Interdepartmental Dermatology: Characteristics and Impact of Dermatology Inpatient Referrals at a Teaching Hospital in Eastern India

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Abstract

Background: Dermatology is primarily considered to be an outpatient-centered specialty. However, several inpatient admissions to other specialties require dermatologic consultation for optimum management. Aims: To analyze the causes of inpatient dermatologic referrals, departments sending referrals, and impact of dermatology consultation on patient management. Materials and Methods: We conducted a cross-sectional study by analyzing the records of 486 patient referrals over a 4-year period. The demographic details, specialties requesting consultation, cause of referral, and dermatological advice have been recorded and analyzed. Results: Dermatology consultation changed the dermatologic diagnosis and treatment of almost two-thirds of patients. General medicine requested the maximum number of referrals, “skin rash” being the most common cause for referral. Accurate diagnosis on referrals was provided by only 30.2% of nondermatologists. Common dermatological disorders were often misdiagnosed by these physicians, and dermatology referrals had significant impact on the diagnosis and subsequent management of these patients. Conclusion: While dermatologic referral leads to improved patient care, there is a need for better training of nondermatologists enabling them to recognize and treat common dermatoses.

Key Words: Dermatology, inpatient, referral

Introduction

Dermatology is primarily considered to be an outpatient-centered specialty. However, several inpatient referrals are made to dermatology departments by other specialties on a daily basis for proper patient management in the hospital settings. In spite of the important role played by dermatologists in indoor patient management, there is a relative dearth of literature regarding this issue, especially in India. We conducted this study to analyze the characteristics of dermatology consultation by nondermatology specialties and its impact on patient management.

Materials and Methods

We conducted a study on 486 patient referrals requested to a single unit of the dermatology department of a teaching hospital in Eastern India by analyzing the records of a period of 4 years (July 2012–June 2016). The data thus obtained have been statistically analyzed with respect to patient demography, frequency of referrals made by different specialties, causes of referrals (presumptive diagnoses made by nondermatologists), diagnostic accuracy of referring departments by comparing with the final dermatological diagnoses made by senior faculty members as the gold standard, and impact of dermatology consultations on the management. All the patients were examined within 24 h of request for referral. Institutional Ethics Committee approval was obtained for the study and all the data have been preserved for future reference.

Results

Patient demographics

The mean age of our patients was 34.3 ± 16.4 years. 87.3% of dermatologic consultations were sought for skin rashes.

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patients >18 years, while 30.8% patients were above 45 years of age; the gender ratio was 1:1.

**Specialties requesting dermatology inpatient referral**

The Department of General Medicine accounted for more than half of the total dermatologic referrals (272 cases, 56%), followed by the departments of orthopedics (51 cases, 10.5%) and hematology (34 cases, 7%). The emergency department accounted for the least number of in-house dermatologic consultations (3 cases, 0.6%). “Skin rash” was the most common condition for which the internists sought dermatology referral (30.1%), while the orthopedicians sent the maximum referrals for cutaneous infections (31.4%). The different specialties requesting dermatology consultation have been tabulated in Table 1.

**Dermatologic conditions for which referral was sought**

Unspecified “skin rash” was the most common dermatologic condition, for which skin referral was sought (129 cases 26.5%) followed by skin infections (84 cases, 17.3%), eczema/dermatitis (79 cases, 16.3%), and suspected drug reactions (38 cases, 7.8%). “Skin swelling,” leprosy, gangrene, miliaria, hair and nail disorders accounted for <10 cases each. “Fungal infections” accounted for almost half (45.24%) of the infective group. All these diagnoses were made by the referring departments and mentioned on the referral sheets. The different conditions for which referrals were sought are tabulated in Table 2.

**Final diagnosis made by the dermatologists**

The different diagnoses made by the dermatologists after examining the referred patients have been tabulated in Table 3. Cutaneous infection was the most commonly diagnosed condition (35%), followed by drug reactions (12.6%) and eczema/dermatitis (8.6%). Among the cutaneous infections, viral infections (12.76%) occurred most frequently, followed by fungal infections closely (11.52%). Some dermatological conditions such as lichen planus, cutaneous sarcoidosis, pigmentary disorders, deficiency dermatoses, rosacea, telogen effluvium, striae, and senile comedones were found to be least common accounting for 5 cases each.

**Accuracy of diagnosis by the referring physicians**

Our study showed that referring physicians could correctly mention the category of skin disorders in 54.9% cases on the dermatology referral sheets (e.g., skin infections, immunobullous disorders), while in the remaining, only a vague diagnosis was provided (e.g., “skin rash,” “skin scaling”). However, an accurate diagnosis was provided only in 30.2% of the referred cases.

**Impact of dermatologic consultation on patient management**

Dermatology consultation resulted in revised diagnosis in about 70% of instances of case referrals. An additional investigation (skin biopsy) was performed in 14.4% of the referred cases to confirm the diagnosis. Dermatologic consultation also resulted in a change and/or additional treatment in 350 (72%) patients in the form of discontinuation of previous treatment and/or addition of a new topical or oral medication. A number of patients (mostly of immunobullous disorders and

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**Table 1: Specialties requesting dermatologic consultation**

| Referring specialty         | Number of patients | Percentage of patients (n=486) |
|----------------------------|--------------------|--------------------------------|
| Internal medicine          | 272                | 56.0                           |
| Orthopedics                | 51                 | 10.5                           |
| Hematology                 | 34                 | 7.0                            |
| General surgery            | 32                 | 6.6                            |
| Pediatrics                 | 21                 | 4.3                            |
| Pulmonary medicine         | 19                 | 3.9                            |
| Gynecology and obstetrics  | 16                 | 3.3                            |
| Psychiatry                 | 12                 | 2.5                            |
| Cardiology                 | 11                 | 2.3                            |
| Eye/ENT                    | 8                  | 1.6                            |
| Oncology                   | 7                  | 1.4                            |
| ER/casualty                | 3                  | 0.6                            |
| Total                      | 486                | 100                            |

ER: Emergency room, ENT: Ear-nose-throat

**Table 2: Dermatological diagnoses by the referring departments**

| Skin disorders referred for (as diagnosed by concerned departments) | Number of patients | Percentage of patients (n=486) |
|---------------------------------------------------------------------|--------------------|--------------------------------|
| Skin rash                                                           | 129                | 26.5                           |
| Skin infections                                                    | 84                 | 17.3                           |
| Eczema/dermatitis                                                  | 79                 | 16.3                           |
| Drug reaction                                                      | 38                 | 7.8                            |
| Connective tissue disease                                          | 26                 | 5.3                            |
| Immunobullous disorders                                            | 22                 | 4.5                            |
| Oral lesions                                                       | 20                 | 4.1                            |
| Purpuric rash/vasculitis                                           | 16                 | 3.3                            |
| Chronic skin ulcer                                                 | 11                 | 2.3                            |
| Urticaria                                                          | 11                 | 2.3                            |
| Skin pigmentation                                                  | 10                 | 2.1                            |
| Acneiform eruptions                                                | 10                 | 2.1                            |
| Skin swelling                                                      | 9                  | 1.9                            |
| Leprosy                                                            | 9                  | 1.9                            |
| Gangrene                                                           | 6                  | 1.2                            |
| Others (miliaria, hair fall, nail dystrophy, etc.)                 | 6                  | 1.2                            |
| Total                                                               | 486                | 100                            |
cutaneous adverse drug reactions) were transferred into dermatology inpatient department for specialized care.

**Discussion**

We analyzed the records of 486 patients admitted to different departments and were referred for dermatology consultation. In our study, most of the dermatology consultations were sought for patients >18 years (87.3%), and a similar result was obtained in a study conducted in the USA.[2] In most of published works,[2] males have outnumbered females while our study showed equal gender incidence.

Almost all the departments requested dermatology consultation for their indoor patients; however, general medicine (56%), orthopedics (10.5%), and hematology (7%) sent the maximum number of referrals. Internal medicine has been shown to send maximum dermatology referrals in most of the literature;[2-4] thus corroborating our findings. This might have occurred as many medical disorders are associated with dermatological manifestations which may serve as important clues for diagnosis of the underlying medical conditions. A South African study also reported similar findings, highlighting the importance of accurate dermatological diagnosis in better patient management.[5] Only 2.5% of referrals in our study were requested by the psychiatry department, this observation being in contrast to similar studies where psychiatry accounted for almost 16% of the total referrals.[2,5,6] This probably occurred due to fewer psychiatric admissions in our hospital. General surgery requested maximum referrals (29.76%) in the study conducted by Walia and Deb from India;[7] however, surgeons requested much less dermatology consultation to us (6.6%).

We saw that unspecified skin rash (26.5%) accounted for maximum number of dermatology referrals, followed by cutaneous infections (17.3%) and cutaneous scaling and eczema (16.3%). A similar finding was obtained by Walia and Deb[7] in India. Dermatitis/eczema was responsible for 21% of dermatology consultations, followed by drug eruptions (10%) in the study conducted by Davila et al.[2] in the USA which is similar to our findings.

The final diagnoses made by the dermatologists revealed infections (35%), drug reactions (12.6%), and

### Table 3: Final diagnoses made by dermatologists

| Final dermatological diagnoses                                           | Number of patients | Percentage (n=486) |
|------------------------------------------------------------------------|--------------------|--------------------|
| **Cutaneous infections**                                               |                    |                    |
| Bacterial infections (pyogenic infections, leprosy, cutaneous TB, etc.)| 38                 | 7.9                |
| Fungal infections (tinea, candidiasis, pityriasis versicolor, etc.)    | 56                 | 11.5               |
| Viral infections (herpes, exanthema, dengue, etc.)                     | 62                 | 12.8               |
| Parasitic infestation (scabies)                                       | 14                 | 2.9                |
| Cutaneous adverse drug reactions nonsevere cutaneous adverse drug      | 31                 | 6.4                |
| reaction (morbilliform rash, FDE, etc.)                               |                    |                    |
| Severe cutaneous adverse reaction (SJS, TEN, DRESS)                    | 30                 | 6.2                |
| Eczema/dermatitis (allergic contact, irritant contact, seborrheic, atopic)| 42               | 8.6                |
| Connective tissue disease (lupus erythematosus, dermatomyositis, scleroderma, etc.) | 30     | 6.2                |
| Vasculitis (small vessel, medium vessel, large vessel)                | 20                 | 4.12               |
| Oral lesions (oral lichen planus, oral candidiasis, recurrent aphthous stomatitis, chemotherapy-induced mucositis, etc.) | 20 | 4.1                |
| **Other conditions**                                                   |                    |                    |
| Miliaria                                                               | 20                 | 4.1                |
| Psoriasis                                                              | 18                 | 3.7                |
| Ichthysis/xerosis                                                      | 12                 | 2.5                |
| Urticaria                                                              | 11                 | 2.3                |
| Acne                                                                   | 9                  | 1.9                |
| Panniculitis (erythema nodosum)                                        |                    |                    |
| Leg ulcer                                                              | 8                  | 1.6                |
| Peripheral gangrene                                                   | 8                  | 1.6                |
| Prurigo                                                                | 7                  | 1.4                |
| Miscellaneous (<5 cases each) (lichen planus, cutaneous sarcoidosis, pigmented disorders, deficiency dermatoses, rosacea, telogen effluvium, striae, senile comedones, etc.) | 44     | 9.0                |
| **Total**                                                              | 486                | 100                |

TB: Tuberculosis, FDE: Fixed drug eruption, SJS: Steven–Johnson syndrome, TEN: Toxic epidermal necrolysis, DRESS: Drug reaction with eosinophilia and systemic symptoms
eczema/dermatitis (8.6%) to be the most common skin disorders. In contrast, maximum referrals were sent for “skin rash” (26.5%), followed by cutaneous infections, eczema/dermatitis, and drug reactions accounting for 17.3%, 16.3%, and 7.8% cases, respectively. Almost 48% of the patients referred as “skin rash” were diagnosed to be suffering from infectious disorders: Viral exanthema (29%), scabies (17.7%), and tinea (17.7%) constituting most of them. The misdiagnosis of infectious disorders by the nondermatologists is a matter of concern as most of these conditions are contagious without proper treatment. Only half of the patients (8.6%) referred for eczema/dermatitis (16.3%) had the condition in reality, thus emphasizing the exaggerated diagnosis of eczema or dermatitis by nondermatologists leading to improper treatment.

We found that nondermatologists could provide an accurate dermatological diagnosis only in 30.20% of cases. This rate is high when compared to another study from the USA,[2] where the diagnostic accuracy was reported to be only 23.9% and slightly low when compared to another Indian study (39%).[3] However, this figure is quite low when compared to 48% diagnostic accuracy in a study conducted by Falanga et al.[4] This discrepancy might have occurred because Falanga et al.[4] conducted a prospective study, in which the physicians made better efforts to diagnose skin disorders as they were being evaluated with their knowledge. Internal medicine provided the maximum number of accurate diagnoses in both these studies. This study also showed the inability of many nondermatologists to recognize simple cutaneous infections such as scabies and drug reactions, particularly drug hypersensitivity syndrome which is of serious concern, thus emphasizing the need for improved dermatological education and training.

Dermatological consultation resulted in skin biopsy in 14.4% of the referred cases to aid in diagnosis and change/additional treatment in 72% cases. This figure is almost similar to results obtained in another study.[2]

**Conclusion**

We may conclude that many common dermatological disorders cannot be diagnosed or are misdiagnosed by the nondermatologists in our setup. A proper dermatological evaluation aids in the diagnosis and management of several conditions apart from making the treatment less time-consuming and more cost-effective. We need more trained dermatologists to combat this problem and more extensive dermatological training for the medical students. There is an ongoing debate regarding the necessity of specialized dermatology centers in the USA as general physicians can handle most of the common dermatology cases, thus eliminating the need for specialized centers to treat only a handful of rare dermatological conditions.[8,9] However, the scenario is much different in India, where nondermatologists often fail to diagnose even common dermatological disorders causing delay in diagnosis and initiation of appropriate treatment.

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Nil.

**Conflicts of interest**

There are no conflicts of interest.

**What is new?**

Common dermatological disorders are quite often misdiagnosed by referring departments and dermatology referrals had significant impact on the diagnosis and subsequent management of admitted patients.

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