Dermatologists in the Emergency Department: A 6-Year Retrospective Analysis

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Objective: There are few studies documenting dermatological consultations in the emergency setting. The aim of this study was to evaluate the nature, purpose, and diagnostic accuracy of emergency care physicians in all the dermatology consults evaluated by the Department of Dermatology of the University of Puerto Rico School of Medicine.

Methods: A retrospective analysis of all the consultation reports pertaining to patients evaluated at 4 emergency departments served from July 1, 2007, to June 30, 2013. The data collected from each consultation report consisted of the demographic information of the patient, the name of the consulting hospital, the initial diagnostic impression, the diagnostic impression of a dermatologist, and the procedures, if any, performed by that dermatologist.

Results: A total of 429 patients were evaluated (53% men, 47% women) from July 2007 through June 2013. The most common diagnosis was infectious process (37%), followed by eczema (14%) and drug-induced skin reactions (12%). Seventeen percent (17%) of the cases for which consultations were sought were considered true dermatological emergencies. Forty-six percent of cases resulted in no diagnostic impression from the consulting physician. Of the cases that did result in diagnoses, these diagnoses were later changed by a dermatologist in 34% of the cases.

Conclusion: This study suggests that the role of the dermatologist in the emergency department is very important. In addition, better education in the management of common skin disorders and the identification of true dermatological emergencies should be stressed during medical school and in residency training programs of specialties such as emergency medicine and those that offer primary care. [*P R Health Sci J 2015;34:215-218*]

Key words: Consults, Emergency medicine, Dermatology

It is often mistakenly thought that the practice of dermatology is not associated with true emergencies. However, there are conditions that can be classified as true dermatological emergencies. These include bullous disorders with extensive involvement, leprosy reactions, angioedema, erythroderma, and severe drug reactions, such as toxic epidermal necrolysis and Stevens–Johnson syndrome.(1) For any one of these conditions, a consult with an on-call dermatologist could have an important impact in terms of obtaining an accurate diagnosis and, subsequently, the initiating of the proper treatment for a given patient. There are several studies which have focused on inpatient dermatology consultations.(2–5) However, there are few studies that have evaluated the need for dermatologic consultations in the emergency department (ED).(1,6,7) Moreover, only 2 of these studies address whether these consults are linked to true emergencies or not.(1,7) No study has been done in Puerto Rico to evaluate the need for dermatologic consultations in the ED. The aim of this study was to evaluate those cases from which dermatology consults were sought, verifying the following for each: 1) the disease characteristics and 2) the diagnostic accuracy of the emergency care physicians; we also hoped to collect data on the frequency of true dermatologic emergencies in an emergency-room setting.

Patients and Methods

The Department of Dermatology of the University of Puerto Rico, School of Medicine provides services to 4 emergency departments (EDs): the ED of the Puerto Rico Medical Center,

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the ED of the University Pediatric Hospital, the ED of the Municipal Hospital of San Juan, and the ED of the obstetrics and gynecology unit at the University District Hospital. These 4 emergency departments are part of the Puerto Rico Medical Center and all serve as supratertiary referral centers for Puerto Rico and the Caribbean. Furthermore, these 4 emergency departments are the only ones in Puerto Rico with an on-call dermatology service. A retrospective analysis of the consultation reports of patients evaluated in these hospitals from July 2007 through June 2013 was performed. These reports included details of all the consultations made by the Department of Dermatology of patients who were being evaluated at the emergency-room level and who had not yet been admitted to a hospital ward. The data collected from each consultation report were the demographic information of the patient, the name of the consulting hospital, the initial diagnostic impression of the emergency care physician, the diagnostic impression of the on-call physician (from the dermatology department) upon being consulted, and the procedure or procedures that that physician performed, if any. For the purpose of our study, true dermatologic emergencies, as defined in previous reports, were autoimmune bullous disorders, angioedema, erythroderma, and all drug-induced skin reactions.(1,7) This study was approved by the Institutional Review Board of the University of Puerto Rico Medical Sciences Campus.

Results

We evaluated 429 patients from July 1, 2007, to June 30, 2013 (53% men, 47% women). The distribution of the consults among the 4 different emergency rooms were as follows: 271 were at the ED of the Puerto Rico Medical Center, 147 were at the ED of the University Pediatric Hospital, 10 were at the ED of the Municipal Hospital of San Juan, and 1 was at the ED of the obstetrics and gynecology section at the University District Hospital. The number of consults for each academic year (July 1 – June 30) from 2007 to 2013 was 46, 77, 60, 77, 95, and 74, respectively. The mean number of consults per year was 72. The final diagnoses as determined by our Dermatology Department are presented in Table 1. The most common diagnosis was infections (37%), followed by eczema (14%) and drug-induced skin reactions (12%).

The infectious processes evaluated were most commonly bacterial (55%), followed by those of the herpes family of viruses (13%) and, finally, those that were fungal in nature (11%) (Table 2). The most common bacterial infections were abscesses (69%), cellulitis (16%), and impetigo (6%). Swab cultures were taken in 34 patients. Of these, methicillin-resistant staphylococcus aureus (MRSA) was the most common causative organism (74%) of the bacterial cutaneous infections (Table 3).

Eczema was the second most common diagnosis made by our service at the different EDs. Atopic dermatitis (58%), followed by contact dermatitis (33%), accounted for the majority of the diagnoses in these patients.

Table 1. Diagnosis of Dermatology consults

Diagnosis made by Dermatologist (N= 429)	N (%)
Infections	159 (37%)
Eczema	61 (14%)
Drug-Induced Skin Reactions	52 (12%)
Vascular Diseases	26 (6%)
Autoimmune Bullous Diseases	22 (5%)
Erythematous Flaking Diseases	20 (5%)
Bite(s) and Prurigo	12 (3%)
Erythema Multiforme and Lichen Planus	12 (3%)
Urticaria-Angioedema	11 (3%)
Tumors	11 (3%)
Secondary to Systemic Condition	10 (2%)
Disease of the Hair follicles, Nails, Sweat glands	7 (2%)
Skin Condition due to Physical or Mechanical factors	6 (1%)
Oral Pathology	1 (0%)
Miscellaneous	19 (4%)

Table 2. Types of Infection

Infections (N = 159)	N (%)
Bacterial Infections	88 (55%)
Herpes Family of Viruses	21 (13%)
Fungal Infections	18 (11%)
Viral Exanthem	13 (8%)
Scabies	10 (6%)
HPV Infections	3 (2%)
Molluscum Contagiosum	3 (2%)
Coxsackievirus	2 (1%)
Cutaneous Larva Migrans	1 (1%)

HPV: Human Papilloma Virus

Table 3. Bacterial Infection – Causative organisms

Organism (N = 34)	N (%)
MRSA	25 (74%)
Staphylococcus epidermidis	4 (12%)
Enterococcus faecium	1 (3%)
Serratia marcescens	1 (3%)
Enterobacter cloacae	1 (3%)
Proteus mirabilis	1 (3%)
Negative culture	1 (3%)

MRSA: Methicillin-Resistant Staphylococcus Aureus

Table 4 shows the drug-induced skin reactions seen, with these reactions compromising the third most common condition evaluated at the 4 EDs. The most common was morbilliform drug eruption (50%), which was followed by Stevens–Johnson syndrome (21%), drug reaction with eosinophilia and systemic symptoms (DRESS) (10%), and toxic epidermal necrolysis (TEN) (10%).

Overall, the most common procedures performed were biopsies (110), followed by incision and drainage (43) and swab cultures (34).

Forty-six percent (n = 197) of the consultations received no diagnostic impressions from the consulting physicians. Of all

those consultations that did result in a diagnosis (by the ER physician), this diagnosis was changed by the dermatologist in 34% (79/232) of the cases. Overall of all the consults (n = 429), 36% (153/429) had an accurate initial diagnosis. Seventeen percent (n = 75) of the consults were considered true emergencies and included drug-induced skin eruptions, erythroderma, and autoimmune bullous disorders.

Table 4. Drug-Induced Skin Reactions

Drug-Induced Skin Reactions (N = 52)	N (%)
Morbilliform Drug Eruption	26 (50%)
Stevens–Johnson Syndrome	11 (21%)
Toxic Epidermal Necrolysis	5 (10%)
DRESS	5 (10%)
Fixed Drug Eruption	2 (4%)
Purpuric Drug Eruption	1 (2%)
Acneiform Drug Eruption	1 (2%)
Bullous Drug Eruption	1 (2%)

DRESS: Drug Reaction with Eosinophilia and Systemic Symptoms

Discussion

Dermatology is primarily an outpatient specialty, but the valuable role of the dermatologist in the inpatient hospital setting has been well documented. Walia et al, found that the overall impact of a dermatologic consultation on health delivery to patients was often substantial.(5) Another, study found that dermatologists were often not consulted for the care of patients with dermatology-related conditions, and that when these physicians were consulted, they were found to have a positive impact on both diagnosis and management.(2) This is the first study that evaluates the process of dermatology consultation in EDs in Puerto Rico. Our data show that infections were the most common cause of emergency room consultations, comprising 37% of all consults. This is comparable to data reported in the literature by Gupta et al (32%), Mirkamali et al (35.2%), and Martinez et al (47%).(1,6,7) Second among consults was eczema (14%), of which atopic dermatitis was the most common (58%). Drug-induced skin reactions were third in frequency (12%), which is similar to what has been reported in previous studies.(1)

In terms of infections, bacterial infections were found to be the most prevalent (55%). Of those bacterial infections, abscesses predominated (69%), and MRSA (74%) was the most prevalent pathogen cultured. The wide prevalence of MRSA can have important management implications; however, since not all abscesses were cultured, the incidence of each organism may not be accurate or representative.

In evaluating the accuracy of the initial diagnostic impression of the emergency care physicians, a limitation of our analysis is that 46% of the consults did not have any diagnostic impressions, whatsoever. Of the consults for which diagnoses were made, the initial diagnosis (made by the ER physician) was changed to the correct diagnosis by the consulting dermatologist in 34% of the cases. If we take into the account all the consultation reports, only 36% of them had accurate initial diagnoses. This shows that the diagnostic accuracy of ER physicians with respect to dermatologic conditions is somewhat limited.

In our study, only 17% of the consults were considered to be true emergencies, which is comparable to that which has previously been reported.(1) We included all drug-induced skin reactions in our calculations. This number might be an overestimation since all reactions to medications were considered to be true emergencies, but reactions such as fixed drug eruption and acneiform eruptions are not really considered as such.(1,6,7) We could not determine whether the reactions were severe drug-induced skin reactions, given that no hospitalization course or follow-up data were included in this study. This is one of the limitations of our study, as well.

Other study limitations include the fact that this was a retrospective study and that the setting was a supratertiary center. Since the patients evaluated for this study were referred to a supratertiary center, the diagnoses and the severity of illness may differ from those seen at non-supratertiary departments. This study also did not evaluate the course of hospitalization or post-discharge follow-up visits; therefore, we cannot ascertain whether a given patient's final diagnosis was the same as that of the diagnostic impression of the dermatologist in the ED.

Our study suggests that the role of the dermatologist in the emergency department is very important. The dermatologist was able to make the correct diagnosis in patients previously misdiagnosed by the emergency care physician in 34% of the cases, which can translate to better care of patients with dermatologic conditions. A broader education in the common skin disorders should be stressed at medical schools and at residency training programs in specialties such as emergency medicine or those that offer primary care where dermatologic conditions are commonly encountered. Additionally, the identification of true dermatological emergencies should also be emphasized, since a prompt dermatology evaluation in each of these cases is imperative for better patient management and outcome.

Resumen

Objetivo: Hay pocos estudios que documentan acerca de las consultas dermatológicas en la sala de emergencia. El objetivo de este estudio fue evaluar la naturaleza, propósito y certeza diagnóstica de los médicos consultores de todas las consultas dermatológicas evaluadas por el Departamento de Dermatología de la Escuela de Medicina de la Universidad de Puerto Rico. Métodos: Análisis retrospectivo de todos los reportes de consultas de pacientes evaluados en la salas de emergencia entre el 1 de julio de 2007 y 30 de junio de 2013. La data obtenida de los reportes de consultas incluía la información demográfica del paciente, el hospital que hizo la consulta, la impresión diagnóstica inicial del médico de sala de emergencia, la impresión diagnóstica del dermatólogo y los procedimientos

hechos por el dermatólogo, si alguno. Resultados: Un total de 429 pacientes fueron evaluados (53% hombres, 47% mujeres) entre julio de 2007 y junio de 2013. El diagnóstico más común fue un proceso infeccioso (37%), seguido de eczema (14%) y reacciones cutáneas inducidas por medicamentos (12%). Un 17% de las consultas se consideraron emergencias dermatológicas. Cuarenta y seis por ciento de las consultas no tenían impresión diagnóstica por el médico consultor. De todas las consultas que sí tenían un diagnóstico inicial hecho por el médico de sala de emergencias, ese diagnóstico se cambió por el dermatólogo en 34% de los casos. Conclusión: Este estudio sugiere que el rol del dermatólogo en la sala de emergencia es bien importante. También, mejor educación en el manejo de desórdenes cutáneos comunes e identificación de verdaderas emergencias dermatológicas se debe enfatizar durante la escuela de medicina y en programas de entrenamiento de especialidades como medicina de emergencia y aquellas que ofrezcan medicina primaria.

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