

Estimation of Serum Granulysin in Vitiligo patients

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Abstract

Background: Vitiligo is a chronic immune-mediated inflammatory skin disease, it is a disorder of both the innate and adaptive immune system. Objectives: The aim of this work was to evaluate serum level of granulysin in vitiligo patients. Methods: This case control study included 30 patients suffering from vitiligo. In addition, 20 apparently healthy individuals. Measurement of serum granulysin using enzyme-linked immunosorbent assay was performed in all subjects. Results: When compared to the control group, the vitiligo group had significantly higher serum granulysin levels ($P < 0.02$). Conclusions: Granulysin levels in the blood may contribute to the pathogenesis of vitiligo.

Keywords: Serum, Granulysin in Vitiligo, patients.

1. Introduction

Vitiligo is an acquired loss of pigmentation following destruction of epidermal melanocytes [1], which leads to appearance of milky white macules and patches that are seen clinically [2].

Granulysin is a substance released by cytotoxic T cells (CD8) and natural killer cells (NK cell) [3]. Granulysin is able to induce apoptosis in target cells. Granulysin is a cytotoxic and proinflammatory molecule first identified by subtractive hybridization during a search for genes expressed by human cytotoxic T lymphocytes 3-5 days after their activation. Granulysin is an important mediator of damage in a variety of skin diseases. In this work, we aimed at evaluation of serum level of granulysin in vitiligo patients and to relate it with different studied clinical parameters.

2. Subjects and Methods:

Study population

This case control study included 30 patients suffering from vitiligo (Group A). In addition, 20 apparently healthy individuals of matched age and sex were chosen as a control group (Group B). All patients were recruited from the outpatient clinic of Dermatology and Andrology Department of Benha University Hospitals.

The study was approved by the ethics committee on research involving human subjects of Benha faculty of Medicine. An informed consent was obtained from each individual before being enrolled in the study.

All participants were subjected to complete history taking and complete clinical and dermatological examination to determine the extent distribution and clinical types of the vitiligo.

Laboratory investigations:

Blood samples were collected from every studied subject by clean venipuncture on plain tube for serum separation. The separated serum samples were kept frozen at minus 20 until they were tested by ELISA for determination of granulysin serum level.

Statistical analysis

Statistical analysis was done by SPSS v25 (IBM Inc., Chicago, IL, USA). Quantitative variables were presented as mean and standard deviation (SD) and were compared by paired Student's t-test for the same group.

3. Results

Vitiligo group showed significantly higher level of serum granulysin when compared to control group ($p < 0.02$). (Table 1)

Table (1) Comparison of serum granulysin among cases and control groups.

Variable	Control	Vitiligo	P
	N=20	N=30	
	Median	Median	
Serum granulysin level	23.9	26.4	0.02

Man Whitney test was used for comparison of numerical parameters.

4. Discussion

Vitiligo, a chronic, acquired pigmentary skin disorder, that affects 0.1–2% of the world population with no sexual or racial preference [6].

Granulysin is a cytolytic protein expressed by activated CTLs. Serum concentration of granulysin reliably reflects the activity of cell-mediated cytotoxic immunity. Accordingly, serum granulysin levels were high in patients with immune diseases such as alopecia areata [7].

In the current study we found that vitiligo group showed significantly higher level of serum granulysin when compared to control group.

AE.Hogg [8] mentioned that IL-15 and IL-21 were found to induce granulysin expression by human peripheral blood CTLs. Also, IL-15 was detected to be high in serum of vitiligo patients and plays a significant role in vitiligo etiopathogenesis as IL-15 is important for maintenance of melanocyte specific CD8+ in vitiligo lesional skin [16].

In our study we found that serum granulysin level showed no significant correlation with age of onset, or duration ($p > 0.05$ for each).

Vicic et al. [9] investigated the expression of granulysin in psoriasis and showed that higher frequency of granulysin levels were significantly higher in psoriatic blood and skin compared with controls. Postulating a role of granulysin in psoriasis pathogenesis and may illustrate the triggering effect of skin infection in psoriasis.

He et al. [10] concluded that recombinant attenuated salmonella with active peptide gene of granulysin show a certain curative effect on melanoma in mice.

In conclusion, serum granulysin level was significantly positively correlated with activity of vitiligo and VASI score. No significant associations were found regarding granulysin level according to course and types of vitiligo.

5. Conclusions

From the results of the present study, it was revealed that serum level of granulysin might play a role in vitiligo.

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