



Kerman university of medical sciences

Prevalence of atopic dermatitis in children
With type 1 diabetes mellitus in southeastern of Iran
(Kerman province): a case-control study

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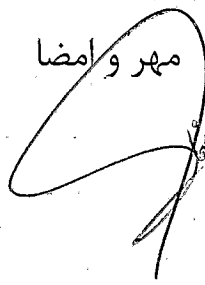
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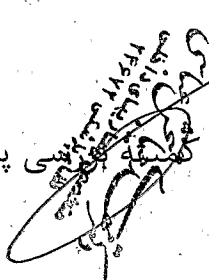
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تذکر:

این فرم می بایست با توجه به نمرات دفاع تکمیل و پس از تائید توسط استاد یا اساتید راهنما و دبیر کمیته پایان نامه ها به تعداد نسخه های پایان نامه تکثیر و در کلیه پایان نامه ها در زمان صحافی درج گردد.

*Prevalence of atopic
dermatitis in children with
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southeastern of Iran (Kerman
Province): a Case- control
study*

With special thanks to:

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No word in the world to show our extreme thanks to the ones
we awe.

The ones who make our dreams come true.

The Lights of our way of success, in this work and in the
most important work of us: our life The First teachers of our
lives: our parents and our everlasting friends:

Our Sisters

Thank you for your being with us

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Abstract:

BACKGROUND: Atopic diseases, including asthma, eczema, and allergic rhinitis, are characterized by a chronic inflammatory reaction mediated by T helper 2 (Th2) cells, while type 1 diabetes mellitus (T1D) is mediated by T helper 1 (Th1) cells. **OBJECTIVE:** The aim of this study was to compare the prevalence of atopic dermatitis between children with T1D and age- matched controls. **METHODS:** We conducted a case- control study enrolling 150 cases with T1D between 2-20 years from pediatric endocrine out patient and 450 controls randomly selected from the general population matched on sex and age. The diagnosis of atopic dermatitis was determined for patients and controls by the Hanifin and Rajka's diagnostic criteria **RESULTS:** From 150

cases, 75 (50%) were male and 75 (50%) were female, with the age between 2 and 20, and among the 450 controls, 228 were male (50.66%) and 222 were female (49.33%) the age was as the case. Dermatitis past or present, was identified in 1.3 percent of cases and 3.1 percent of controls, a difference was not statistically significant ($P > 0.05$) CONCLUSIONS:

In our study, the incidence of dermatitis among patients with T1D was 1.3 percent and 3.1 percent in control group, but it was not statistically significant, may be due to difference between races and geographic areas and lack of support for an inverse relationship between the Th2- mediated atopy and th1- mediated autoimmune disorder. More studies are needed to show the difference in serum IgE and cytokine profiles among patients.

Introduction:

Atopic dermatitis (AD) is an itchy, chronic or chronically relapsing, inflammatory skin condition.

The age of onset is between 2 and 6 months in the majority of cases, but it may start at any age, even before the age of 2 months in some cases. The clinical features include: itching, macular erythema, papules or papulovesicles, Eczematous areas with crusting, Lichenification and excoriation, Dryness of the skin, secondary infection [10].

About $\frac{2}{3}$ of patients with AD have a Th2 (T-helper2) immune reactivity pattern [1]. AD is a common disease. The consequence of the rising prevalence of AD is a heavy

burden on medical Services and budgets [10]. The prevalence of AD in Iran is about 2 percent [3].

Type 1 diabetes mellitus (T1D) develops as a result of the synergistic effects of genetic, environmental and immunologic factors that ultimately destroy the pancreatic beta cells. T1D results from autoimmune beta cell destruction, which leads to insuline deficiency. Criteria for the diagnosis of DM are:

1) symptoms of diabetes plus random blood glucose concentration ≥ 11.1 mmol/L (200mg / dl) or 2) fasting plasma glucose ≥ 7.0 mmol/L (126mg / dl) or 3) Two- hour plasma glucose ≥ 11.1 mmol/L (200mg / dl) during an oral glucose tolerance test [9]

It seems that T1D has a Th1 (T- helper 1) immune reactivity pattern. There is often a reciprocal relationship between Th1 immune responses , which suggests that AD (Th2 phenotype) and T1D (Th1 Phenotype) are unlikely to coexist in the same individual [10].

Few studies have investigate the association between T1D and AD and the results are controversy between different studies.

The study carried out by Rosen baur and collagues in Germany 2003 indicates that atopic eczema in early childhood could be protective against T1D[6], however another study carried out in Netherlands (2002) by Meerwaldt and collagues shows the lower prevalence of asthma, hay fever and eczema symptoms in DM patients

compared with age- matched controls, although not statistically significant, is consistent with the Th1/Th2 concept [4]. The aim of our study is to determine the association between these two diseases, in our city, because such studies were not conducted in this region and if we can Found an association, further studies are needed to determine the pathogenesis.

Methods

We conducted a case- control study enrolling 150 cases with T1D between 2-20 years from pediatric endocrine outpatient and 450 controls randomly selected from the general population matched on sex and age. The diagnosis of AD was determined for patients and controls by the Hanifin and Rajka's diagnostic criteria [10]. Which is the most suitable one for determining this disease in population based studies. To compare the Frequency of categorical variables, chi square test was used and using multivariate logistic regression, the association between diabetes and AD was analyzed.

Results:

From 150 cases, 75 (50%) were male and 75 (50%) were female, the mean age of cases was 9.46 with a range between 2 and 20 (SD= 3.38) , and among the 450 controls, 228 were male (50. 66%) and 222 were female (49. 33%), with a mean of 9.55 (SD = 3.74).

Dermatitis past or present, was identified in 1.3 percent of cases and 3.1 percent of controls (Fig1), a difference was not statistically significant ($p > 0.05$) (Fig3). The relative frequency of dermatitis was 3.7 percent among women and 1.7 percent among men ($p > 0.05$) (Fig2).

Figure 1:

The relative frequency of dermatitis in cases and controls

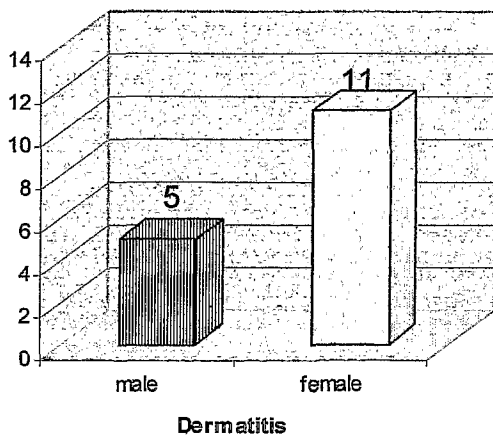
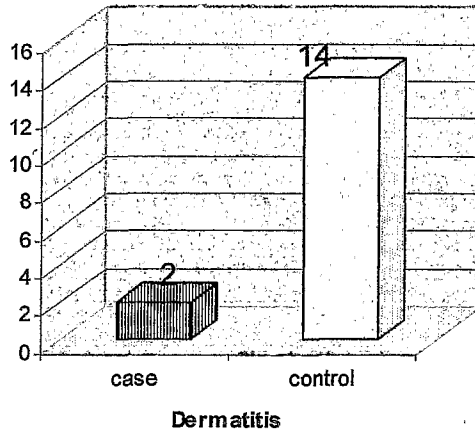


Figure 2: Sex distribution:

The relative frequency of dermatitis in male and female

Table: The association between T1D and AD by multivariate logistic regression

Variable	Total	dermatitis		Adjusted odds ration	Confidence interval 95%	Pvalue
		Yes	No			
age		8.4 ± 4.6	9.6 ± 3.6	0.91	0.80 – 1.04	0.177
Gender						
Female	297	11 (3.7)	286 (96.3)	-	0.14 – 1.28	1.129
male	303	5 (1.1)	298 (98.3)	0/43		
diabetes						
Yes	150	2 (1.3)	148 (98.1)	-	0.10 – 2.1	0.336
No	450	14 (3.1)	436 (96.9)	0/47		

Conclusion:

Atopic patients are Known to have hyper- reactivity of the Th2 immune mechanism [10]. Immune disregulation is an important factor in the creation of this condition.

Th1 and Th2 cells have been found to be mutually antagonistic leading to either Th1 or Th2 dominated responses upon immunization [10].

According to the results of a Danish study conducted by Anne and, collogues the incidence of AD up to age 15 is 13.1 percent among children with T1D and 19.8 percent in non diabetic children ($p < 0.001$) [1]. The prevalence of AD in Iran is about 2 percent [3], which is similar to our study (3.1 percent). According to the study carried out in Tehran city in Iran, There was a lower frequency of AD in diseases

of Th1 although it was not statistically significant due to small sample size [12]. A study by cakir et al supports the Th1/Th2 model. The prevalence of allergic disease and atopy is decreased in Th1 mediated autoimmune disease, T1D, and conversely is increased in insufficient Th1 response. [13].

In a study by sheikh et al, there was no evidence of an inverse relationship between atopy and patient reports of physician- diagnosed common autoimmune disorders in the adult American population. Contrary to our initial hypothesis, reports of physician- diagnosed common allergic disorders are positively associated with reports of physician – diagnosed autoimmune disorders, with this possibly being caused by ascertainment bias. These findings suggest that the Th1/Th2 paradigm might be an oversimplification [14].

that the Th1/Th2 paradigm might be an oversimplification [14].

Another study carried out by Simpson et al shows that Th1 and Th2 mediated diseases are significantly associated in a large general practice population. This finding supports the proposal that autoimmune and atopic diseases share risk factors that increase the propensity of the immune system to generate both Th1 and Th2 mediated inappropriate responses to non-pathological antigens [15].

In our study, the incidence of dermatitis among patients with T1D was 1.3 percent and 3.1 percent in control group, but it was not statistically significant ($p > 0.05$), may be due to difference between races and geographic areas and lack of

support for an inverse relationship between Th2 mediated atopy and Th1- mediated autoimmune disorders.

More studies are needed to show the differences in serum IgE and cytokine profiles among patients.