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RESEARCH ARTICLE

EPIDEMIOLOGICAL, CLINICAL, AND ETIOLOGICAL PROFILE OF HYPEREOSINOPHILIA IN A DERMATOLOGY DEPARTMENT: A SERIES OF 115 CASES

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Abstract

Background: The eosinophil granulocyte is a key cell of the immune system that plays multiple essential roles in numerous diseases. In dermatology, two distinct entities are recognized: eosinophilic dermatoses proper and dermatoses associated with eosinophilia.

Materials and Methods: We present a 5-year retrospective study including all patients admitted to our department who presented with peripheral blood eosinophilia.

Results: A total of 115 cases met the inclusion criteria. Eosinophilic dermatoses accounted for 9% of cases, where as dermatoses associated with eosinophilia represented 91%, distributed as follows: adverse drug reactions (37%), eczema (16%), prurigo (14%), bullous pemphigoid (10%), psoriasis (5%), cutaneous lymphomas (3%), cutaneous parasitoses (3%), and immunodeficiencies (3%).

Conclusion: Eosinophilic dermatoses remain extremely rare and present as sporadic cases. Dermatoses associated with eosinophilia constitute the majority of cases, predominantly represented by adverse drug reactions, eczema, and prurigo.

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Introduction:-

The eosinophil granulocyte is a specialized white blood cell acting at the interface of multiple inflammatory and immune processes, explaining the frequency and diverse etiologies of peripheral blood hypereosinophilia. Consequently, dermatologists encounter hypereosinophilia across various clinical presentations, including hypersensitivity reactions, adverse drug reactions, eosinophilic dermatoses, bullous dermatoses, cutaneous lymphomas, vasculitides, and immunodeficiencies [1] [2].

Materials and Methods:-

This descriptive retrospective study was conducted in our department over a 5-year period using a standardized data extraction form. Variables included age, sex, medical history, occupation, presence of an atopic background, history

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of travel/stay in parasite-endemic regions, history of drug intake, severity and chronicity of eosinophilia, diagnostic workup, and final diagnosis.

Results:-

Out of 163 registered cases, 115 met the criteria for analysis, comprising 71 males (61%) and 34 females (39%). Age distribution was as follows: Pediatric/Adolescents (<18 years): 12 cases (11%), Adults (18–60 years): 68 cases (59%) and Elderly (>60 years): 35 cases (30%). An atopic background was noted in 10 cases (9%), and 3 cases (3%) reported travel to parasite-endemic areas. Marked hypereosinophilia ($>1,500/\text{mm}^3$) was identified in 27 cases (24%). Eosinophilic Dermatoses (9%, $n = 10$): Eosinophilic cellulitis (Wells syndrome): 2 cases, Eosinophilic pustular folliculitis (Ofuji disease): 2 cases, Angiolymphoid hyperplasia with eosinophilia (ALHE): 2 cases, Granuloma faciale (Lever's granuloma): 2 cases and Hypereosinophilic syndrome (HES): 2 cases.

Dermatoses Associated with Eosinophilia (91%, $n = 105$): Adverse drug reactions (ADRs): 42 cases (37%): Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS syndrome): 21 cases, Maculopapular exanthem: 11 cases, Erythema multiforme: 5 cases, Fixed drug eruption: 3 cases and Stevens-Johnson syndrome: 2 cases. Eczema: 18 cases (16%), Prurigo: 16 cases (14%), Bullous pemphigoid: 12 cases (10%), Psoriasis: 6 cases (5%), Cutaneous lymphomas (Mycosis fungoides and Sézary syndrome): 3 cases (3%), Hyper-IgE syndrome: 3 cases (3%) and Cutaneous leishmaniasis: 3 cases (3%)

Discussion:-

Eosinophil granulocytes were first described in 1879 by Paul Ehrlich. They account for approximately 1% to 5% of peripheral blood leukocytes. While normally resident in lymphoid organs, the gastrointestinal tract, and the lungs, the skin is naturally devoid of eosinophils. Clinically, symptoms of hypereosinophilia result from tissue infiltration and the release of eosinophil-derived mediators. Interleukin-5 (IL-5) appears to be the primary cytokine regulating eosinophil differentiation and survival, prompting the recent clinical introduction of anti-IL-5 targeted therapies [3][4]. The number of hypereosinophilia cases documented in our department does not fully reflect its true incidence in daily outpatient practice, as this study exclusively evaluated hospitalized patients. Furthermore, the male predominance (61% vs. 39%) can be attributed to the young, predominantly male demographic of our military institution's coverage population.

Our findings highlight distinct etiology patterns across age groups:-

Young Adults: Predominantly present with dermatoses associated with eosinophilia.

Elderly: Etiologies are dominated by severe adverse drug reactions, bullous pemphigoid, and cutaneous lymphomas.

Children: Atopic dermatitis and primary immunodeficiencies predominate. Dermatoses with secondary eosinophilia represent the vast majority of cases (91%), led by severe drug reactions (notably DRESS syndrome), generalized eczema, and prurigo. Eosinophilia in bullous pemphigoid is nearly constant, serving as a reliable biological marker of disease activity, though lacking prognostic value. Conversely, peripheral eosinophilia in cutaneous lymphomas (such as Mycosis fungoides and Sézary syndrome) serves as a marker of poor prognosis. Eosinophilia in psoriasis is generally mild and may be physiological or secondary to eczematization. In infants and young children, atopic dermatitis remains the primary etiology; however, primary immunodeficiencies such as Hyper-IgE syndrome and syndromic urticarias like Gleich syndrome must also be considered. Eosinophilic dermatoses represent well-defined clinical and histological entities. They are exceptionally rare and typically present sporadically. Key entities include eosinophilic cellulitis (Wells syndrome), angiolymphoid hyperplasia with eosinophilia (ALHE) and its differential diagnosis Kimura disease (eosinophilic lymphogranuloma), granuloma faciale, eosinophilic pustular folliculitis (Ofuji disease), hypereosinophilic syndrome (myeloid and lymphoid variants), eosinophilic granulomatosis with polyangiitis (Churg-Strauss syndrome), and erythema toxicum neonatorum [4][5][6].

Conclusion:-

Dermatologists routinely manage the full spectrum of hypereosinophilia etiologies. However, marked or severe hypereosinophilia most commonly secondary to severe adverse drug reactions warrants urgent diagnostic and therapeutic intervention. A multidisciplinary approach is frequently necessary to elucidate rare or atypical clinical presentations.

Conflicts of Interest:-

The authors declare no conflicts of interest regarding this work.

Figures & Tables:-

Table 1: Distribution of Dermatoses According to Eosinophilia Severity

Disease Category	Mild ($<1,000/\text{mm}^3$)	Moderate ($1,000-1,500/\text{mm}^3$)	Severe/Marked ($>1,500/\text{mm}^3$)
Eosinophilic dermatoses	2	4	4
Adverse drug reactions	12	20	10
Eczema	9	5	4
Prurigo	8	6	2
Bullous pemphigoid	4	4	2
Psoriasis	3	0	0
Cutaneous lymphomas	0	1	2
Cutaneous parasitoses	3	0	0
Immunodeficiencies	0	0	3

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