



## ORIGINAL ARTICLE

# Relation between the Peripherofacial Psoriasis and Scalp Psoriasis

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**Background:** Facial involvement of psoriasis is known to be one of the clinical manifestations that indicate the severity of the psoriasis and thought to be more closely associated with certain distribution. Centrofacial (CF) psoriasis has been suggested to be related with severity of systemic disease while peripherofacial (PF) psoriasis has been thought to have connection with scalp psoriasis. **Objective:** To analyze the epidemiologic characteristics, clinical features and subjective feelings of patients with facial psoriasis and to find out relationship between scalp psoriasis and facial involvement according to the facial types. **Methods:** One hundred nineteen facial psoriasis patients were categorized into 3 types according to the distribution: PF type, CF type and mixed facial (MF) type. Onset and duration of facial and scalp psoriasis, and their relationship were questioned. Severity and extent of psoriasis on whole body, face, and scalp were rated by clinicians. **Results:** There was no significant difference of whole body psoriasis area and severity index (PASI) and body surface area (BSA) score but scalp PASI and BSA was much higher in PF psoriasis compared to CF psoriasis (scalp PASI, 17.9 vs. 10.1;  $p=0.005$ ) (scalp BSA, 40.9 vs. 22.2;  $p=0.002$ ). According to the questionnaire, patient's objective feeling about the spreading of scalp lesion to facial area was markedly more prominent in the patients with peripheral involvement (PF+MF, 90.1%; CF, 54.2%;  $p<0.0001$ ).

**Conclusion:** Among subtypes of facial psoriasis, PF psoriasis is closely associated with spreading of scalp lesion into the face rather than reflecting the disease severity. (*Ann Dermatol* 28(4) 422~426, 2016)

**-Keywords-**

Face, Psoriasis, Scalp

## INTRODUCTION

Psoriasis is a chronic inflammatory disease that can involve any site of our body including face. In case of facial involvement of psoriasis, it causes the patient's psychological and cosmetic problems which negatively affect their social life and can significantly lower the quality of life. Facial psoriasis is pretty commonly seen in the patient with long disease duration<sup>1-4</sup> and we reported that 67.7% of psoriasis patients had facial involvement at least once during the follow-up period and more commonly seen in the severe psoriasis<sup>4</sup>. Other reports also supported the fact that facial psoriasis is more frequently found in patients with severe disease state<sup>5-7</sup>. In 2008 we reported the classification of facial psoriasis according to the distribution of the lesion into 3 types classified as centrofacial (CF), mixed facial (MF), and peripherofacial (PF) psoriasis<sup>8</sup>.

Among types of facial psoriasis, central involvement such as CF psoriasis and MF psoriasis have been suggested to be a marker of severe psoriasis while PF psoriasis has been considered as a consequence of severe scalp psoriasis and also believed to be extended from scalp psoriasis<sup>8</sup>. But since no study had performed data based analysis on the relationship between scalp psoriasis and facial psoriasis according to the facial types.

In this study we analyzed the epidemiologic characteristics and clinical features of patients with facial psoriasis

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and asked patients about their subjective opinion about possible association between face and scalp involvement through questionnaire to find out whether there is a certain relationship between scalp lesion and facial psoriasis according to facial types.

## MATERIALS AND METHODS

### Subjects

We conducted the survey for 119 psoriasis patients with facial involvement who visited National Medical Center, psoriasis clinic from September 2012 to March 2013. Questionnaire was provided for the patients to ask about their subjective feelings about the relationship between the facial psoriasis and scalp psoriasis. And the psoriasis medical charts were used by clinicians to evaluate severity and extent of psoriasis according to the affected areas (whole body, face and scalp). This study was approved by the Institutional Review Board of National Medical Center (IRB no. H-1505-054-003).

### Methods

This study was questionnaire-based study involving 119 psoriasis patients who had facial involvement. Study included patients who had visited National Medical Center in Seoul, Korea between September 1, 2012 and May 31, 2014. It was a cross-sectional study involving follow up patients of psoriasis clinic in the dermatology department. We handed out questionnaire at the time of the visit to figure out patient's subjective feeling about association between face involvement and scalp psoriasis. Questionnaire included the questions that focused on the relationship between the types of facial psoriasis and the scalp psoriasis by extent, duration and severity of scalp psoriasis. Physicians checked severity of psoriasis on whole body, face, and scalp using psoriasis area and severity index (PASI) scores by using the psoriasis medical chart for clinicians. Affected area was also categorized in face, scalp and whole body to calculate the extent of affected area using body surface area (BSA). 'The rule of fours' was used to calculate the BSA of involved facial areas<sup>9</sup>. All the

facial psoriasis patients were classified in to 3 types suggested by the previous study according to affected area<sup>8</sup>. PF type involves upper forehead and/or periauricular lesions. CF type involves lower forehead and/or cheeks and/or nasolabial fold and/or perioral area and/or eyelids without involvement of upper forehead and periauricular lesions. And MF type invades areas of both CF type and PF type can involve<sup>8</sup>. All medical information was recorded at the time of presentation to the clinic and incomplete data were not included in the statistical analysis. Pearson's chi-square test was used for the comparison of binominal variables and the independent-samples t-test for continuous variables. Multiple logistic analysis software (SPSS ver. 9.0, SPSS Inc., Chicago, IL, USA) was used. Those results showing *p*-value less than 0.05 were regarded as statistically significant values.

## RESULTS

Total 119 facial psoriasis patients finished this study. Seventy patients (58.8%) were male, and 49 patients (41.2%) were female. Their mean age was 42.1 and average onset age was 28.9 years. CF type took the largest portion of 48 patients (40.3%) and 37 patients with PF type (31.1%), 34 patients with MF type (28.6%) (Table 1).

In comparison of mean PASI and BSA between facial types, MF had significantly higher PASI and BSA scores on whole body, face and scalp ( $p < 0.05$ ). In comparing between CF and PF, PF had much higher scalp PASI (17.9) and BSA (40.9%) compared to scalp PASI (10.1) and BSA (22.2%) of CF ( $p = 0.005$ ,  $p = 0.002$ ), although there was no significant difference in whole body and face PASI and BSA (Table 2).

For the question in the questionnaire asking about scalp psoriasis spreading to the forehead or periauricular area, only 12.5% of the CF patients answered "definitely yes" to the question while 56.8% of PF patients and 58.8% of MF patients answered "definitely yes" to the question. Including the answer "generally yes", among patients with central facial involvement without PF involvement (CF patients) 54.2% thought the scalp psoriasis was spreading to

**Table 1.** Demographic data of enrolled patients with facial psoriasis

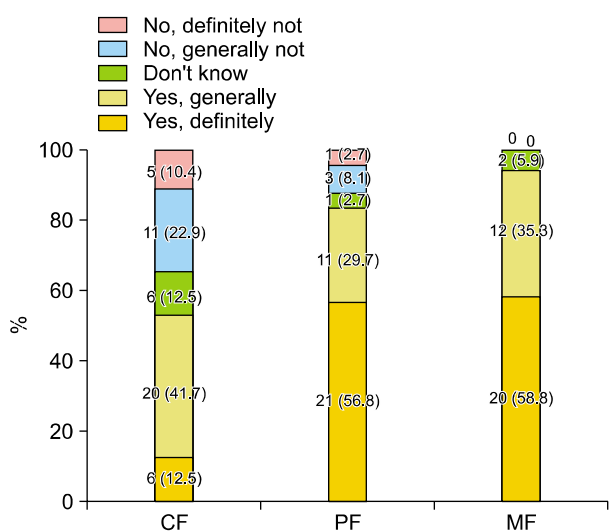
Variable	Total	CF type	PF type	MF type
Patient no.	119 (100)	48 (40.3)	37 (31.1)	34 (28.6)
Age (yr)	42.1 ± 14.2	41.6 ± 13.8	42.2 ± 14.1	42.7 ± 14.4
Age of onset (yr)*	28.9 ± 12.5	27.7 ± 12.2	26.8 ± 12.4	32.9 ± 12.8
Male/female*	70/49	25/23	20/17	25/9

Values are presented as number (%), mean ± standard deviation, or number only. CF: centropacial, PF: peripherofacial, MF: mixed facial. \* $p < 0.05$ .

**Table 2.** The mean PASI score and BSA on whole body, scalp, and face according to the types of facial psoriasis

Type	Whole body		Scalp		Face	
	PASI	BSA (%)	PASI	BSA (%)	PASI	BSA (%)
CF	8.6	15.0	10.1	22.2	6.3	4.0
PF	7.4	11.0	17.9*	40.9*	6.7	4.0
MF	19.0*	34.0*	29.3*	60.9*	14.4*	24.0*
Total	10.6	19.0	17.7	38.0	8.6	10.0

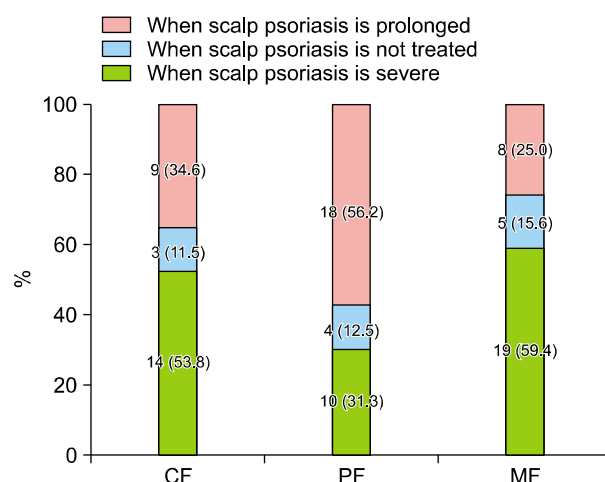
PASI: psoriasis area and severity index, BSA: body surface area, CF: centropfacial, PF: peripherofacial, MF: mixed facial. Comparison with CF: \* $p < 0.05$ .



**Fig. 1.** The proportion of patients who answered to the question, “Does scalp psoriasis spread to the forehead or periauricular area?” according to the types of facial psoriasis. CF: centropfacial, PF: peripherofacial, MF: mixed facial.

the face, while 90.1% of patients with peripheral involvement (PF and MF patients) had strong feeling about their scalp lesion spreading into the facial area ( $p < 0.0001$ ; Fig. 1). For the question “When do you think it spreads to the forehead or periauricular area if you think it does”, more than half (56.2%) of PF patients said “When the scalp psoriasis is prolonged” while 53.8% of CF and 59.4% of MF patients answered “When the scalp psoriasis is severe”. It indicates that the duration of scalp psoriasis is more related to the PF other than the severity of scalp lesion while CF and MF is more closely connected to the severity of scalp psoriasis (Fig. 2).

For the question “Aggravation or improvement of scalp psoriasis is related to the aggravation or improvement of facial psoriasis”, only 35.4% of CF patients said “yes” to the question while 64.8% of patients with PF involvement (PF and MF patients) thought that severity of facial psoriasis is connected to the severity of scalp psoriasis. And this implies PF involvement can be a reflection of the

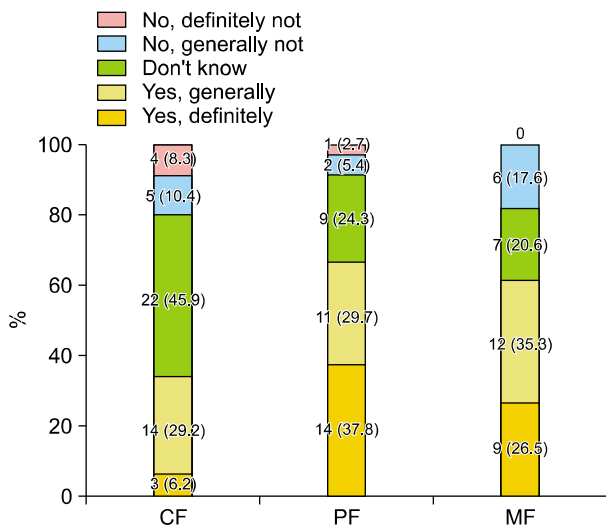


**Fig. 2.** The proportion of patients who answered to the question, “If scalp psoriasis spread to the forehead or periauricular area, when?” according to the types of facial psoriasis. CF: centropfacial, PF: peripherofacial, MF: mixed facial.

scalp psoriasis, while CF psoriasis is less likely (Fig. 3).

## DISCUSSION

Facial psoriasis has been proposed as a marker of severe psoriasis and reported to be more frequently seen in patients with extensive disease<sup>1-7,10</sup> and known to be more commonly observed in patients with early onset psoriasis and with long disease duration<sup>11,12</sup>. Harrison and Walker<sup>3</sup> reported that 57% of patients hospitalized with psoriasis had facial lesions, whereas only 27% had facial involvement in a daycare center setting. We previously reported that the face involvement more frequently found in patients with long disease duration or early onset, high severity, nail or joint involvement, and a requirement for more extensive treatments<sup>4</sup>. But there were conflicting opinions among the physicians because there were patients with facial involvement who did not show severe systemic disease. We also reported that focused on the distribution of facial involvement and found out that pa-

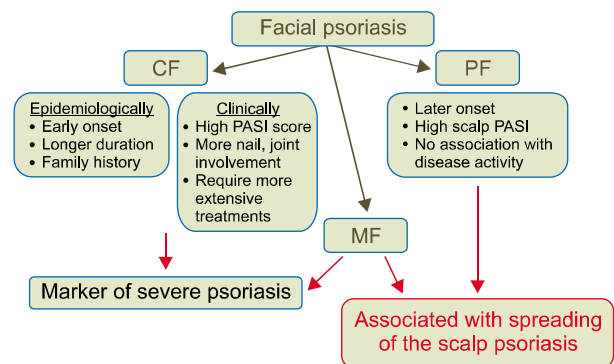


**Fig. 3.** The proportion of patients who answered to the question, “Does aggravation or improvement of scalp psoriasis related with aggravation or improvement of facial psoriasis?” according to the types of facial psoriasis. CF: centrofacial, PF: peripherofacial, MF: mixed facial.

tients with CF involvement had a higher mean total body PASI score and lower mean age of onset compared to those with only the peripheral facial lesion<sup>8</sup>. It appears that CF psoriasis to be a sign of severe psoriasis while PF psoriasis could be more related with scalp psoriasis rather than reflecting the severity of the systemic disease.

There were reports that 2.3% of scalp psoriasis patients experienced expansion of scalp lesion onto the face<sup>11</sup>. We previously reported that 93.4% of patients with PF psoriasis also had scalp involvement, whereas 76.3% of patients with facial psoriasis without peripheral lesions had scalp involvement<sup>1</sup>. In addition, we also reported that PF psoriasis patients had higher scalp PASI scores and developed facial psoriasis earlier than those without PF involvement, supporting that PF psoriasis is associated with extension of scalp psoriasis<sup>8</sup>.

In our study 90.1% of patients with PF involvement (PF and MF type) had strong feeling about scalp lesion spreading into peripheral area of the face. And also 64.8% of patients with PF lesion thought that facial lesion is associated with aggravation or improvement of scalp psoriasis while only 35.4% of patients with CF type psoriasis thought so. About the timing of scalp lesion spreading to the face, more than half of the PF type patients answered prolonged scalp psoriasis was most relevant. We also asked about the main factor of the scalp lesion spreading of to the face, more than half of PF psoriasis patients said that the duration of the scalp lesion is most important factor, while CF and MF patients thought that severity of the lesion is more



**Fig. 4.** Diagram of patient’s characteristics and histories according to the types of facial psoriasis. CF: centrofacial, PF: peripherofacial, MF: mixed facial, PASI: psoriasis area and severity index.

relevant.

We suggest that the PF psoriasis is more closely associated with the scalp psoriasis spreading into the face. Consideration of peripheral involvement of facial psoriasis reflects severe and long duration of scalp involvement of psoriasis that consequently expand to the face. Early intervention and active treatment of scalp psoriasis may prevent spreading to the face in patients without facial involvement and can improve facial lesions in patients with PF psoriasis which can positively affect on patient’s life of quality and can help regaining self confidence in social life.

Finally we could complete the picture of clinical presentations, epidemiological factors and reflection of severity of whole body and duration of scalp psoriasis according to the distribution of facial psoriasis (Fig. 4).

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