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Improving Treatment Outcome of Pemphigus Vulgaris on Vietnamese Patients by Using Desmoglein Elisa Test

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Abstract

BACKGROUND: Pemphigus Vulgaris (PV) is a chronic disease, is characterized by the presence of flacid bullous in skin and mucosa. There are 2 main autoantibodies against desmoglein3 (Dsg3) and desmoglein1 (Dsg1).

AIM: The aims of this study were to evaluate the before and after treatment outcome with corticosteroid, using Desmoglein ELISA test.

METHOD: Forty patients with Pemphigus include 36 PV and 4 PF (28 women, 12 women) were enrolled. The titers of Dsg in pemphigus patients by using ELISA test were done before and 1-month treatment

RESULTS: Both anti-Dsg1 and anti-Dsg3 levels were significantly reduced after treatment ($P < 0.05$). The severity of skin lesions was correlated with anti-Dsg1 antibody level and the severity of oral lesions was significantly correlated with anti-Dsg 3 antibody levels ($p < 0.05$)

CONCLUSION: It is recommended that we can predict and improve the outcome of treatment by using Desmoglein ELISA test.

Introduction

Pemphigus is a group acquired autoimmune bullous skin disease, it is characterized by flaccid blisters on the skin and mucous membranes, caused by acantholysis phenomenon (Amagai.M, Ishii.K et al. 1997) [1]. There are 2 main subtypes: Pemphigus vulgaris (P.V) and Pemphigus foliaceus (P.F). The pathogenic of disease is characterized by the presence of autoantibodies against desmosomal glycoproteins, including desmoglein 3 (Dsg3) in P.V and desmoglein 1 (Dsg1) in P.F. ELISA is a quantitative method for measuring antibody levels and a useful test for the diagnosis of pemphigus.

We tried to find the value of Dsg 1,3 by ELISA to predict the severity and monitoring this disease before and after treatment.

Methods

Based on clinical presentation and histopathology, from July 2013 to September 2014, forty pemphigus patients (36 PV, 4 PF) were enrolled in this study, including 28 women and 12 men. Mean age of male was 40.1 ± 9.0 years and of females was

51.3 ± 14.0 years. Dsg ELISA testing was performed on the sera of 40 patients before and after 1-month treatment. Anti-desmoglein autoantibodies were detected by ELISA method (kits from Medical and Biological Laboratories Co Ltd. Nagoya, Japan) with 100-fold serum dilution. The index value of positive reactions was considered greater than 20 U/L.

SPSS 20.0 software was used to analyse the data. Paired t-test was used to determine the difference in the anti-Dsg index values before and after treatment. $P < 0.05$ was considered significant.

Results

Forty patients with pemphigus (12 men, 28 women) were enrolled. The mean ± SD age was 48.0 ± 13.6 years, with a range of 15 to 80 years. The most frequent phenotype was muco-cutaneous in 25/40 (62,5%) cases, mucosal dominant and cutaneous dominant phenotypes were seen in 1/40 (2,5%) and 14/40 (35%) cases, respectively.

Table 1: Distribution of anti-Dsg ELISA

Level	Cutaneous lesions	Dsg 1 positive	Dsg3 positive	Mucosal lesions	Dsg 1 positive	Dsg 3 positive
No lesion	1	0	1	14	13	7
Mild	5	3	4	13	11	11
Moderate	23	20	16	13	10	13
Severe	11	11	10	0	0	0

The changes of the mean anti-Dsg1 and anti-Dsg3 index values (± SD) before and after treatment are shown in Table 2. The decrease in the mean anti-Dsg1 and antiDsg3 index values was statistically significant with a p-value below 0.05.

Table 2: Anti-Dsg ELISA before and after 1- month treatment

Disease	Dsg 1 (U/L)		Dsg 3 (U/L)	
	Before	After	Before	After
PV	81. 5 ± 52.5	67.8 ± 53.4	91.2 ± 54.1	65.6 ± 53.3
PF	138.3 ± 38.3	94.7 ± 40.7	56.6 ± 23.3	28.2 ± 19.1
Total	87.2 ± 53.7	61.5 ± 53.0	87.7 ± 55.1	60.9 ± 53.1
p	< 0.05		< 0.05	

Discussion

There are many documents report about the relationship between desmoglein titer and the severity of pemphigus disease. Amagai et al., (1999) used ELISA test in serum pemphigus patients showed 97.9% of P.F patients were positive with anti-Dsg 1 and 97.5% of P.V patients were positive with anti-Dsg 3 (Lenz, Amagai et al. 1999) [2]. Harman et al (2000) showed that the sensitivity of the ELISA in diagnosing Pemphigus is above 98% and in those patients untreated, the sensitivity was 100% (Harman, Gratian et al. 2000) [3]. Daneshpazhooh et al (2007) found that the rate of positive is 76.1% with anti- Dsg1; with anti- Dsg 3 is 94.5% (Daneshpazhooh, Chams-Davatchi et al. 2007) [4]. In many other studies also showed anti-Dsg has generally higher, ranging from 80 to 100% depending on each author (Anand, Khandpur et al. 2012; Avgerinou, Papafragkaki et al. 2013; Bracke, Speeckaert et al. 2013) [5], [6], [7]. Many studies have shown that this technique is highly sensitive and high specificity and it can evaluate the correlation between antibody concentration and the degree of activity (Marinovic, Fabris et al. 2010; Schmidt, Dähnrich et al. 2010; Anand, Khandpur et al. 2012; Bracke, Speeckaert et al. 2013) [5], [7], [8], [9]. Recently, it using as a marker to diagnosing and monitoring the severity of a disease. It is believed that oral dominant pemphigus is characterized by the presence of anti-Dsg3, and anti-Dsg 1 is in cutaneous dominant (Aoyama, Tsujimura et al. 2000; Harman, Gratian et al. 2000; Abasq, Mouquet et al. 2009; Bracke, Speeckaert et al. 2013) [3], [7], [10], [11]. On the other hand, studies regarding the correlation between the severity of this disease and anti-Dsg levels as well as its value in monitoring the disease are. Our results also showed that anti-Dsg ELISA is a simple method and highly valuable in the diagnosis.

There was a statistically significant correlation was seen between Dsg1 index values and severity of skin involvement and direct statistically significant correlation was seen between Dsg3 index values and the severity of oral involvement. Mortazavi et al (2009) showed that: the degree of skin damages a significant increase with anti-Dsg1 concentrations, and there was a relationship between the level of mucosal lesions with anti-Dsg3 (Mortazavi, Shahdi et al. 2009) [12].

Both anti-Dsg1 and anti-Dsg3 levels were significantly reduced after 1-month treatment ($p < 0.05$). In some studies also concluded that there was significant decrease level of Dsg after treatment. (K.E.Harman, P.T.Seed et al. 2001; Kumar, Arora et al. 2006; Bracke, Speeckaert et al. 2013) [7], [13], [14], [15].

In conclusion, Dsg ELISA is not only a sensitive tool for diagnosis of PV, but also has a predictive means of its severity as well as for monitoring the activity and relapse of disease.

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