

Immunohistochemical Expression of the Estrogen Receptor in Oral Pemphigus Vulgaris

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ABSTRACT

The current study sought to assess the immunohistochemical expression of estrogen receptors (ER- α) in oral PV biopsies. The study was conducted from May 10, 2020, to February 9, 2021. 44 paraffin embedded oral PV tissue blocks were taken. Each block was sliced with a microtome. Antibodies were applied to each sample using the IHC technique to observe the expression of ER. The first was dependent on the intensity of the stain, and the second on the percentage of cells with positive stain. All results were statistically analyzed using the SPSS application. The Chi-square and Spearman tests were employed. Results: The intensity of ER- α in all silds was studied and found to be negative in 29 cases and mild in 15 cases. According to the percentage of the cells with positive stains, the results were as follows: The 30 cases registered as negative for ER- α , the scoring for 11 cases was weak, and finally 3 cases showed a moderate score. The current study showed that activation of ER-doesn't play a role in the story of PV, but more research was needed to figure out and clarify the role of EH in autoimmune blistering conditions.

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1- INTRODUCTION

Pemphigus vulgaris (PV) is a severe autoimmune disorder that impacts the skin and mucous membranes [1]. The vast majority of cases begin in the oral mucosa [2]. Global incidence is one case appearing in every one million individuals. Most cases develop in women between 40 and 50 years of age [3,4]. The pathogenesis of disease includes the production of autoantibodies against the proteins that tether the epithelial cells to each other, leading to the separation of the cells and blistering formation. This process occurs above the basal layer of the epithelium [5]. The fate of the blisters is to turn into ulcers. The lethality of the disease is due to complications raised by increased infection susceptibility, aches, body fluid loss, and impaired nutrition intake [6]. When a corticosteroid was used, the bad effects of PV were lessened, but the medicine could have been bad for the patients [7]. Estrogen hormone (EH) is one of the sex hormones implicated in many physiological processes. Several studies have highlighted the role of EH in many pathological conditions, such as inflammatory processes, autoimmune diseases, and malignant tumors [8]. Worldwide, the prevalence of autoimmune diseases is higher in women than in men [9]. That emphasizes the role of the EH in developing immune-mediated conditions. Studies have been conducted to establish the role of EH in PV pathogenesis

[10]. The aim of the present work was to evaluate the immunohistochemical (IHC) expression of estrogen receptors alpha (ER- α) in oral PV biopsies.

2- MATERIAL AND METHOD

The study was performed from May 10, 2020, to February 9, 2021, after permission was taken from the ethics committee of Dentistry College/Baghdad University. Forty-four paraffin embedded oral PV tissue blocks were taken from the archives of the lab of oral and maxillofacial pathology/Dentistry College/Baghdad University from 2021 to 2011. Each block was sliced with a microtome to get 4-micron tissue that was then loaded on the charge slide. Antibodies were applied to each slide using the IHC technique to observe the expression of ER in the nucleus of the epithelial cells by two pathologists using a light microscope. Two scoring systems were used to translate the ER expression. The first scoring system depended on the intensity of estrogen receptors, and the scoring was as follows [11]: 0-negative, 1-mild, 2-moderate, and 3-strong. The second scoring system depends on the percentage of the positive cells, which is as follows [12,13]: 0 means negative, 1 means less than 10% of cells have positive nuclear staining, 2 means 10%–50% of cells have positive nuclear staining, and 3 means more than 50% of cells have positive nuclear staining. All results were statistically analyzed using the SPSS application. The Chi-square and Spearman tests were used, and the results were significant when the P value was less than 0.05.

3- RESULTS

All slides were examined to evaluate the intensity of ER- α expression and the percentage of the cells with positive stain. The intensity of ER- α in all slides was studied and found to be negative in 29 cases and mild in 15 cases. There were no cases with moderate or strong stains (Table 1). According to the percentage of the cells with positive stains, the results were as follows: The 30 cases registered as negative for ER- α , the scoring for 11 cases was weak, and finally 3 cases showed a moderate score (Table 2). The intensity and percentage measurements showed that the negative score was statistically higher in the study samples. The correlation between the intensity and the percentage scoring for the oral PV in the present study was significant (Table 3).

Table 1: Evaluation of Estrogen receptor alpha intensity in Pemphigus vulgaris samples

Marker	Intensity score	No.	Percentage	P-value
ER- α	Negative	29	65.9	0.00
	Mild	15	34.1	
	Moderate	0	0	
	Strong	0	0	

P-value > 0.05 is significant by Chi-square test

Table 2: Evaluation of Estrogen receptor alpha percentage in Pemphigus vulgaris samples

Marker	Percentage score	No.	percentage	P-value
ER- α	Negative	30	68.2	0.00
	Mild	11	25.0	
	Moderate	3	6.80	
	Strong	0	0.00	

P-value > 0.05 is significant by Chi-square test

Table 3: the relation between the intensity and percentage for Estrogen receptor alpha in Pemphigus vulgaris samples

	Correlation Coefficient	Sig. (2-tailed)	No.
Intensity of ER- α	0.986	0.000	44
Percentage of ER- α			

Sig. at $P < 0.01$; Testing are based on a Spearman's rho Correlations test.

4- DISCUSSION

Pemphigus vulgaris is an autoimmune condition and most cases are reported in women [14]. Several studies have been conducted to establish the pathogenesis, predisposing factors, and elements that may have an effect on the prognosis in a negative or positive way [15,16]. EH is reported to be involved in many physiological and pathological conditions [17]. Autoimmune conditions and EH show a controversial relationship. On the other hand, previous studies reported that women at postmenopausal age were at risk of developing autoimmune conditions [18]. The EH is documented as an enforcement factor for immune response [19]. The current study sought to assess the expression of ER- α in the samples examined. The majority of cases, nearly 66% had negative expression, while the remainder had mild ER-expression. This contradicted a prior study, which found that half of the samples examined, 39 samples, stained positive for ER- α [20]. Although from different measurement processes, the findings by Lavaee and his colleagues could agree with the present results as they found the estrogen hormone level in the blood of PV patients is lower than healthy patients [21]. Further studies are needed to correlate the clinical finding of PV with ER expression and estrogen hormone level. This study utilized a retrospective design, relying on archived samples from PV patients. Key limitations include the lack of clinical examinations, biochemical analyses, severity assessments, and follow-up data. Studies dependent on the immunohistochemical expression of estrogen receptors were rarely found. Therefore, comparison with the present study is difficult.

5- CONCLUSION

No difference was found between evaluation of the intensity and percentage of ER- α . The current study found that ER- activation does not play a role in the PV story, but more research is needed to establish and clarify the role of EH in autoimmune blistering conditions.

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التعبير الكيميائي المناعي لمستقبلات الإستروجين في داء الفقاع الشائع الفموي

الخلاصة

سعت الدراسة الحالية إلى تقييم التعبير الكيميائي المناعي لمستقبلات الإستروجين ($ER-\alpha$) في خزعات الفم المتعددة لمرضى مصابين بداء الفقاع الشائع الفموي. أجريت الدراسة في الفترة من 10 ايار 2020 إلى 9 شباط 2021. تم أخذ 44 كتلة نسيجية مغلقة بالبارافين من أنسجة الفم لمرضى مصابين بداء الفقاع الشائع الفموي. تم تقطيع كل كتلة باستخدام ميكروتوم. تم تطبيق الأجسام المضادة على كل عينة باستخدام تقنية الكيمياء المناعية النسيجية لمراقبة تعبير مستقبلات الإستروجين. كانت الطريقة الأولى تعتمد على شدة الصبغة، والثانية على نسبة الخلايا ذات الصبغة الإيجابية. تم تحليل جميع النتائج إحصائياً باستخدام تطبيق SPSS. استخدمت اختبارات مربع كاي وسبيرمان. اوضحت النتائج لدراسة شدة $ER-\alpha$ في جميع الشرائح ووجد أنها سلبية في 29 حالة وخفيفة في 15 حالة. وفقاً لنسبة الخلايا ذات الصبغات الإيجابية، كانت النتائج كما يلي: تم تسجيل 30 حالة سلبية لـ $ER-\alpha$ ، وتم تسجيل 11 حالة بتصنيف ضعيف، وأخيراً أظهرت 3 حالات تصنيفاً معتدلاً. أظهرت الدراسة الحالية أن تنشيط $ER-\alpha$ لا يلعب دوراً في قصة الفم الفقاعي، ولكن هناك حاجة إلى المزيد من الأبحاث لفهم وتوضيح دور $ER-\alpha$ في حالات داء الفقاع الشائع.