DOI: https://doi.org/10.53555/nnmhs.v9i4.1643 Publication URL: https://nnpub.org/index.php/MHS/article/view/1643

ASSOCIATION BETWEEN PEMPHIGUS AND PSORIASIS: A SYSTEMATIC REVIEW

Yeyen Jani Sari Dabukke*

**Faculty of Medicine, University of Methodist, Indonesia*

Corresponding Author:
newyeyendabukke@gmail.com

Abstract

Pemphigus vulgaris, foliaceus, paraneoplastic, IgA, and herpetiformis are autoimmune bullous diseases. Epidemiologically heterogeneous symptoms characterize pemphigus. The first non-HLA genes related with PV have been found, and our knowledge of pemphigus frequency, which varies widely between populations, has increased. Pemphigus causes blisters and lesions. This polymorphism is also linked to many comorbidities, including autoimmune illnesses, hematological malignancies, and psoriasis. Psoriasis is a T cell-mediated papulosquamous skin illness that results from immune system dysregulation. It is characterized by severe inflammatory and hyperproliferative alterations in the affected areas of the skin. Psoriasis has traditionally been linked to bullous pemphigoid, which is a subepidermal autoimmune bullous illness. Pemphigus is a group of IgG-mediated blistering diseases that affect the skin and mucous membranes' squamous epithelium. Pemphigus causes painful intraepidermal blisters and erosions. Pemphigus disease is chronic and autoimmune, which has increased research into its link with other autoimmune and autoinflammatory disorders. Pemphigus and psoriasis have been reported to co-occur, however their relationship is uncertain. Yet, there are also additional biological plausible reasons for this link. The "epitope spreading phenomena" may have caused the disease. This occurs when a primary autoimmune or inflammatory response damages tissue. Hence, the immune system can now detect some protein components, triggering a subsequent autoimmune reaction. Psoriasis patients are three times more likely to develop pemphigus. Psoriasis doctors should know about this epidemiological trend.

Keyword: *Autoimmune disease; Blistering; Pemphigus; Psoriasis; Skin*

INTRODUCTION

Pemphigus is a blistering disease that affects the skin as well as the mucous membranes. It is an uncommon autoimmune disorder that can be persistent. It is caused by IgG autoantibodies directed against desmoglein 3, which causes pemphigus vulgaris, as well as desmoglein 1, which causes pemphigus foliaceus.[1] Both desmoglein 3 and desmoglein 1 are transmembrane desmosomal glycoproteins that function as cadherin-type cell-cell adhesion molecules. These autoantibodies prevent desmogleins from performing their adhesive role, which causes keratinocytes to lose their ability to adhere to one another. This results in the production of vesicles and erosions via a process known as acantholysis.[2,3]

Pemphigus is a collection of autoimmune bullous illnesses that includes pemphigus vulgaris, pemphigus foliaceus, paraneoplastic pemphigus, IgA pemphigus, and pemphigus herpetiformis. Pemphigus is characterized by an epidemiologically diverse spectrum of manifestations. Our knowledge about the frequency of pemphigus, which is highly variable between different populations, has significantly expanded in recent times, and the first non-HLA genes associated with PV have been identified. Pemphigus is a skin condition that can cause blisters and lesions to form on the skin. In addition, this variation has been associated with a wide range of comorbidities, such as various autoimmune disorders, hematological malignancies, and psoriasis.[4,5]

Psoriasis is a T cell-mediated papulosquamous skin illness that results from immune system dysregulation. It is characterized by severe inflammatory and hyperproliferative alterations in the affected areas of the skin. Psoriasis has traditionally been linked to bullous pemphigoid, which is a subepidermal autoimmune bullous illness.[2,6] Nevertheless, the link between the two conditions is not as well established and is based primarily on case reports and a few observational studies that were conducted more recently. In the past, there has not been a single meta-analysis performed to summarize this association.[7,8]

The purpose of this essay is to demonstrate that pemphigus and psoriasis are related to one another.

METHODS

The requirements for the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) 2020 project were met for data collection, processing, and reporting. Several things went into the decision to approve new rules. This review of the literature looks at how pemphigus and psoriasis are related. The main results of the study are that all written materials must be in English and deal with the link between pemphigus and psoriasis. This systematic review looked at scholarly articles that came out after 2015 and met the study's criteria for inclusion. Editorials, contributions without a DOI, reviews of books that have already been published, and duplicate journal articles that are too long will be taken out of the anthology.

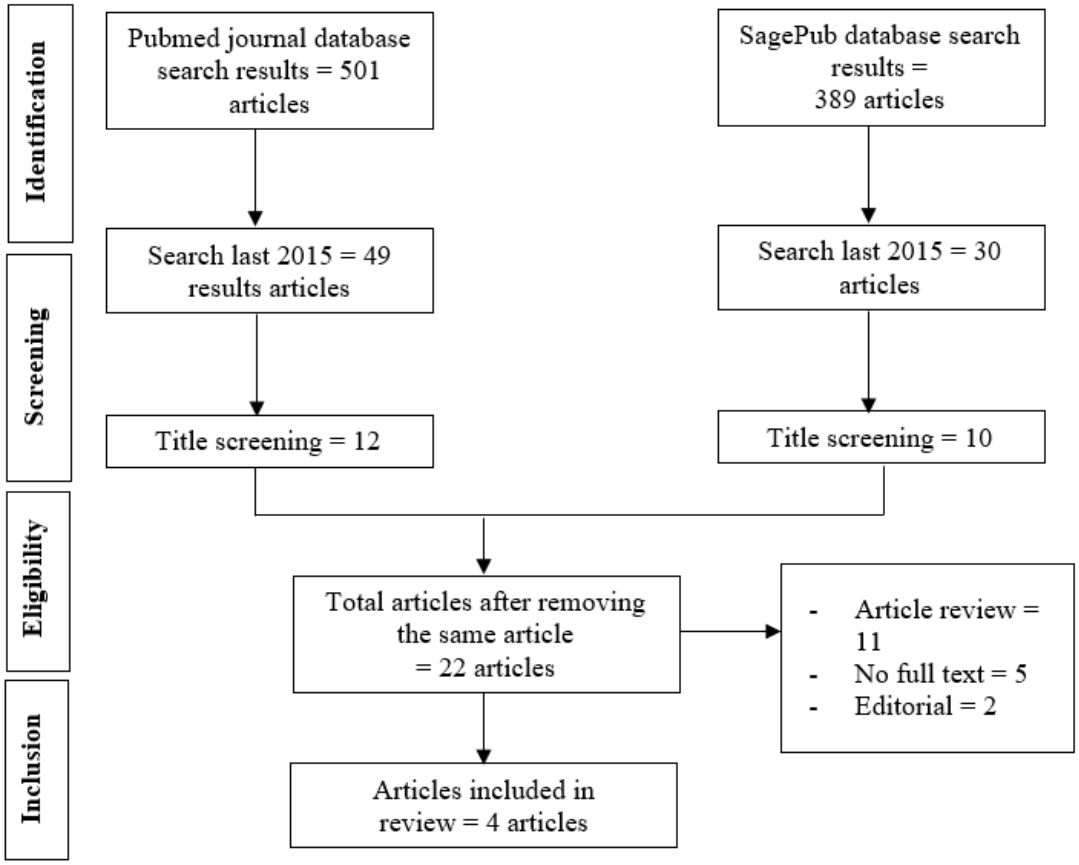

Figure 1. Article search flowchart

The search for studies to be included in the systematic review was carried out from March, 26th 2023 using the PubMed and SagePub databases by inputting the words: “association”; “pemphigus”; and “psoriasis”. Where *("associate"[All Fields] OR "associated"[All Fields] OR "associates"[All Fields] OR "associating"[All Fields] OR "association"[MeSH Terms] OR "association"[All Fields] OR "associations"[All Fields]) AND ("pemphigus"[MeSH Terms] OR "pemphigus"[All Fields]) AND ("psoriasis"[MeSH Terms] OR "psoriasis"[All Fields] OR "psoriases"[All Fields] OR "psoriasi"[All Fields])* is used as search keywords.

Abstracts and titles dictated the admissibility of studies. Thus, they rely on historical writings. Due to the constancy of study outcomes, unpublished publications in English are required. Only studies meeting inclusion criteria were included in the systematic review. This filters the search results to only match. The evaluation is outlined below. The research investigated authors, publication dates, geographic areas, activities, and factors. Following the saving of search results by EndNote, the database eliminated duplicate articles.

Two individuals examined the titles and abstracts. Each contributor evaluated the article's title and abstract before deciding which to analyze. Any papers that match the review requirements will undergo a comprehensive analysis. After our investigation, we will examine pertinent scholarly articles. This rule provides document assessment categories. Identifying objects for inspection in the future should be made easier. Why was specific study included in the literature review?

RESULT

A large-scale population-based longitudinal retrospective cohort study was conducted to determine the hazard ratio (HR) of pemphigus in 68,836 patients with psoriasis in comparison to 68,836 age-, sex-, and ethnicity-matched controls. The incidence of pemphigus was 0.14 (95% confidence interval [CI] = 0.10-0.19) per 1,000 person-years among psoriatic patients and 0.04 (95% CI: 0.02-0.07) per 1,000 person-years among controls. Individuals with psoriasis had a greater than threefold increased risk of developing pemphigus (HR = 3.25; 95% CI = 1.70-6.20). After adjusting for multiple confounding variables, the increased risk remained statistically significant (adjusted HR = 3.19; 95% CI = 1.57-6.10).[9]

Kridin, et al (2017)[10] conducted a population based cross-sectional study, utilizing the database of Clalit Health Services, which is the largest managed care organization in Israel. They showed pemphigus exhibited a significant independent connection with psoriasis in multivariable logistic regression analysis (OR = 2.6; 95% CI = 1.9-3.6; P <0.001). Uncertain is the pathophysiological basis for the relationship between pemphigus and psoriasis.

Table 1. The litelature include in this study

Author	Origin	Method	Sample	Conclusion
Kridin, 2020[9]	Israel	Cross sectional study	68,836 patients with psoriasis	Psoriasis is linked to a significantly increased likelihood of developing pemphigus. To further investigate the immunoserological profile of patients who have been given a dual diagnosis, more research is required.
Kridin, 2017[10]	Israel	Cross sectional study	1,985 pemphigus patients	Psoriasis is linked to the skin condition known as pemphigus.
Chiu, 2017[11]	Taiwan	Case-control study	1,998 patients with pemphigus and 7,992 control subjects	These findings lend credence to the hypothesis that pemphigus is linked to a number of autoimmune conditions, such as Sjogren's syndrome, systemic lupus erythematosus, and alopecia areata. In addition, we describe the unexpected discovery that patients who have pemphigus have an increased risk of developing psoriasis in their lifetime.
Phan, 2019[12]	Australia	Case-control study	4,035 bullous pemphigoid cases and 19,215 control cases	This meta-analysis of case-control studies that have been conducted to date demonstrates that there is a statistically significant connection between BP and psoriasis. They also demonstrated that, in contrast to the majority of autoimmune diseases, which are more likely to affect women, the coexistence of BP and psoriasis appears to be more likely to affect male patients.

Chiu, et al (2017)[11] conducted a study and they showed that patients with pemphigus were significantly more likely to develop Sjogren's syndrome (odds ratio [OR] = 15.0; 95% confidence interval [CI] = 3.16-71.50), psoriasis (OR = 7.18; 95% CI = 5.55-9.29), systemic lupus erythematosus (OR = 4.46; 95% CI = 1.86-10.6), and alopecia areata (OR = 2.68; 95% CI = 1.26-5.67). The link between pemphigus and Sjogren's disease or alopecia areata was significant only in female patients, according to gender-specific studies.

Phan, et al (2019) conducted study with 4,035 bullous pemphigoid cases and 19,215 control cases. The number of people with psoriasis was much higher in BP than in controls (2.6% vs. 1.1%, OR = 2.5, 95% CI = 1.4–4.6). Analysis of subgroups showed that this link was still important for both men (3.0% vs. 1.3%, OR = 2.4, 95% CI = 1.6–3.6) and women (1.9% vs. 0.7%, OR = 2.9, 95% CI = 1.4–5.9). A lot more cases were found in men than in women (3.0% vs. 1.9%, OR = 1.75, 95% CI = 1.1–2.7). This analysis of the case-control studies that have been done so far shows that there is a strong link between BP and psoriasis.[12]

DISCUSSION

Pemphigus is a collection of autoimmune blistering illnesses that are mediated by IgG and that target the squamous epithelium of the skin and mucous membranes. Pemphigus appears as painful intraepidermal blisters and erosions on the skin. Pemphigus disease are characterized by their autoimmune genesis and their chronic nature, which has led to an increase in research into their relationship with other autoimmune and autoinflammatory conditions. Although several case reports mention the co-occurrence of pemphigus and psoriasis, it is still unknown if the two conditions are associated with one another or not.[13]

On the other hand, a number of other explanations of the biological plausibility that underlies this link have been been forward. It is possible that the "epitope spreading phenomenon" was responsible for the pathophysiology of the condition. This is a process in which a primary autoimmune or inflammatory process may be responsible for causing damage to the tissue. As a result, the immune system is now able to recognize particular protein components that it had previously been unable to recognize, which results in the activation of a secondary autoimmune reaction.[14]

There is a connection between pemphigus and psoriasis, although the pathophysiologic mechanisms that underlie this connection are not well understood. Nonetheless, the link might only be partially explicable by means of a few different mechanisms. Pemphigus and psoriasis are both related with HLA DRB1 alleles, which suggests that a fundamental genetic predisposition may be present for both conditions. Alterations could be made to the plausible mechanisms relating these two states.[15]

T-lymphocyte activity in psoriasis, which is associated with increasing levels of autoantibody synthesis and epitope spreading as a result of chronic autoinflammation or autoimmune derangements.[16,17] Moreover, plasminogen activity in pemphigus results in acantholysis, and higher levels of plasminogen activation are seen in psoriatic lesions, which serves as another plausible relationship. It is not possible to rule out the possibility of other external and endogenous causes of both disorders (such as infection or trauma).[18]

CONCLUSION

Individuals who suffer from psoriasis have an increased risk of pemphigus that is more than three times higher than average over the course of their condition. It is important for doctors who treat patients with psoriasis to be aware of this epidemiological aspect of the disease.

REFERENCE

[1]. Bolognia J, Jorrizo J, Schaffer J. Dermatology. 3rd ed. New York: Elsevier; 2013.
[2]. Hammers CM, Stanley JR. Mechanisms of disease: pemphigus and bullous pemphigoid. Annu Rev Pathol Mech Dis. 2016;11:175–97.
[3]. Stanley JR, Amagai M. Pemphigus, bullous impetigo, and the staphylococcal scalded-skin syndrome. N Engl J Med. 2006;355(17):1800–10.
[4]. Fitzpatrick TB, Wolff K, Goldsmith LA, Katz SI, Gilchrest BA, Paller AS, et al. Fitzpatrick's dermatology in general medicine [electronic resource]. McGrawHills AccessMedicine Clinical library. 2008.
[5]. Kridin K, Schmidt E. Epidemiology of Pemphigus. JID Innov Ski Sci from Mol to Popul Heal. 2021 Mar;1(1):100004.
[6]. Henseler T, Christophers E. Disease concomitance in psoriasis. J Am Acad Dermatol. 1995;32(6):982–6.
[7]. Gudjonsson JE, Johnston A, Sigmundsdottir H, Valdimarsson H. Immunopathogenic mechanisms in psoriasis. Clin Exp Immunol. 2004;135(1):1–8.
[8]. Weigle N, McBane S. Psoriasis. Am Fam Physician. 2013;87(9):626.
[9]. Kridin K, Ludwig RJ, Damiani G, Cohen AD. Increased Risk of Pemphigus among Patients with Psoriasis: A Large-scale Cohort Study. Acta Derm Venereol. 2020 Oct;100(17):adv00293.
[10]. Kridin K, Zelber-Sagi S, Comaneshter D, Cohen AD. Association between pemphigus and psoriasis: A population-based large-scale study. Vol. 77, Journal of the American Academy of Dermatology. United States; 2017. p. 1174–5.
[11]. Chiu Y-W, Chen Y-D, Hua T-C, Wu C-H, Liu H-N, Chang Y-T. Comorbid autoimmune diseases in patients with pemphigus: a nationwide case-control study in Taiwan. Eur J Dermatol. 2017 Aug;27(4):375–81.
[12]. Phan K, Goyal S, Murrell DF. Association between bullous pemphigoid and psoriasis: Systematic review and meta-analysis of case-control studies. Australas J Dermatol [Internet]. 2019 Feb 1;60(1):23–8. Available from: https://doi.org/10.1111/ajd.12899
[13]. Kwon HH, Kwon IH, Chung JH, Youn J Il. Pemphigus foliaceus associated with psoriasis during the course of narrow-band UVB therapy: a simple coincidence? Ann Dermatol. 2011;23(Suppl 3):S281–4.

[14]. Chan LS, Vanderlugt CJ, Hashimoto T, Nishikawa T, Zone JJ, Black MM, et al. Epitope spreading: lessons from autoimmune skin diseases. J Invest Dermatol. 1998;110(2):103–9.
[15]. Pavoni DP, Roxo V, Marquart Filho A, Petzl-Erler ML. Dissecting the associations of endemic pemphigus foliaceus (Fogo Selvagem) with HLA-DRB1 alleles and genotypes. Genes Immun. 2003;4(2):110–6.
[16]. Panzarella K, Camisa C. Coexistence of superficial pemphigus and psoriasis. Cutis. 1996;57(6):414–8.
[17]. Vanderlugt CL, Miller SD. Epitope spreading in immune-mediated diseases: implications for immunotherapy. Nat Rev Immunol. 2002;2(2):85–95.
[18]. Giomi B, Cardinali C, Pestelli E, Caproni M, Fabbri P. Pemphigus foliaceus developing on pre-existing psoriasis: a supposed pathogenetic linkage. ACTA DERMATOVENEREOLOGICA-STOCKHOLM-. 2004;84(1):82–3.