, the most frequent answer was ''slightly, the patient would have suffered longer with the dermatological complaint until an outpatient consultation was available'' in 48% of cases, followed by ''yes, a systemic disease would not have been diagnosed or a potentially severe dermatologic disease would not have been treated'' in 31% of cases. In 21% of cases, there were no need for an emergency dermatological evaluation, or the dermatological consultation did not modify the treatment.

DISCUSSION

Dermatology is primarily an outpatient specialty, but it also plays an important role in the hospital setting. Due to ongoing changes in the patterns of inpatient care, dermatologists have become increasingly valuable as consultants in the hospital setting. Therefore, it is becoming more important to study the role of the dermatologistin this context.

A literature search yielded nine relevant articles (Table 4)[1,4-11], of which one included inpatients and outpatients[10] and another involved patients who were referred from internal medicine departments.[11] Although the length of our study period was shorter than those used in other reports, the data obtained from this study are consistent with these other reports. Of the studies available, only Fisher et al.[8] and Penãte et al.[1] recorded the number of

Table 3 - Questions used to evaluate the impact of dermatological consultations.

What was the relevance of the consultation for the admitted patient?	n	%
A) Extremely relevant, it helped to achieve a diagnosis and/or changed the treatment of the disease that led to admission.	98	31
B) Important, it aided in a diagnosis and/or treatment of a dermatologic disease that was unrelated to the reason for admission.	180	58
C) It was not important.	35	11
Would patient treatment be negatively impacted if there was no dermatological consultation available?	n	%
A) Yes, a systemic disease would not have been diagnosed or a potentially severe dermatologic disease would not have been treated.	97	31
B) Slightly, the patient would have suffered longer with the dermatologic complaint until an outpatient consultation was available.	150	48
C) No, there were no need for an emergency dermatologic evaluation, or the dermatologic consultation did not modify the treatment.	66	21

Table 4 - Literature Review.[1,4-11]

Author [ref.]	Institution/ city/country	Total	Study period months	Services with the highest demand	Most frequent diagnoses
Sherertz[4]	Gainesville Hospitals USA	700	12	Not available	Systemic diseases manifestations 9.4% Drug reaction/Dermatitis 9.2% Superficial dermatophyte/Candida 9.1%
Hardwick[5]	Groote Schuur Hospital Cape observatory South Africa	500	16	Internal medicine 45.6% General surgery 10.6% Obst & Gyn 8.4%	Dermatitis 17.1% Drug reaction 10.5% Superficial fungal infections 7.0%
Falanga[6]	Jackson Memorial Hospital Miami USA	591	8	Medicine 39% Emergency 16% Pediatrics 14%	Miscellaneous 48% Drug eruption 8.8% Atopic dermatitis 5.1%
Itin[7]	Kantonssopital Arau Switzerland	594	12	Internal medicine >50%	Infections 21.7% Drug reactions 9.8% Fungal infections 8.9%
Fischer[8]	University Hospital Halle Germany	2390	24	Internal medicine 42.8% Pediatrics 11.7% Neurology 9.9%	Infections 24.4% Candidiasis 23.9% Allergic dermatitis 9.2% Eczema 12.4%
Walia[9]	158 Base Hospital Secunderabad India	971	60	Surgery 29.8% Medicine 29.7% Psychiatry 16.4%	Allergic/vascular reactions 30.2% Infections 29.8% Papulosquamous 9.7%
Penãte[1]	Hospital Insular Las Palmas Spain	3144	96	Internal medicine 21.5% Pediatrics 11.4% Neurology 8.3%	Contact dermatitis 8.9% Drug eruption 7.4% Candidiasis 7.1%
Arora[2,10]	Base Hospital Delhi India	662		Internal medicine 49.8% Surgery 22.7% Pediatrics 9.8%	Systemic diseases manifestations 23% Drug eruption 9.1%
Antic[11]	Kantonssopital Arau Switzerland	1290	36	Only data from internal medicine and subspecialties	Eczema 12.6% Cutaneous precancerosis 6.2% Drug eruption 4.2%
Present study	Hospital das Clinicas FMUSP Sao Paulo Brazil	313	4	Internal medicine 24% Neurology 12% Cardiology 11%	Infectious and parasitic diseases 25.8% Eczematous diseases 16.6% Drug reaction 14%

[1]2832 cases with diagnosis, and 3097 cases with referral service.
[2]Study of inpatients and outpatients referred to dermatology by other medical services.

visits for each patient; 85.7% and 71.8% of complaints, respectively, were resolved with a single visit. Our study also showed that one visit was sufficient for a majority of patients (58%), which suggested that most complaints corresponded to common diseases for which a clinical diagnosis was sufficient to enable treatment by the referring physician. This finding was consistent with the observation that only 39% of the patients required dermatological follow-up visits after discharge from the hospital, which suggested that most of the diagnosed conditions were resolved with appropriate treatments.

In the present study, as well as in other published studies[1,5,7,9], internal medicine placed the heaviest demand on dermatological requests. In terms of demand, internal medicine was followed by pediatrics, neurology and psychiatry in most studies[6,8], which differs slightly from the findings of our study in which cardiology and infectious diseases also played important roles. The substantial number of requests made by internal medicine, pediatrics, cardiology and psychiatry correlated with the number of patients admitted to their care. The consultations from neurology were due to the observation that most of their patients were bedridden and that neuroleptic drugs are frequent causes of drug reactions, which was the most frequent diagnosis for neurology patients.

The number of diagnostic tests requested by dermatology in referred patients varies widely among different studies, ranging from 48% in our study to 34.6% in Falanga et al.[6] and to 6.4% in Penãte et al.[1]

The most frequent diagnoses in our literature review were infections, dermatitis and drug reactions[1,5,7,8], which were also the most common diagnoses in our study. The prevalence of eczematous dermatitis is likely due to the observation that this condition is one of the most common complaints of dermatology outpatients[12] and because upon hospital admission, the patient is confined to a bed and is exposed to sweating, antiseptics, dressing occlusion, diapers and monitoring with catheters or pressures tubes. Skin infections are frequent in the outpatient setting[12] but are even more prevalent in inpatients, probably due to the immunosuppression of some patients and the presentation of skin infections as a common reason for patient admission. The prevalence of drug reactions can be explained by the large amounts of drugs received by patients during admission, especially analgesics, non-steroidal anti-inflammatories and neuroleptics, which frequently trigger drug reactions.

To our knowledge, this is the first study that has attempted to evaluate the effects of dermatological consultations via multiple-choice questions. Most consultations were related to complaints that had occurred prior to admission and likely would have been resolved in the outpatient setting if the patient had scheduled a dermatological appointment. However, in almost one-third of the consultations, the dermatologist facilitated management of the disease that

led to admission or treated a potentially severe dermatologic disease, which demonstrates the importance of the dermatologist as a consultant in the hospital setting.

REFERENCES

1. Peñate Y, Guillermo N, Melwani P, Martel R, Borrego L. Dermatologists in Hospital Wards: An 8-year Study of Dermatology Consultation. Dermatology. 2009;219:225-31, doi: 10.1159/000232390.
2. Prodanovich S, BS, Kirsner RS, Kerdel FA, BSc MBBS. Inpatient Dermatology: A Prescription for Survival. Dermatol Clin. 2001;19: 593-602, doi: 10.1016/S0733-8635(05)70302-8.
3. Nahass GT. Inpatient dermatology consultation. Dermatol Clin. 2000;18: 533-42.
4. Sherertz EF. Inpatient dermatology consultations at a medical center. Arch Dermatol. 1984;120:1137, doi: 10.1001/archderm.120.9.1137a.
5. Hardwick N, Saxe N. Patterns of dermatology referrals in a general hospital. Br J Dermatol. 1986;115:167-76, doi: 10.1111/j.1365-2133.1986.tb05713.x.
6. Falanga V, Schachner LA, Rae V, Ceballos PI, Gonzalez A, Liang G, et al. Dermatologic consultations in the hospital setting. Arch Dermatol. 1994;130:1022-5, doi: 10.1001/archderm.130.8.1022.
7. Itin PH. Impact of a department of dermatology within the global concept of a large hospital setting - analysis of 594 consultations requested by non-dermatologists. Dermatology. 1999;199:79.
8. Fischer m, Bergert H, Marsch WC. The dermatologic consultation. Hautarzt. 2004;55:543-8, doi: 10.1007/s00105-004-0736-1.
9. Walia NS, Deb S. Dermatology referrals in the hospital setting. Indian J Dermatol Venereol Leprol. 2004;70:285-7.
10. Arora PN, Aggarwal SK, Ramakrishnan SK. Analysis of dermatological referrals (a series of 662 cases from Base and Army Hospital complex). Indian J Dermatol. 1989;34:1-8.
11. Antic M, Conen D, Itin PH. Teaching effects of dermatological consultations on non-dermatologists in the field of internal medicine. A study of 1.290 inpatients. Dermatology. 2004;208:32-7, doi: 10.1159/000075043.
12. Schaefer I, Rustenbach SJ, Zimmer L, Augustin M. Prevalence of skin diseases in a cohort of 48,665 employees in Germany. Dermatology. 2008;217:169-72, doi: 10.1159/000136656.