

## Serum Level of Podoplanin in Vitiligo

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### Abstract

The natural part of podoplanin is still inadequately comprehended. With respect to critical part of cell-cell connections in supportive of incendiary cytokine creation, a component stayed to be recognized. The aim of the present study was to evaluate serum level of Podoplanin in patients with vitiligo and assessment of its clinical significance. and its role in pathogenesis of vitiligo. The study was conducted on fifty vitiligo patients and thirty age and sex matched healthy volunteers served as controls. All participants were tested for determination of Podoplanin level Higher PDPN was significantly associated with vitiligo patients. PDPN best cut of value for discrimination between cases and controls. Higher PDPN was considered as risk predictor for vitiligo occurrence, as well as for more severe cases.

### 1. Introduction

Vitiligo, is an acquired, idiopathic, long-term skin disease featuring melanocytic destruction and depigmented maculae and/or patches in the skin. The patches of affected skin become white and usually have sharp margins [1].

Podoplanin is a basic film protein made out of 162 amino corrosive buildups . In its structure there is an extracellular area wealthy in O-glycoside type sugar chains [2].

The natural part of podoplanin is still inadequately comprehended. The significant part of podoplanin in the arrangement of a typical lymphatic framework during undeveloped advancement is demonstrated by concentrates with take out mice model lacking articulation of C1galT1 quality just in endothelial and hematopoietic cells. The absence of articulation of this quality encoding center 1  $\beta$ -1,3-galactosyltransferase (antigen T-synthase), answerable for blend of type-1 center O-glycans [6].

The aim of the present study was to evaluate serum level of Podoplanin in patients with vitiligo and assessment of its clinical significance. and its role in pathogenesis of vitiligo.

### 2. Patient and method

The study was conducted as a case control study. The study was conducted on fifty vitiligo patients and thirty age and sex matched healthy volunteers served as controls. All patients were selected from the Outpatient Clinic of Dermatology and Andrology Department in Benha University Hospitals in period between March to October 2019.

Informed consents were obtained from all participants. The study was approved by the ethics committee on research involving human subjects of Benha Faculty of Medicine.

#### 2.1 Inclusion criteria

- Patients with vitiligo including different clinical types.
- Age between 18 and 60 years old.

#### 2.2 Exclusion criteria

- Patients with history of active infection, inflammatory and autoimmune local and systemic diseases such as asthma, rheumatoid arthritis.
- Pregnancy and lactation.
- Patients with history of liver or kidney diseases.

#### 2.3 Methods

**All patients were subjected to the following:**

##### Full history taking

- Personal history: Name, age, sex, occupation, residence, special habits of medical importance and marital status.
- Present history: Onset, course, duration of Vitiligo , relation to diet, relation to stress, relation to sun exposure, previous treatment, history of other skin diseases.
- Family history of Vitiligo and/or autoimmune disease(s).

##### Laboratory investigations

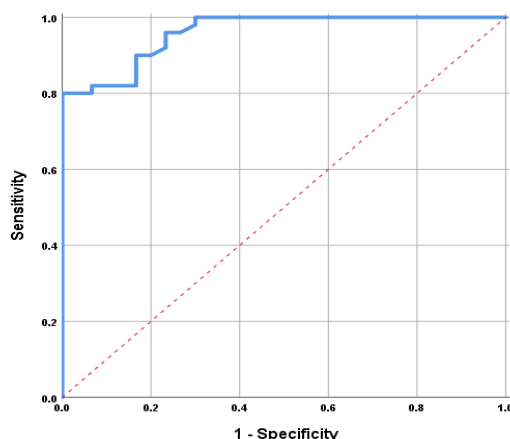
All participants were tested for determination of Podoplanin level.

### 3. Results

The present study included 50 diagnosed patients with vitiligo and 30 healthy control groups. The following table and figure represent the results of the study:

Our results show comparison of age and gender between all studied groups. In addition to 30 healthy control subjects of matched age and gender. No significant differences were found in age and gender between vitiligo and control groups ( $p > 0.04$ ).

Regression analysis was conducted for prediction of higher BSA within vitiligo cases, using age, gender, FH, previous treatment, onset, course, duration, PDPN as covariates. Longer disease duration and higher PDPN were significantly associated with prediction of higher BSA in Univariable analysis. However, taking significant risk factors into multivariable analysis, revealed that higher PDPN was considered as risk predictor for more severe vitiligo cases.



**Fig (1)** ROC curve of PDPN for discrimination between vitiligo and control groups.

**Table (1)** Regression analysis for prediction of severity of vitiligo cases (higher BSA).

	Univariable		Multivariable	
	$\beta$	p	$\beta$	p
Age	0.421	0.104		
Sex	2.450	0.325		
FH	0.374	0.564		
Previous treatment	-4.034	0.123		
Duration	1.051	0.001	0.051	0.243
Age of onset	0.140	0.170		
Course	-5.240	0.163		
PDPN	0.180	<0.001	0.263	<0.001

OR, odds ratio; CI, confidence interval; linear regression test was used.

#### 4. Discussion

Vitiligo is a chronic depigmenting disorder characterized by the absence of functional melanocytes in the skin. The etiology and pathogenesis of such disease are still not completely understood. A strong evidence supports an autoimmune cause, together with an underlying genetic predisposition [7].

In the current study we aimed to evaluate serum level of Podoplanin in patients with vitiligo and assessment of its clinical significance with assessment of its role in pathogenesis of vitiligo. The current study included 50 patients suffering from Vitiligo. In addition, 30 apparently healthy individuals. All included subjected were subjected to complete general and dermatological examination besides measurement of serum level of Podoplanin in patients and control groups by enzyme linked immunosorbent assay (ELISA).

To the best of our knowledge, this is the first study to evaluate serum level of podoplanin in vitiligo patients. Serum PDPN was significantly higher in vitiligo patients when compared to control group ( $p=0.020$ ).

Podoplanin also showed excellent discrimination power between vitiligo and control subjects. PDPN level of 82 ng/ml aid in vitiligo diagnosis with sensitivity 80%, specificity 93.3%, PPV 87.8%, NPV

88.6% and accuracy 88.3%.

Podoplanin was reported to exert proinflammatory functions and correlated with inflammatory diseases. In rheumatoid arthritis (RA), Ekwall et al. [8] recently reported that while PDPN is absent from the synovium of healthy subjects and patients with osteoarthritis, it is highly upregulated in RA patients. Furthermore, expression of PDPN in cultured synoviocytes is increased upon treatment with proinflammatory cytokines as (IL-1 $\beta$ , TNF- $\alpha$ , or TGF- $\beta$ ).

Podoplanin expression was also reported to be enhanced in oral inflammatory condition like sialoadenitis that supported the inflammatory role of PDPN [9]. From the above mentioned studies, proinflammatory role of PDPN can be implicated in the pathogenesis of vitiligo and therefore can be therapeutic target in future researches.

Finally, further research into the role of PDPN in vitiligo and other inflammatory diseases is recommended to reveal the exact mechanism and pathway of PDPN in inflammation.

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