

Exfoliative Dermatitis: A Clinico-etiological Study

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ABSTRACT

Background: Exfoliative dermatitis or erythroderma is a symptom complex characterized by universal desquamation and erythema of the skin in response to various internal or external, known or unknown factors. Largely it is a secondary process and therefore it is mandatory to establish its etiopathology to facilitate the precise management. We attempted to establish the different causes of exfoliative dermatitis. **Methods:** We reviewed the clinical, laboratory and histopathological findings of 50 patients diagnosed with exfoliative dermatitis. **Results:** The frequency of exfoliative dermatitis was found to be 0.1 percent. The male-female ratio was 2.5:1 and majority of patients were in their 5th & 6th decade of life (mean age at diagnosis being 45.2 years). The total duration of disease ranged from 2 months to 1 year. The common causative factors were preexisting dermatoses (64%), followed by idiopathic (18%), drug induced (16%) and malignancy (2%). The most common dermatoses were psoriasis (24%) and eczema (24%). Carbamazepine (6%) and antitubercular drugs (6%) were the most frequent drugs which induced exfoliative dermatitis. Apart from scaling with erythema, pruritus and thickening of skin were found in all patients. Anemia was the most common finding (90%), followed by fever (42%), lymphadenopathy (38%) and edema (32%). The best Clinicopathological correlation was found in psoriasis and pemphigus foliaceus. **Conclusions:** This study outlined that the underlying etiologic factors of exfoliative dermatitis may show geographic variations. In this study preexisting dermatoses was most common cause of exfoliative dermatitis followed by idiopathic causes. Clinical features were identical irrespective of the etiology.

Key words: Exfoliative dermatitis, erythroderma, psoriasis

INTRODUCTION

Exfoliative dermatitis is universal or almost universal dermatitis with erythema and continuing scaling (Fig 1). It is better considered to be a syndrome complex arising out of diverse etiological factors. Historically exfoliative dermatitis was categorized into several types based on the course rather than the primary causes.^[1,2] Annual incidence of exfoliative dermatitis has been reported to be around

0.9% per 100000 population.^[3] In another series, the reported hospital incidence was 6.3 % per year.^[4] In one study the age of onset was 40 years or above in more than 80% of reported cases.^[2] Most of the studies showed a male predominance.^[5-8] Exfoliative dermatitis is now considered a secondary or reactive inflammatory process to an underlying cutaneous or systemic disease. The causative factors can be grouped as previous dermatoses, drug reactions, malignancies, systemic diseases and various infections. Apart from causes mentioned many patients remain idiopathic even after thorough investigations. Earlier studies had demonstrated preexisting dermatoses to be the underlying causes responsible for the exfoliative dermatitis in majority of the adults,^[2-8] but in children and neonates the etiology in addition to preexisting dermatoses also included various congenital disorders.^[9-11] Common skin diseases causing exfoliative dermatitis are psoriasis, atopic dermatitis, seborrhoeic dermatitis and eczema. The clinical diagnosis of exfoliative dermatitis is simple but the recognition of the underlying cause may be very difficult. In one third of cases careful history taking and physical examination often failed to diagnose the underlying

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disease. Histopathology can help diagnose only 50% of cases by multiple skin biopsies.^[7-12] Present study was an attempt to find out the different causes of exfoliative dermatitis and correlate it with histopathology.

METHODS

This was a prospective cross-sectional study of all patients with erythroderma attending the dermatology department of ESI PGIMS, Basaidarapur, New Delhi from January 2012 to December 2013. Detailed history regarding personal data, past medical history, drug intake history, previous episodes of erythroderma, onset and disease progression, symptoms and physical examination findings were noted. After clinical evaluation these patients were subjected to laboratory investigations which included complete blood count, liver function tests, renal function tests, serum electrolytes, serum albumin & protein level, urine and stool examination (routine and microscopy) and chest radiograph. In relevant cases bone marrow examination, stool for occult blood, serum markers for hepatitis B & C, HIV antibody testing, skin biopsy, lymph node biopsy were performed. All clinical and laboratory details were recorded on specially designed proforma. The study was approved by the college ethics committee.

RESULTS

In the present study, exfoliative dermatitis was diagnosed with a frequency of 0.1 percent. Seventy two percent (n=36) patients were males while 28% (n=14) were females (male-female ratio of 2.5:1). The age of the patients ranged from 1 to 82 years and mean age of onset of the disease was 45.2 years. There was no significant difference in the age of onset between male and female groups. Only one patient was a child of 1 year age (Table 1)

Most of the patients had mild to moderate degree of pruritus, erythema, scaling and skin thickening. Severe pruritus, erythema, scaling and skin thickening were present in 30% (n=15), 28% (n=14), 30% (n=15) and 28% (n=14) cases respectively. Apart from above clinical features 90% (n=45) had some degree of pallor, 42% (n=21) had fever at onset, 40% (n=20) had lymphadenopathy, 32% (n=16) had lower limb edema, and 16% (n=8) had hepatomegaly.

On laboratory investigation, around 90% (n=45) cases had below normal hemoglobin level, 40% (n=20) cases had low serum protein level and 24% (n=12) cases had increased serum alanine transaminase level (ALT). Histopathological examination of skin was performed in 72% (n=36) cases. Rest of the patients' histopathology showed nonspecific psoriasiform dermatitis features with hyperkeratosis, parakeratosis, spongiosis, acanthosis, dermal mixed cell infiltrate mostly lymphocytes except in drug induced where eosinophils predominant.

Final diagnosis was made on the basis of clinical, biochemical, histopathological findings and of the evolution of disease in each individual patient. The patients

were divided into different groups according to underlying etiologies.

More than 60% (n=32) patients had some pre-existing dermatoses. Psoriasis was seen in majority of the cases with 24% (n=12) cases and contact dermatitis was the second highest with 8% (n=4) cases. Seborrhoeic dermatitis, atopic dermatitis and dermatophytosis was responsible in 6% (n=3) patients each. Norwegian scabies and stasis dermatitis accounted for 4% (n=2) patients each. Only one patient (2%) each of generalized lichen planus, pityriasis rubra pilaris & pemphigus foliaceus were responsible for exfoliative dermatitis. The 2nd most common etiology was drug induced with 16% (n=8) patients. Carbamazepine and antitubercular drugs each accounted for 6% (n=3) patients while dapsone and homeopathic medication each were responsible in 2% (n=1) patients. Exfoliative dermatitis due to malignancy was seen only in one patient (2%) who had bronchogenic carcinoma. In 18% (n=9) patients no cause could be identified and hence were idiopathic.

Causal relationship between a drug and erythroderma was established from history of intake of drug preceding the onset of erythroderma and clearing of the lesions following withdrawal of the drug. Oral provocation test was not done in any patient. None of the patients were HIV positive based on serum antibody tests.

The onset of erythroderma was gradual in most of the cases except in drug induced group where it was acute. In half of the patients (n=25) the disease was chronic and recurrent lasting for more than 6 months. In 18% (n=9) patients, majority of which were drug induced, the manifestations cleared within 15 days. Only one patient died due to bronchogenic carcinoma.

DISCUSSION

The frequency of exfoliative dermatitis in the present study was 0.1% which was lower than the previous studies.^[3,4] where it varied from 0.9 to 6.3 percent. Male patients were 2 ½ times more than females. A similar observation was made by other workers.^[5-8] The mean age of onset of disease in the present study was 45.2 years which was in accordance with previous studies.^[2]

Like in the previous studies we also found the onset of disease was gradual^[4,8] except drug induced exfoliative dermatitis which had an acute onset with severe itching and diffuse erythema. Almost all resolved rapidly on discontinuation of the causative drug.^[4,14]

Symptoms like erythema and scaling were present in all patients though itching was observed in 78% cases only. In majority of these cases the etiology was of contact dermatitis or drug induced which was similar to previous study.^[7,13] In the present study, mild to moderate hepatomegaly was found in 16% (n=8) patients. Most of them were from drug induced, psoriatic and idiopathic variety. The incidence of hepatomegaly was similar to previous studies^[8] which may not have been related to any specific cause or may partly have been due to the development of congestive cardiac failure.

Table- 1: Etiology and age distribution of 50 cases with exfoliative dermatitis

S.N.	Diseases	Age in years							Total
		0-10	11-20	21-30	31-40	41-50	51-60	>60	
1	Psoriasis	-	-	-	2	5	4	1	12
2	Lichen planus	-	-	-	-	1	-	-	1
3	Pityriasis rubra pilaris	-	1	-	-	-	-	-	1
4	Pemphigus foliaceus	-	-	-	-	1	-	-	1
5	Atopic dermatitis	2	-	1	-	-	-	-	3
6	Seborrhoeic dermatitis	-	-	-	1	-	2	-	3
7	Stasis dermatitis	-	-	-	-	-	1	1	2
8	Contact dermatitis	-	-	1	3	-	-	-	4
9	Norwegian scabies	-	-	-	1	-	-	1	2
10	Dermatophytosis	-	-	-	-	2	1	-	3
11	Drugs	-	-	-	2	4	2	-	8
12	Internal malignancy	-	-	-	-	-	1	-	1
13	Idiopathic	-	-	1	1	-	5	2	9
14	Total	2	1	3	10	13	16	5	50

Table- 2: Comparative etiological classification of exfoliative dermatitis in various studies including the present series (relative incidence in percentage)

S. No.	Investigators	Year	Pre-existing dermatosis	Drug induced	Malignancies	Idiopathic
1	Wilson	1954	48	16	10	26
2	Abraham et al.	1963	32	14	8	46
3	Nicolis and Helwig	1973	25	42	21	12
4	Nigam et al.	1977	40	27.5	0	32.5
5	Sehgal & Srivastava	1986	52.5	25	0	22.5
6	Botella-Estrada et al.	1994	62.5	16	12.5	9
7	Chaudhury & Gupte et al.	1997	40	16.6	6.6	36.8
8	Pal et al.	1998	74.4	5.5	5.5	14.6
9	Rym et al.	2005	72.5	11.25	8.75	7.5
10	Hulmani et al	2014	63.2	16.6	3.3	16.6
11	Present series	2012	64	16	2	18

Lymphadenopathy was seen in 40% (n=20) patients in this study and the most commonly involved was the inguinal group. In literature, lymphadenopathy in patients of exfoliative dermatitis has been reported in the range of 21-33 percent.^[7,15] Sehgal and Srivastava had observed microcytic hypochromic anemia in 70% of their patients.^[5] Similarly, in other studies anemia was observed in the range of 48-72% of the patients.^[7,16] In the present series, anemia (< 12 gm %) was observed in 90% of patients and majority of them had normocytic normochromic anemia. This higher percentage of anemia might have been due to poor nutritional status or malabsorption as a result of dermatogenic enteropathy. Low total serum proteins were found in 40% (n=20) patients similar to the Botella-Estrada et al study.^[15] It might have been due to the loss through the skin or as a result of expansion of plasma volume.^[17,18] Nearly one fourth patients (mostly drug induced exfoliative dermatitis) had abnormal liver function test. This might have been due to the effect of the drug on liver leading to intrahepatic cholestasis.

Clinicopathological correlation was possible in 20% (n=10) cases in the present study. Among these nine patients had psoriasis and only one patient presented with pemphigus foliaceus which was much lower than previous report.^[7,19]

**Fig 1: Patient of exfoliative dermatitis showing erythema and scaling of the whole body.**

Comparison of the etiologic groups among previous series and present one is depicted in Table 2. This series had a

high percentage of exfoliative dermatitis secondary to preexisting dermatoses. Psoriasis and eczema were the most common preexisting dermatoses, an observation reported in majority of the previous studies.^[6,7,13,16,19] The frequency of idiopathic variety was 18% which was comparable to previous studies.^[6,7,16] In previous studies, death from exfoliative dermatitis or its complication was observed between 1.0 to 3.8 percent.^[4,14,19] Most common cause of death observed was advanced age, secondary infection, dehydration, electrolyte imbalance, temperature deregulation and high-output cardiac failure. Cesar et al reported deaths in 5.8% of their patients and all of them had CTCL lymphoproliferative malignancy.^[24] In the present series only one patient died due to underlying lung cancer.

CONCLUSION

This series had a higher percentage of exfoliative dermatitis secondary to preexisting dermatoses and a very low percentage of malignancy induced erythroderma. The clinical features of the disease were identical irrespective of the etiology and the onset of the disease was usually insidious except in drug induced variety. The diagnosis of underlying etiology is difficult and it is of great importance to perform repeated skin and lymph node biopsies in order to have a targeted approach and to reduce the percentage of idiopathic cases.

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