

Original Article:

Clinical Presentation and Etiological Profile of Exfoliative Dermatitis: An Observational Study at a Tertiary Care Hospital

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Abstract

Exfoliative dermatitis (erythroderma) is a severe inflammatory skin disorder characterized by erythema and scaling involving more than 90% of the body surface area. It is associated with significant morbidity and systemic complications. This cross-sectional observational study was conducted on 64 patients with exfoliative dermatitis at the Department of Dermatology and Venereology, Chittagong Medical College Hospital. Clinical data were collected using a structured questionnaire, and relevant examinations were performed. The mean age was 44.8 ± 11.3 years. Males predominated (75%; M:F = 3:1). Psoriasis was the leading cause (60.9%) followed by drug reactions (15.6%) and atopic dermatitis (10.9%). All patients presented with generalized erythema and scaling; 48.4% had itching, 85.9% sparse body hair, and 57.8% loss of scalp hair. Nail changes such as shiny nails (65.6%), thick nails (51.6%), and subungual hyperkeratosis (53.1%) were common. Winter was the most frequent aggravating factor (32.8%). Psoriasis remains the most common cause of exfoliative dermatitis in our population. Early recognition of clinical features and identification of underlying causes are essential for proper management.

Keywords: Exfoliative dermatitis; Erythroderma; Psoriasis.

Introduction

Exfoliative dermatitis, also known as erythroderma, is a severe and potentially life-threatening dermatologic reaction pattern characterized by diffuse erythema and scaling that involves more than 90% of the body surface area^[1]. The condition was first described by Hebra in 1868 and is also referred to as dermatitis exfoliativa or pityriasis rubra (Hebra)^[2]. Clinically, the disease presents with generalized redness of the skin accompanied by desquamation and is often associated with systemic features including fever, malaise, pruritus, lymphadenopathy and metabolic disturbances^[3,4]. The extensive inflammation severely disrupts normal cutaneous barrier and thermoregulatory functions, making affected individuals vulnerable to severe complications such as infection, electrolyte imbalance and cardiac failure^[5].

Exfoliative dermatitis usually develops as a final common

pathway of a wide range of pre-existing skin conditions. Among these, psoriasis, atopic dermatitis, seborrheic dermatitis, pityriasis rubra pilaris and contact dermatitis are the most frequent^[6,7]. Other major causes include drug reactions, cutaneous T cell lymphomas, leukemia cutis, paraneoplastic syndromes and idiopathic cases^[5]. Drug-induced erythroderma has been reported with numerous agents, including allopurinol, sulfonamides, phenytoin, carbamazepine, barbiturates, dapsone, isoniazid and gold salts^[8]. More recently, anti-tumor necrosis factor agents have been associated with the onset of erythroderma^[6].

Although uncommon in the general population—with an incidence estimated at 1–2 cases per 100,000 persons per year in Western settings^[9] erythroderma accounts for a substantial proportion of inpatient dermatology admissions. In Bangladesh, exfoliative dermatitis was the

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most frequent dermatosis among admitted dermatology patients, accounting for 21.31% of cases^[10].

The exact pathogenesis of exfoliative dermatitis remains incompletely understood. It is thought to result from complex interactions of cytokines and adhesion molecules, including interleukins 1, 2 and 8, tumor necrosis factor (TNF), and intercellular adhesion molecule-1, which cause increased epidermal turnover^[11-13]. This accelerated cell proliferation shortens the epidermal cell cycle, leading to excessive desquamation and a significant loss of protein, folate and heat. These changes manifest systemically as weight loss, hypothermia, edema and in severe cases, high-output cardiac failure^[14].

The classical clinical presentation begins with erythematous patches that enlarge and coalesce to cover most of the body surface. This is followed by fine or coarse scaling, which usually appears 2–6 days after erythema onset^[12,15]. Pruritus is nearly universal, with varying severity, and is particularly intense in patients with atopic dermatitis and Sézary syndrome. Nail and hair involvement is also common, with thickened, shiny nails, ridging, Beau's lines, and alopecia seen in a substantial proportion of cases^[16]. Additional systemic findings may include lymphadenopathy, hepatosplenomegaly, edema of the extremities and ocular complications such as ectropion caused by periorbital skin inflammation^[12, 15, 16]. The prognosis of erythroderma depends on the underlying etiology, making etiological identification a critical component of management^[17]. However, establishing the precise cause can be difficult. While a thorough clinical history including past skin diseases and recent drug exposure—is essential, histopathology remains the most useful confirmatory tool, correctly identifying the etiology in about 55–60% of cases^[18-20]. Nevertheless, a proportion of cases remain idiopathic at initial presentation, some of which are later diagnosed as cutaneous lymphomas^[21].

There is limited published data from Bangladesh on the pattern and clinical spectrum of exfoliative dermatitis. Regional variations in causative factors and clinical presentation emphasize the need for locally generated evidence. This study aims to evaluate the clinical features, common aggravating factors, and etiological distribution of exfoliative dermatitis among patients presenting to the Dermatology and Venereology Department of Chittagong Medical College Hospital, thereby providing baseline information to guide early recognition and improved management in our context.

Materials and Methods

This cross sectional observational study was carried out in the Department of Dermatology and Venereology at Chittagong Medical College Hospital over a period of twelve months. A total of 64 consecutive patients aged 18 years and above, presenting with generalized erythema and scaling involving more than 90% of the body surface area, were included after taking informed written consent. Patients with localized skin lesions or those unwilling to participate were excluded. Data were collected through direct interview using a semi structured questionnaire that recorded socio demographic information, past history of dermatoses, drug history, aggravating factors, and clinical features. All patients underwent thorough general and dermatological examination, and relevant investigations including skin biopsy were done when required to determine the cause. Data were analyzed using SPSS version 23, and results were expressed as frequencies, percentages, and mean with standard deviation. Ethical approval was obtained from the Institutional Review Board of Chittagong Medical College.

Results

A total of 64 patients with exfoliative dermatitis (ED) were enrolled in this study. The mean age of the study population was 44.84 ± 11.27 years, with an age range of 18 to 66 years. The majority of patients (34.4%) were in the 38-47 years age group, followed by 31.3% in the 48-57 years group. Males comprised the predominant sex (75.0%), resulting in a male to female ratio of 3:1. Regarding educational qualification, 53.1% of participants had primary education, while 40.6 had SSC or equivalent. The employment status revealed that 35.9% were service holders, and 25.0% were businessmen, with another 25.0 being unemployed. Most of the study population was married (71.9%). A majority of patients (60.9%) resided in urban areas. Monthly family income analysis showed that 53.1% of participants had an income between 10,000-20,000 Taka, and 28.1% had an income of 5,000-10,000 Taka.

Clinical Presentations

All patients (100%) presented with generalized shedding and skin redness, which are hallmark features of exfoliative dermatitis. Itching was reported by 48.4% of the patients. Upon skin examination, erythema and scaling were universally present (100% each). Positive Nikolsky's sign was observed in 4.7% of cases. Sparse body hair was noted in 85.9% of patients, and 57.8 experienced loss of scalp hair.

Nail changes were a common finding, with only 21.9% of patients having normal nails. The most frequent nail changes included shiny nails (65.6%), thick nails (51.6%), subungual hyperkeratosis (53.1%), and Beau's lines (62.5%). Nail pitting was present in 21.9% of cases, brittle nails in 7.8%, ridging of nails in 3.1%, and nail dystrophy in 6.3%.

Table 1: Clinical Presentations of Exfoliative Dermatitis in Study Population (n=64)

Features	Frequency (n)	Percentage (%)
General features		
Generalized Shedding and skin redness	64	100.0
Itching	31	48.4
Skin Examination		
Erythema	64	100.0
Scaling	64	100.0
Positive Nikolsky's sign	3	4.7
Sparse body hair	55	85.9
Loss of scalp hair	37	57.8
Nail changes		
Normal nail	14	21.9
Thick nail	33	51.6
Brittle nail	5	7.8
Ridging of nail	2	3.1
Nail pitting	14	21.9
Shiny nail	42	65.6
Nail dystrophy	4	6.3
Beau's line	40	62.5
Subungual hyperkeratosis	34	53.1

Aggravating Factors

Aggravating factors for exfoliative dermatitis were identified in 68.8% of the study population. Winter season was the most frequently reported aggravating factor, affecting 32.8% of participants. Sun exposure was noted by 21.9%, and discontinuation of drugs by 18.8%. Other less common aggravating factors included stress, food, and dust, each reported by 3.1% of patients.

Table 2: Aggravating Factors for Exfoliative Dermatitis Patients in the Study (n=64)

Aggravating factors	Frequency (n)	Percentage (%)
Winter	21	32.8
Sun exposure	14	21.9
Discontinuation of drug	12	18.8
Stress	2	3.1
Food	2	3.1
Dust	2	3.1

Past History

A significant proportion of patients (45.3%) had a previous history of exfoliative dermatitis. Furthermore, 81.3% reported a past history of other dermatoses. A positive drug history was identified in 15.6% of patients. Among those with a positive drug history, non-steroidal anti-inflammatory drugs (NSAIDs) and antibiotics were each implicated in 6.3% of cases, while anti-epileptics accounted for 3.1%.

Table 3: Past History in Study Population (n=64)

Variables	Frequency (n)	Percentage (%)
Previous exfoliative dermatitis		
Yes	29	45.3
No	35	54.7
Previous history of other dermatoses		
Yes	52	81.3
No	12	18.7
Previous drug history		
Yes	10	15.6
No	54	84.4

Causes of Exfoliative Dermatitis

Psoriasis was identified as the leading cause of exfoliative dermatitis in this study, accounting for 60.9% of cases. Drug reactions were the second most common etiology (15.6%), followed by atopic dermatitis (10.9%). Other less frequent causes included Pityriasis rubra pilaris (4.7%), Contact Dermatitis (3.1%), Pemphigus foliaceus (3.1%), and Seborrheic dermatitis (1.6%).

Table 4: Causes of Exfoliative Dermatitis in Study Population (n=64)

Diagnosis	Frequency (n)	Percentage (%)
Psoriasis	39	60.9
Drug reaction	10	15.6
Atopic Dermatitis	7	10.9
Pityriasis rubra pilaris	3	4.7
Contact Dermatitis	2	3.1
Pemphigus foliaceus	2	3.1
Seborrheic dermatitis	1	1.6
Total	64	100.0

Discussion

Exfoliative dermatitis (ED) or erythroderma is a severe inflammatory skin condition characterized by widespread erythema and scaling, often involving over 90% of the body surface[1, 22, 23]. It is a rare disease with significant morbidity, often requiring hospitalization due to its debilitating symptoms like intense pruritus and scaling[22]. Identifying the etiology is crucial for effective management. This study aimed to analyze the clinical presentations and causes of ED in patients at the Dermatology and Venereology department of Chittagong Medical College Hospital.

Our study of 64 ED patients revealed a mean age of 44.84 ± 11.27 years, with the majority (75.1%) being over 38 years, consistent with some international studies [24, 25] but differing from others [26, 27]. A strong male predominance was observed (75.0%, male to female ratio 3:1), aligning with findings by Pal et al. and Rym et al.[26, 28]. Most patients had primary education (53.1%), were employed (57.8%), married (71.9%), and resided in urban areas (60.9%).

Clinically, all patients presented with generalized shedding, skin redness, erythema, and scaling. Itching was reported by 48.4%. Hair changes were common, with sparse body hair in 85.9% and scalp hair loss in 57.8%. Nail changes were also prevalent, with only 21.9% having normal nails; common findings included shiny nails (65.6%), thick nails (51.6%), and Beau's lines (62.5%). These findings are largely consistent with other studies [12, 13, 26, 29, 30]. Aggravating factors were present in 68.8% of cases, with winter season (32.8%) being the most common, followed by sun exposure (21.9%) and drug discontinuation (18.8%). This aligns with other Indian studies highlighting winter as a significant trigger [31, 32]. Regarding past history, 45.3% had previous ED episodes, and 81.3% had a history of other dermatoses, supporting the notion that ED often arises from pre-existing conditions [24, 26, 33-35]. A positive drug history was found in 15.6% of patients, with NSAIDs and antibiotics each accounting for 6.3%.

Psoriasis was the predominant cause of ED in our cohort (60.9%), followed by drug reaction (15.6%) and atopic dermatitis (10.9%). This high prevalence of psoriasis as an etiology is consistent with several previous studies [26, 28, 36, 37], though some studies report eczema as more common [38]. Our drug reaction rate (15.6%) was slightly higher than some reports[28, 36]. Variations in etiological patterns across studies may reflect differences in disease spectrum, referral practices, or other regional factors.

Conclusion

Exfoliative dermatitis in Bangladesh predominantly affects middle-aged males, with psoriasis as the leading cause. Common clinical features include generalized scaling, erythema, nail changes, and hair loss. Aggravating factors such as winter weather play a role in disease exacerbation. Early recognition of these patterns can improve management and reduce morbidity.

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