

Correlation between Psoriasis Severity and Periodontal Pocket Depth in Psoriasis Vulgaris

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Abstract: Psoriasis is a chronic inflammatory skin disease, characterized by erythematous plaques and scales, with Koebner phenomenon and Auspitz sign. One of the trigger factors that contributes is infection. Periodontitis is an infection that occurs in periodontal tissue and can be one of the infection focus. This research aimed to determine the proportion of periodontitis in patients with psoriasis vulgaris and the correlation between psoriasis severity and periodontal pocket depth. This cross-sectional study was conducted in July-November 2017 in Dermatovenereology clinic of dr. Cipto Mangunkusumo National General Hospital, Jakarta. Anamnesis and physical examination of skin lesions were done by investigator, dental and oral examination were done by periodontist. Total of 34 subjects were examined with median age of 37.5 years (range 19-58 years old). The subjects consisted of 20 patients (58.8%) with mild psoriasis and 14 patients (41.2%) with moderate-severe psoriasis. The result showed 16 patients (47.1%) with periodontitis and 18 patients (52.9%) without periodontitis. Periodontitis was obtained in 8 patients (23.53%) in each group of mild and moderate-severe psoriasis. There was no statistically significant correlation between psoriasis severity and periodontal pocket depth ($r = 0.126$, $p = 0.478$). The results might be due to confounding factors that affect both psoriasis severity and pocket depth.

1 INTRODUCTION

Psoriasis is a chronic inflammatory skin disease, characterized by erythematous plaque and scales, with Koebner phenomenon and Auspitz sign (Gudjonson et al., 2012). Trigger factors for psoriasis are infection, drugs, trauma, stress, obesity, smoking, and alcohol consumption (Sharma et al., 2015; Ungprasert et al., 2016). Recurrence and persistence of psoriatic lesions may occur and disrupt patients quality of life. One of the trigger factors that contributes is infection (Sharma et al., 2015). The focus of infection sources are varied, including oral, ear, and throat infections (Ungprasert et al., 2016; Brezewski et al., 2013). Management of infection is one of the keys for achieving skin remission (Brezewski et al., 2013).

Oral infection in psoriasis patient is common and may act as a source of focal infection. The prevalence of periodontal disease in psoriasis patients in some studies ranged from 24-27%

(Rysstad et al., 2014; Lazaridou et al., 2013). Periodontitis is a chronic infection and inflammatory disease of periodontal tissue characterized by gum bleeding, periodontal pocket formation, periodontal tissue destruction, and alveolar bone destruction (Sharma et al., 2015). The periodontal pockets are assessed by measuring the pocket depth, the distance measured from gingival edge to pocket base in millimetres (Page & Eke, 2007).

Both of psoriasis and periodontitis have immune responses toward microbiota on epithelial surface. It is suspected that damage or disturbance in periodontal tissue may associate with psoriasis exacerbation. On the other side, remission of psoriasis may correlate with remission of periodontal tissue destruction (Sharma et al., 2015). Pocket depth correlate with periodontitis severity (Page & Eke, 2007). We suspected that psoriasis severity might be correlated with pocket depth.

Several studies aimed to know the difference between periodontitis and periodontal status in

psoriasis patients compared with control group (Sharma et al., 2015). Periodontitis was found more frequently in psoriasis patients than in control group (Rysstad et al., 2014). Metaanalysis studies reported that patients with periodontitis had a greater risk of psoriasis (Ungprasert et al., 2016; Keller et al., 2012).

Prevalence of psoriasis varies across countries with range of 0.09-11.4% (Gujonson et al., 2012; Anonym, 2016). In developing countries, the prevalence ranges from 1.5-5% (Anonym, 2016). The 2013 Indonesian National Health Research Report (known as RISKESDAS) reported the population proportion with dental and mouth problems were 25.9%. The proportion of Indonesians with proper behavior in teeth brushing was only 2.3%. Most Indonesian brushed their teeth every day during morning and afternoon shower (Anonym, 2013).

The high proportion of periodontitis in patients with psoriasis vulgaris in earlier studies and low proportion of Indonesian population with proper behavior in brushing were become our consideration to determine the proportion of periodontitis in psoriasis vulgaris. The study was aimed to find the proportion of periodontitis in patients with psoriasis vulgaris and report the correlation between psoriasis severity and periodontal pocket depth. In this study, patients with smoking habit and alcohol consumption were excluded.

2 METHODS

The study was an analytic descriptive study with cross sectional design. Total subjects were 34 psoriasis vulgaris patients in Dermatovenereology clinic of dr. Cipto Mangunkusumo National General Hospital according to inclusion and exclusion criteria. General physical examination, vital signs, skin lesions, and determination of psoriasis severity using psoriasis area and severity index (PASI) scores were performed by principal investigator. Patients with PASI score less than 7 were classified as mild psoriasis and patients with PASI score 7 or greater were classified as moderate-severe psoriasis. Patients were assessed by a periodontist to examine pocket depth, clinical attachment level (CAL), plaque index, calculus index, and papillary bleeding index. Periodontitis were assessed based on pocket depth and CAL. Periodontitis definition in this study was based on case definition proposed by the Centers for Disease Control and Prevention (CDC) and the American Academy of Periodontology

(AAP). Moderate periodontitis was defined as having ≥ 2 interproximal sites with CAL ≥ 4 mm (not on same tooth), or ≥ 2 interproximal sites with pocket depth ≥ 5 mm (not on same tooth). Severe periodontitis was defined as having ≥ 2 interproximal sites with CAL ≥ 6 mm (not on same tooth) and ≥ 1 interproximal site with pocket depth ≥ 5 mm (Rysstad et al., 2014; Page & Eke, 2007). Subjects with certain indications or clinical doubts will be underwent panoramic radiography.

3 RESULTS

Total subjects were 34 patients during July-November 2017. The proportion of periodontitis can be seen in table 1 and correlation between psoriasis severity and periodontal pocket depth can be seen in figure 1.

4 DISCUSSION

4.1 Proportion of Periodontitis in Psoriasis Vulgaris Patients

Total of 34 subjects consist of 20 patients (58.8%) with mild psoriasis and 14 patients (41.2%) with moderate-severe psoriasis. Median of PASI scores was 4.1 (range 1.8-27.5). Median of age was 37.5 years old with range 19-58 years old. Subjects consist of 27 female (79.4%), and 7 male (20.6%). The results showed that 16 patients (47.1%) with periodontitis and 18 patients (52.9%) without periodontitis. There were 8 patients (23,53%) with mild psoriasis and 8 patients (23,53%) with moderate-severe psoriasis diagnosed with periodontitis.

The proportion of periodontitis in psoriasis vulgaris patients in this study is higher than previous studies conducted by Lazaridou et al. (2013), Fadel et al. (2013), and Rysstad et al. (2014). Lazaridou et al. (2013) showed the proportion of periodontitis in psoriasis patients were 27%, which is 46% of the patients were active smokers. In our study, smokers were excluded. There was no age restriction in Lazaridou's study, while in our study the age was limited at 18-59 years old. Fadel et al. (2013) showed the proportion of periodontitis in psoriasis vulgaris patients were 24%. The results showed that patients with psoriasis have lower pH of saliva, fewer teeth number, and lower level of alveolar bone compared to control group ($p < 0.05$). Rysstad et al.

(2014) showed the proportion of moderate-severe periodontitis in psoriasis patients were 24%, while 68% of subjects were in immunosuppressant

therapy. Patients with systemic therapy and smoking habit still be included in Rysstad’s study, while in our study those patients were excluded.

Table 1. Proportion of periodontitis in subjects (n = 34)

	Periodontitis n (%)	Without periodontitis n (%)	Total n (%)
Mild psoriasis	8 (23.5)	12 (35.3)	20 (58.8)
Moderate-severe psoriasis	8 (23.5)	6 (17.6)	14 (41.2)
Total n (%)	16 (47.1)	18 (52.9)	34 (100)

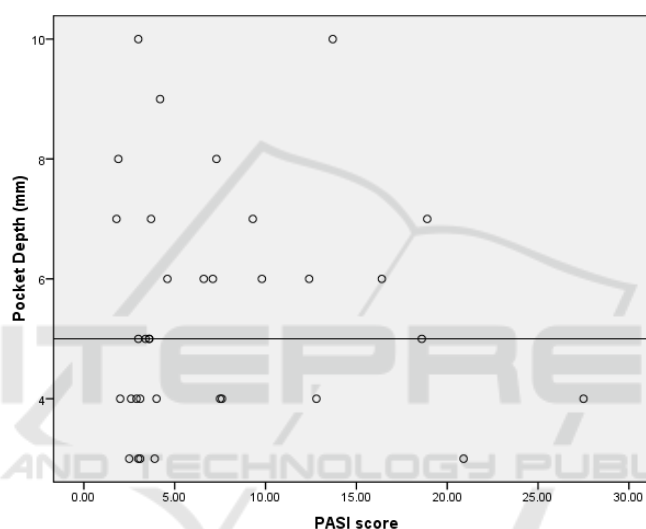


Figure 1. Correlation between PASI score and periodontal pocket depth (n = 34)

The reports of 2013 RISKESDAS showed that proportion of Indonesian population with dental and mouth problems were 25.9%. Proper behavior in teeth brushing is the habit of brushing every day after breakfast and before bedtime. Almost all population with age ≥10 years brushed their teeth every day (93.8%), Jakarta was the highest proportion (98.1%) and Papua was the lowest (49.6%). Most of them actually brushed their teeth during morning and afternoon shower. Improper behavior of teeth brushing were found in almost all age groups, while the proper behavior were only 2.3% (Anonym, 2013). These might be the cause of high proportion of periodontitis in this study compared with other researches.

4.2 Correlation between Psoriasis Severity and Periodontal Pocket Depth

This study showed no significant and very weak correlation ($r = 0.126$; $p = 0.478$) between PASI score and pocket depth (figure 1). This results showed that increase in pocket depth were not followed by an increase in PASI score. Although this study found that there were no correlation between psoriasis severity and periodontal pocket depth, but there was positive correlation between them. We assumed that pocket depth was not enough to affect psoriasis severity. This result may be caused by confounding factors that affect both pocket depth and psoriasis severity.

There were many factors that can affect both PASI score and pocket depth. The characteristics of subjects were heterogeneous, with wide age range

(18-59 years old). Emotional stress and diabetes mellitus may also be the cause of the absence of significant correlation.

Wide age range (18-59 years old) could be a confounding factor for correlation between psoriasis severity and periodontal pocket depth in this study. Brown et al. (1990) reported 5.7% subjects with 4-6mm pocket depth in the age group of 18-24 years old. This proportion was increased three fold (18.1%) in the age group of 55-64 years old.

This study did not evaluate stress factors. Lakshmy et al. (2015) reported psychiatry morbidity in psoriasis vulgaris and the correlation with psoriasis severity. The results showed that 71 patients (78.9%) have depression and 69 patients (76.7%) have anxiety disorders. There was positive correlation between psoriasis severity and psychological variables (depression, anxiety, and stress). Psoriasis severity correlated significantly with depression ($r = 0.465$, $p = 0.000$), anxiety ($r = 0.515$, $p = 0.000$), and stress ($r = 0.544$, $p = 0.000$). Rosania et al.¹⁴ (2009) reported there were positive correlation between the score of stress and pocket depth ($r = 0.23$, $p = 0.06$) and also with number of missing teeth ($r = 0.54$, $p < 0.001$).

Diabetes mellitus is a frequent comorbid in psoriasis and periodontitis patients (Anonym, 2016; Holmstrup et al., 2017). There were 5 patients (14.7%) with history of diabetes mellitus. Diabetes mellitus could act as a confounding factor between psoriasis severity and periodontal pocket depth in this study.

5 CONCLUSION

The high proportion of periodontitis was found in psoriasis vulgaris patients and there was no statistically significant correlation between psoriasis severity and periodontal pocket depth. In the management of psoriasis vulgaris, all trigger factors should be eliminated so that psoriatic lesions do not get worse and recurrent. Although this study found that there was no correlation between psoriasis severity and periodontal pocket depth, but the high proportion of periodontitis in psoriasis vulgaris patients should increase the physician awareness to identify and treat the focus of infection properly.

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