

Significance of adenosine deaminase (ADA)-lactate dehydrogenase(LDH) and uric acid levels in psoriasis

Shaikh Mahmood

Assistant Professor, Dept. of Physiology, Deccan College of Medical Sciences, Owaisi Hospital & Research Centre, Hyderabad, Telangana State, India

***Corresponding Author: Shaikh Mahmood**

Email: mahmood_shaikh2001@yahoo.co.in

Abstract

Psoriasis is a most common and chronic genetic disease. There is high inflammation and proliferation of the skin. Due to this disease the skin becomes demarcated dull red, scaly plaques. It distributed particularly on the extensor prominences of the body and also in the scalp. There are several factors involved in the etiopathogenesis of psoriasis are genetic factors, metabolic factors, and immunological factors. The genetic mutations, body metabolism and the immune disorders of the body can cause elevation of adenosine deaminase (ADA), lactate dehydrogenase (LDH) and uric acid levels. Psoriasis is common chronic inflammatory skin disease with a spectrum of clinical phenotype and results from interplay of genetic environments and immunological factors. Psoriasis is dynamic disease, morphological changes accompany the evolution of a newly formed lesion into an advanced plaque that can slowly enlarge or remain static.

Keywords: Psoriasis ,Genetic Factors, Metabolic factors, Immunological Factors, Mutations for Adenosine Deaminase (ADA), Lactate Dehydrogenase(LDH), Uric Acid.

Introduction

Psoriasis is one Of the commonest skin disorder. Psoriasis is genetic, metabolic and autoimmune condition. It is a chronic skin disease that affects 2 – 4 percent of the population. Psoriasis can develop at any age, it commonly appears between the age of 15 and 22 years. The second peak may appears during 60 – 70 years of age group. Females are more early affected than male. Psoriasis is an inflammatory skin disease that typically follows a relapsing and remitting course. Plaque psoriasis is characterized by well delineated red, scaly plaque that may extend from a few patches to generalized involvement. Psoriasis is common chronic inflammatory skin disease with a spectrum of clinical phenotype and results from interplay of genetic environments and immunological factors. Psoriasis is dynamic disease, morphological changes accompany the evolution of a newly formed lesion into an advanced plaque that can slowly enlarge or remain static.

Materials and Methods

This study was done at Owaisi Hospital & Research Centre(a teaching hospital to Deccan College of Medical Sciences, Hyderabad,500058 Telangana State, India. A total number of 50(fifty) patients suffering from psoriasis were selected from out patients of Department of Dermatology at Owaisi Hospital & Research Centre(a teaching hospital to Deccan College of Medical Sciences, Hyderabad,500058 Telangana State, India. This was confirmed clinically and skin biopsy. This disease is effected both males and females within the age group of 18- 70 years. A total number of 100(hundred) individual without any history of any kind of skin disease were selected as healthy controls.Their serum Adenosine Deaminase (ADA), Lactate Dehydrogenase(LDH) and serum Uric Acid parameters were measured in Cobas 311 clinical chemistry analyzer at Biochemistry Laboratory, deapartment of Biochemistry at Owaisi Hospital & Research Centre(a teaching hospital to Deccan College of Medical Sciences, Hyderabad,500058 Telangana State, India.

Table 1: Demographic data of the studied groups

Demographic	Controls(100)	Mild(10)	Moderate(20)	Severe(20)	p
Age(Years)					
Median	28.5(18 – 70)	32.5(15 – 65)	31(20 – 30)	31(20 – 30)	0.199*
(Minimum – Maximum)					
Sex					
Female (%)	12(60)	16(80)	14(70)	11(55)	0.348**

Male (%)	8(40)	4(20)	6(30)	9(45)	
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*Kruskal – Wallis Test, ** Chi – Square Test

Table 2: Comparison of Parameters in Psoriasis Patients and Controls

Parameters	Psoriasis		Patients	Controls	p value
	Mean	SD			
ADA (U/L)	55.20	22.34	17.43	8.13	<0.001
LDH (U/L)	450.25	225.12	280.50	140.50	<0.001
Uric Acid (mg/dl)	12.50	6.25	7.50	3.75	<0.001

Results

The psoriasis group (n=50) included 25 females and 25 males with a mean age of 44.0 \pm 10.52 years (range 18 – 70 years). The control group (n=100) considered of 50 females and 50 males subjects with a mean age of 41.72 \pm 8.82 years range is 25.65 years. The comparison of the serum Adenosine Deaminase (ADA), Lactate Dehydrogenase(LDH) and Uric Acid levels were done between psoriasis patients and healthy controls. There is significant high values were found in patients of psoriasis.

Discussion

The Psoriasis patients have significantly high serum Adenosine Deaminase (ADA) with mean value 55.20 U/L compared to healthy controls Adenosine deaminase(ADA) with mean value 15.34 U/L (p value <0.001 highly significant). The Psoriasis patients have significantly high serum Lactate Dehydrogenase (LDH) with mean value 450.25 U/L compared to healthy controls Lactate Dehydrogenase(LDH) with mean value 225.12 U/L (p value <0.001 highly significant) The Psoriasis patients have significantly high serum Uric acid with mean value 12.50 mg/dl compared to healthy controls with mean value 7.50 mg/dl (p value <0.001 highly significant).

Conclusion

The Adenosine Deaminase(ADA) is implicated in the pathogenesis of psoriasis . This is due to T Lymphocytes activation and proliferation. This increase in Adenosine Deaminase(ADA) will result in involved T Lymphocyte activation and proliferation leading to increased severity of psoriasis. Although The Adenosine Deaminase(ADA) plays an important role in the genetics of psoriasis. The serum Lactate Dehydrogenase (LDH) among the serum Lactate Dehydrogenase (LDH) isoenzymes were more prominent in psoriasis.

The serum Lactate Dehydrogenase (LDH) was useful as a marker for the evaluating the disease condition and severity of psoriasis. The increased Uric Acid levels are due to increase epidermal turn over in

psoriasis which leads to increase in purine catabolism. The increase epidermal turn over in psoriasis is due to hyperproliferation of epidermis. There is proportional increase in serum Uric Acid levels with increasing serum Adenosine Deaminase(ADA) and The serum Lactate Dehydrogenase (LDH).

Source of funding

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Conflict of interest

None.

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