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RESEARCH ARTICLE

CHARACTERIZATION OF ECZEMATOUS RASHES IN IRAQI CHILDREN; A CLINICOEPIDEMIOLOGICAL STUDY IN DIWANIYAH.

Nabeel K. AL_hamzawi.
Specialist dermatologist, Department of Dermatology, Diwaniyah Teaching Hospital AL-Diwaniyah, Iraq.

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Abstract

Background: Eczema is a group of medical conditions that cause the skin to become inflamed or irritated. This study aimed to assess the clinicoepidemiological aspects and precipitating factors of various types of eczema in Iraqi children.

Methods: **A cross sectional, descriptive study was conducted among three hundred patients, in** Diwaniyah teaching hospital, Iraq, over a period of two years. This study based on questionnaire survey completed by interviewing the parents and the diagnosis of eczema was made on the basis of history and physical examination.

Results*:* The results showed that the number of males was 164(54.6%) and females 136(45.4%), and atopic dermatitis is the most common type of eczema seen in the different age group of children. It forms about (49.3%), xerosis was the typical morphological criteria in atopic dermatitis, forming about (56.7%), flexural regions are the commonest site affected, and positive family history seen in (64.8%) of atopic patients. Two-thirds of patients with atopic dermatitis and positive family history have an early onset of the disease during infancy (66.6%). Analysis of chronic cases showed that (51.5%) of patients got exacerbation during winter and autumn.

Conclusions: Eczema of all types affect Iraqi children of different ages, the most common type is atopic dermatitis. Family history and diet additive have a significant impact on the onset of the disease, while weather changes and the standard of living have a bearing on the criteria and severity of the disease status.

Introduction:-

Clinically eczema presents with pruritic erythematous lesions with or without clear margin. Such injuries pass through acute (vesicular), subacute (scaling and crustation), chronic (acanthotic with thick epidermis) phases. Primary lesions include macules, papules, vesicles or plaques. Secondary lesions with oozing, crusting, scaling, fissuring, and lichenification frequently follow.[1]

The Hanifin- Rajka criteria state that three of the four following features must be present to diagnose AD 1- Pruritus, the primary symptom and even referred to as the central lesion by some 2- Typical morphology and distribution of lesions for age 3- Chronic or chronically relapsing course 4- Personal family history of asthma, allergic rhinitis, or Atopic dermatitis. [1] The prevalence of AD is estimated to be 15-20% in children, and the

Corresponding Author:- Nabeel K. AL_hamzawi.
Address:- Specialist dermatologist, Department of Dermatology, Diwaniyah Teaching Hospital AL-Diwaniyah, Iraq.

incidence has increased by 2- to 3-fold during the past decades in industrialized countries. [2,3] The severity of AD evaluated according to the percentage of skin involvement and the type of skin lesions. [4-7]

Aim; This study aimed to determine the epidemiological and clinical aspects of various types of eczema in Iraqi children and to throw more light on the different precipitating factors that cause further aggravation of the disease in children.

METHODS:-

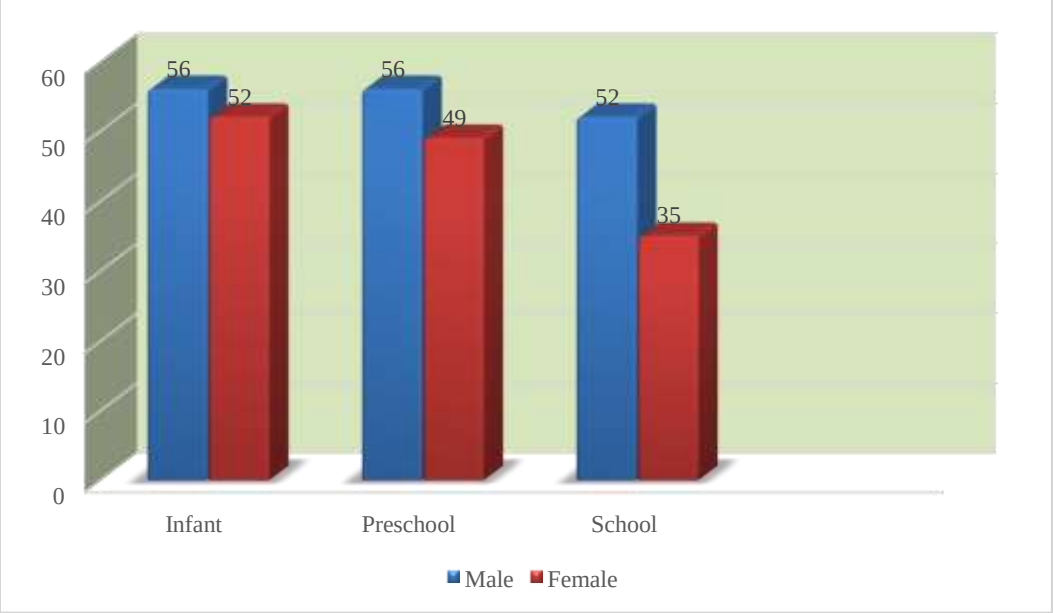
In this cross-sectional, descriptive study, a total of 300 patients visiting the Department of Dermatology in Diwaniyah teaching hospital, Diwaniyah, Iraq, during the period from October 2014 to September 2016 were evaluated. All patients in the age group from 2 months to 12 years, presented with a particular type of eczema were included in this study. Patients with a mixed kind of eczema, patients with secondary pyogenic infection and newborn babies were excluded from the survey. Direct interviewing of the parents of the children based on a questionnaire used to collect data. Each interview includes the following; age, sex, the onset of skin lesion, associated symptoms, precipitating factors (relation to climate, type of clothes, diet, bottle or breast feeding in infants, relation to bath and detergent, seasonal variation), family history, medical history and socioeconomic state.

Each patient was examined thoroughly, including general physical and skin examination. Careful inspection of the lesions, their morphology and distribution noted. A note made for the presence of any other skin conditions (like keratosis pilaris, periorbital changes, facial pallor, acquired ichthyosis, white dermographism and nail changes). SCORAD clinical tool used to assess the extent and severity of AD. The severity of AD evaluated according to the percentage of skin involvement and the type of skin lesions. Surface areas measured according to the rule of nine and grade into mild < 20%, moderate 20% -- 40% and severe for more than 40% involvement. The type of skin lesions assessed as 0- None 1- mild 2- moderate 3- severe according to the presence of the following signs redness, swelling, oozing and crustation, scratch mark, dryness and lichenification degree. SCORAD < 20 mild, 20-40 moderate, > 40 severe. The degree of itching and sleep disturbance assessed from (0—10). All data were collected and analyzed by using electronic statistical soft ware.

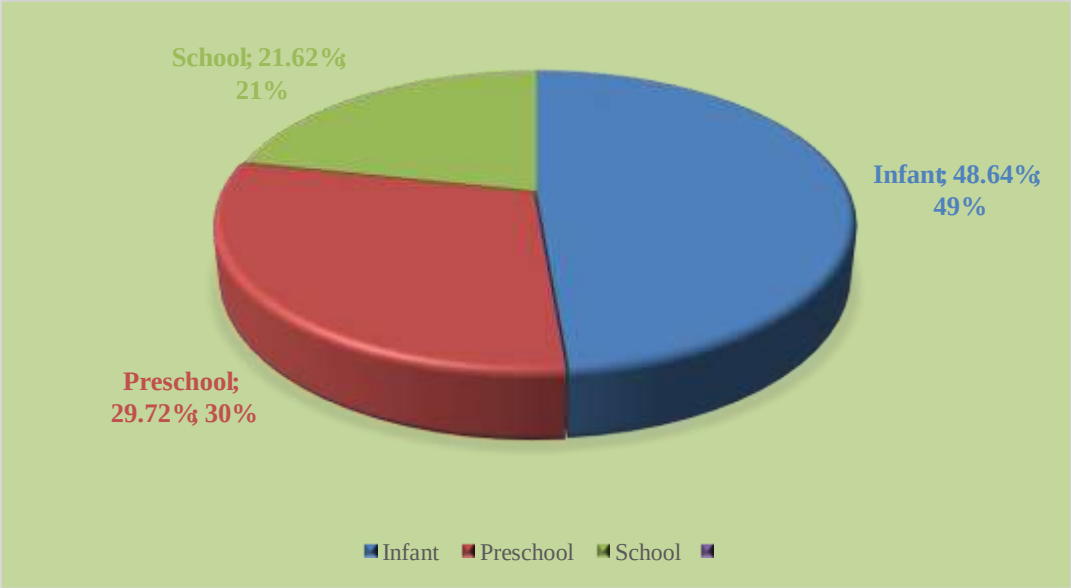
Results:-

The age group of the patients included in this study ranged from (2 months – 12 years) with a mean age of (5.91) years. The study group comprised of 164 (54.7%) males and 136 (45.3%) females. The male to female ratio was 1.2/1. The youngest one was two-month-old male infant with napkin dermatitis, and the oldest one was a female child of 12 years old with primary irritant dermatitis of the hands. The distribution of cases by their age and sex, Infants 108 (36%) 56 males and 52 females, preschool 105(35%) 56 males and 49 females, school aged 87(29%) 52 males and 35 females.

[Figure – 1]:- Distribution of patients according to age and sex [Figure -1]



Age of onset; The total number of patients with atopic dermatitis was 148, 72 of them (48.64%) have an early onset of eczema during infancy, 44 (29.72%) in preschool, 32 (21.62 %) in school age.[Figure-2]
Percentage of disease onset in different age studied [Figure – 2]



Family history reported by 96 patients with AD (64.9%), the other 52 (35.1%) have no family history. Most of the patients with AD and positive family history have an early onset of the disease during infancy 64 out of 96. Patients with AD and negative family history have their age of onset mainly in preschool and school periods 26, 18 out of 52 .[Table- 1]

Total No. of patients with AD concerning their family history & duration of onset of the disease [Table- 1]

Relation of AD & family history	No. of patients with AD n=148	Percentage %	Onset in infancy n= 72	Onset in preschool n= 44	Onset in school n= 32
Patients with AD & positive family history	96	64.8	64	18	14
Patients with AD & negative family history	52	35.2	8	26	18

Associated symptoms; Itching is intense in 148 patients, while it is moderate in 57, mild in 54 and absent in 41(patients with pityriasis alba and FE showed an absence of itching). Precipitating factors; The number of chronic cases of AD were 132(89.1%), the number of new cases was 16 (10.8%). The relatives of newly diagnosed patients have no idea about the precipitating factors of the disease. Analysis of chronic cases about the precipitating factors showed that 68 patients (51.5%) had an exacerbation of the disease during winter and autumn and improved during summer months, the other showed no difference in their illness state concerning seasonal variation. Precipitation on frequent bathing and soaps showed in 28 (21.2%) of patients, on wearing wool clothes in 24 (18.1%). [Table-2]. 56 patients given a history of breastfeeding, 44 were free from skin lesion during the period of exclusive breastfeeding, while they got their eczema when they started taking additional foods in the 5th month of life and more exacerbation occurred after weaning.

Frequency of precipitating factors in chronic cases of AD (n=132) [Table- 2]

Precipitating factor	Frequency	Percentage
Weather changes	68	51.5

Frequent bath	**28**	**21.2**
Wool clothes	**24**	**18.1**
Others	**12**	**9**

Results also showed that 70 (47.2%) patients with AD were related to upper social class, 15 (10.1%) to upper middle, 24(16.2%) to the middle, 9 (6%) to lower middle and 30 (20.2%) to lower social class. The results compared with patients with infective dermatitis (their total No. were 18, 13 of them were from lower social class and five from lower middle and no one from upper level, 14 patients were getting their eczema from pre-existing pediculosis and four from otitis media. [Table- 3]

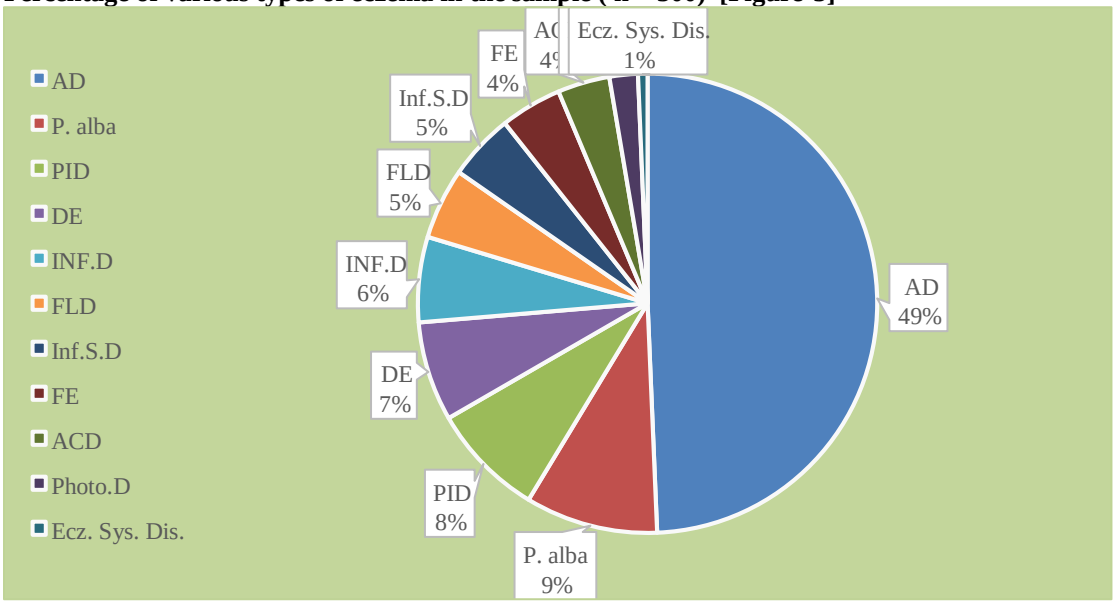
Cases of AD and infective dermatitis concerning socio-economic class [Table -3]

Socio-economic class	Frequency of AD	Frequency of Infective dermatitis
Upper	**70 (47.2%)**	**0**
Upper middle	**15 (10.1%)**	**0**
Middle	**24(16.2 %)**	**0**
Lower middle	**9(6%)**	**h pediculosis (27.7%)**
Lower	**30(20.2%)**	**13 (9 with pediculosis, 4 with otitis media) (72.2%)**
Total	**148**	**18**

The types of eczema found in this study classified as follow;
A-Exogenous; primary irritant dermatitis 24 (9.3%) allergic contact dermatitis 11 (3.6%) phototoxic dermatitis 6 (2%) infective dermatitis 18 (6%).

B- Endogenous; AD 148 (49.3%), pityriasis alba 28 (28%) [Cases of PA reported in this study are unrelated to AD and diagnosed as a distinctive pattern of low-grade eczema]. Discoid eczema 21 (7%) infantile seborrheic dermatitis 14 (4.6%), fore foot eczema 13 (4.3%) frictional lichenoid dermatitis 15 (5%), eczema due to systemic diseases 2 (0.6%) [Figure-3]

Percentage of various types of eczema in the sample (n = 300) [Figure-3]



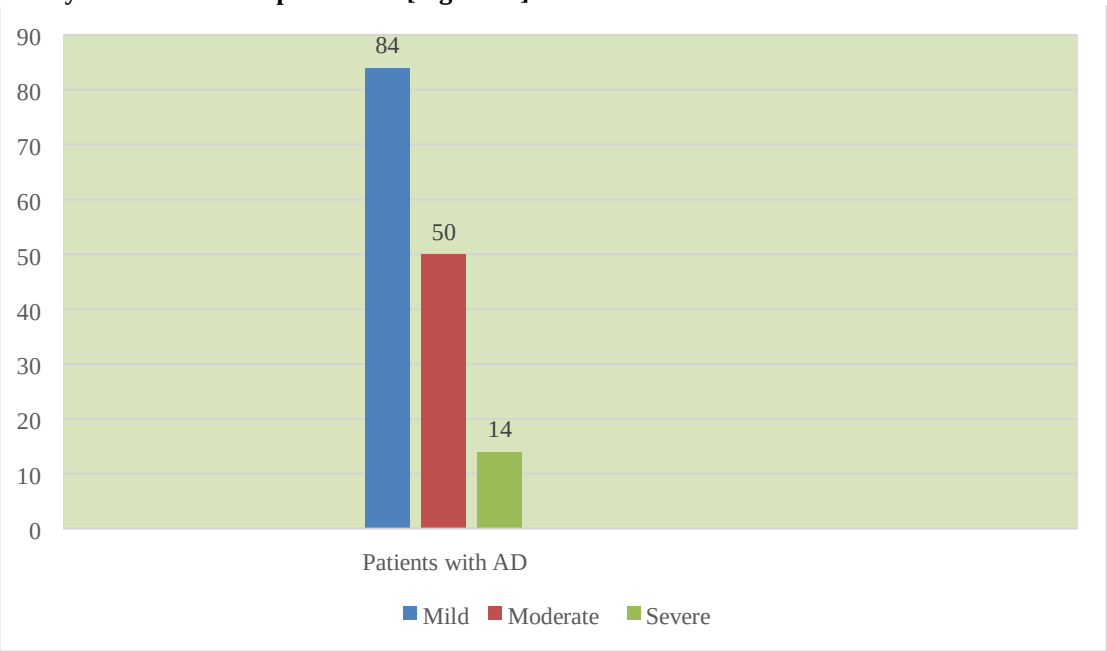
Morphology of AD in this study showed that redness present in 46 (31%), swelling in 36 (24.3%), oozing and crustation similar to discoid eczema were seen on hands and feet in 28 (18.9%). Excoriated and scratch marks observed in 76 (51.3), lichenified plaques in 64 (43.2%) and most of the patients presented with xerosis and dryness 84(56.7%). Two or three signs of these may present in one patient; therefore the total number of lesions is not-compatible with the number of the patients [Table -4]

Morphology of AD in the sample [Table-4]
(Two or three signs may present in one patient)

Types of lesions	Frequency	%
Redness	46	31%
Swelling	36	24.3%
Oozing & crustation	28	18.9%
Scratch marks	76	51.3%
Lichenification	64	43.2%
Xerosis	84	56.7%

The sites of the lesions involved were as follows; upper and lower limbs (mainly the flexural regions cubital and popliteal fossae) are the commonest site. It included 96 patients, wrist, and ankles affected in 50 patients, face involved in 42. Neck involved in 36, hands & feet in 26, anterior trunk in 24, back involved in 14, nail changes were present in 10, anogenital lesion was present in 2 (11-year-old), and no one has generalized rashes.[Most of the patients have more than one site of lesion], and according to SCORAD tool it showed that most of the cases of AD reported here are with mild skin involvement, 84 < 20%, 50 patients with
moderate involvement 20-40 %, and only 14 with severe involvement > 40%. [Figur-4]

Severity of AD in the sample studied [Figure- 4]



Discussion:-

Eczema is an inflammatory skin condition characterized by redness, itching, and oozing vesicular lesions which become scaly, crusted or hardened. In the present study, it found that infants and preschool children were affected more than school, and there is a preponderance of male to female ratio 1.2/ 1 and this consistent with other studies. [8, 9] The diagnosis of eczema is based on the findings of the history and physical examination. Exposure to possible exacerbating factors, such as aeroallergens, irritating chemicals, foods and emotional stress, sunlight, was investigated. [10,11]

The present study showed that most of the patients with AD and positive family history have an onset of their eczema in early infancy, which means that family factor has a high impact on the development of AD. [12- 14] While in those with AD and negative family history the onset was later in most of the cases. There are many precipitating factors mentioned to exacerbate the course of eczema like frequent bathing and soaps, seasonal variation, wool clothing, infection and allergen in food. The triggering factors mentioned have a strong association with the severity of AD in this study.

Infants during the period of exclusive breastfeeding were free from skin lesions. While they got their eczema when they started taking additional food (mostly with eggs and cow's milk) so it better to postpone any other food especially eggs, fish, cow's milk till the age of 12 months to reduce the risk of AD. The World Health Organization currently recommends exclusive breastfeeding for the first half and continuing to breastfeed, as well as introducing other foods, until two years of age. Breast milk contains compounds such as α-tocopherol, β-tocopherol, and prolactin— all help degrade inflammatory compounds, increase immune function, and decrease the sensitivity of infants.[15-17]

Social history showed that most of the cases of AD were related to the higher social class and this is probably due to excessive use of a cleansing agent (soaps & shampoo) and excessive washing in people with more senior class thinking that this is beneficial for the condition. Furthermore, patients with low social class showed more cases of infective dermatitis as a result of poor hygiene.

Other types of endogenous eczema showed high number of cases is pityriasis alba which was reported as a separated clinical pattern of dermatitis and not an associated feature of AD and those patients have no family history of atopy and all of them were living in rural areas and spent most of their day exposed to sunlight.

There is a broad spectrum of presentations of atopic eczema, from minimal flexural eczema to erythroderma. Eczema can occur anywhere, but particular patterns are more common at certain ages. The face is usually the first to be affected and involved in all infants in this study. In crawling infants the forearms, extensor aspects of the knees, and the ankle flexures are often the most affected. While, in older children, the flexor aspects of the elbows and the knees are mostly affected.[18] The flexural sites (cubital &popliteal fossa) are the commonest sites involved especially in preschool children. [19] The involvement of nail folds cause ridging of the nails, and this seen in patients with prolonged course of AD. The skin lesions observed in atopic dermatitis vary widely, depending on the severity of inflammation, different stages of healing, chronic scratching and frequent secondary infections. The most distressing symptom of eczema is one intolerable itch. Intense pruritus precedes the appearance of any skin lesion. In this study, all cases of AD showed severe itching irrespective to the extent of the skin lesion. A moderate degree of itching seen in discoid eczema and infective dermatitis, mild itching in primary irritant dermatitis and no itching in pityriasis alba and FE.

PID in this study mostly reported in infants, and it mainly associated with the use of diaper, i.e., Irritant diaper dermatitis (IDD) is a form of contact dermatitis occurring in the diaper area as a consequence of disruption of the barrier function of the skin through prolonged contact with feces and urine. Despite advances in diaper technology, it is a condition that still occurs regularly in young children.[20] One case of PID recorded in 12- year-old female due to the excessive use of water and detergent at home, (housewife dermatitis).

ACD in this study reported mainly due to earrings in preschool female children and coins in the pocket in the thighs of boys wearing jeans. [21]

Fore foot eczema or " wet and dry foot syndrome" was reported in this study in patients who had no personal history of atopy. Whereas a family history of atopy was present in some patients, and in most of the cases the disease was aggravated by wearing rubber shoes and sweating, or prolonged immersion of their feet in water especially in children from rural areas who already have disturbed skin barriers.[22,23]

Cases of FLD recorded in summer months, and it seems to be due to prolonged exposure to sun light and friction and most them presented with xerosis and papular eruption on the dorsum of elbows.

Eczematous rashes reported due to systemic disease, two infants presented with acrodermatitis enteropathica which characterized by a triad of periorificial and acral dermatitis and diarrhea. [24]

The skin barrier plays critical roles in immune surveillance and homeostasis, and in preventing penetration of microbial products and allergens. Defects that compromise the structural integrity, or else the immune function of the skin barrier play a pivotal role in the pathogenesis of AD. [25] A Strong evidence exists in the literature to support a genetic predisposition to eczema. The risk of childhood eczema is two to three times higher in children with a maternal or paternal history, irrespective of parent sex or body region affected. [26]

Conclusions:-

This study showed that there is a strong association between family history and early onset of eczema probably due to defective barrier skin function and suppressed immune mechanism in those group, and first introducing solid foods added further impact on the initiation of the disease. Whereas the severity of eczema determined by environmental factors such as (extremes of temperature, seasonal variation in Iraq, prolonged exposure to sunlight and pollution). The standard of living and hygiene (excessive washing, use of cleansing and detergent, type of clothing) added a significant impact on the type and severity of eczema.

Infant with Atopic Dermatitis [Figure-5]

5 -year -old female with Discoid Eczema [Figure-6]

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