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CLINICAL ASPECTS OF THE ORAL CAVITY IN PATIENTS WITH PSORIASIS: AN INITIAL STUDY AND A PROPOSAL OF A NEW EVALUATION METHOD

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The involvement of the oral cavity is rare but possible in patients with psoriasis. Most frequently different clinical entities are reported such as geographic tongue, fissures, angular cheilitis and ectopic geographic tongue. This interdisciplinary study was conducted by dermatologists in collaboration with dental hygienists on 22 patients with psoriasis. We examined 11 men and 11 women aged between 25 and 72 years during a period of 6 months. The involvement of the oral cavity was examined and a full photographic evaluation was carried out. A new assessment evaluation named Oral Psoriasis Area and Severity Index (OPASI) is proposed herein. The results obtained show the presence of oral lesions in 45.6% of the cases. This high involvement could be explained by the interdisciplinary nature of the study. We believe OPASI can be useful to assess the severity of lesions of the oral cavity, and may help to evaluate the response to therapy in relation to the Psoriasis Area and Severity Index (PASI) improvement.

Psoriasis vulgaris is a common dermatological disease with a prevalence of 2-3% in the Caucasian population (1-2). Plaque type psoriasis is the most frequent form representing up to 80% of cases; less usual aspects are the pustular (3%), erythrodermic (3%) and arthropathic types (7-40%) (3). Psoriasis area and severity index (PASI) of >10 indicates moderate to severe forms. It has proven to be a useful tool for monitoring clinical improvement during therapy (4). Mucosal involvement in psoriasis is possible but it is rare. Oral mucosa and tongue involvement can be observed in psoriasis vulgaris but it is more frequent in pustular and in erythrodermic psoriasis (5).

Psoriasis affects oral mucosa mainly on the cheeks, gums and palate, with characteristic roundish whitish plaques. Bleeding can be observed after micro traumas, and this is not related to erythema. In pustular psoriasis, erythematous patches with red pustular elements may be observed (6). The dorsal mucosa can show areas of de-epithelialization, also known as "geographic tongue". It is a common inflammatory disorder of unknown aetiology characterized by areas of erythematous and oedematous mucosa (7). It causes loss of papillae, with well demarcated margins that are reinforced by a yellow-white border that appears slightly raised at the edge of the tongue. It can extend to the side

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of the latero-ventral surfaces up to the mucosa of the cheeks, lips, gums and palate ("migrant arch stomatitis"), with no subjective symptoms. Lingual mucosa may also be fissured dorsally by deep longitudinal grooves and small transverse fissures giving an appearance of so called "scrotal" tongue. Angular cheilitis and ectopic geographic tongue are other features related to psoriasis (8-9).

The ectopic geographic tongue is an idiopathic inflammatory condition of the oral mucosa, but it does not affect the tongue, and its frequency is not well documented.

The aim of this observational study is to report different clinical aspects of oral mucosa in psoriatic patients and to suggest a new evaluation method that we have chosen to call Oral Psoriasis and Severity Index (OPASI).

MATERIALS AND METHODS

From April to October 2010, in the Tor Vergata University outpatient Dermatological Center for Psoriasis, a dental hygienist was available for an oral cavity examination. Patients included in the study were male and female, aged between 18 and 75 years. They all signed an informed consent and accepted to be photographed. Noncompliant patients receiving systemic therapy and those with concomitant infective or neoplastic disease processes were excluded from this study. Information on eligible patients was collected, such as demographic data, type and extension of cutaneous psoriasis, age of onset, family history, presence of other diseases, smoking and concomitant therapies. We took photographs of the oral cavity in a room with an artificial light before examining the oral lesions.

Twenty-two patients who fulfilled the inclusion criteria were included in the study, 11 men and 11 women respectively, aged between 25 and 72 years (average age 53 years). The age of onset was 37 years in men and 40 in women (average age 38.5). In 19 cases psoriasis vulgaris (86.4%) was diagnosed. PASI ranged from 10 to 20, in 2 cases arthropathic psoriasis (9.1%) and in one case palmoplantar pustular psoriasis (4.5%) were diagnosed.

Although a proportional clinical correlation between the degree of severity (PASI average 17) of skin lesion and the frequency of geographic tongue could be seen as reported in the literature (10), we did not correlate cutaneous PASI with severity level of mucosal lesions. The severity score for the oral mucosa was performed during the clinical visit via photographic evaluation and the OPASI was also calculated.

In order to calculate this index, we divided the mouth into five parts: tongue, lip, oral mucosa, palate and gums named accordingly TPASI (Tongue), LPASI (Lip); MPASI (Oral mucosa); PPASI (Palate) and GPASI (Gum). For each part we assessed the extension of the area involved [A] on a scale of 3 points: 0 = no involvement, 1 = 0-29%, 2 = 30-69%, 3 = 70-100%. We estimated the severity of psoriasis lesions (erythema [E], infiltration [I], desquamation or de-epithelialisation [D]) on a scale of 3 points: erythema => 0 = none, 1= slight, 2= moderate, 3 = severe infiltration => 0 = none, 1= slight, 2= moderate, 3 = severe desquamation or de-epithelialisation => 0 = none, 1= slight, 2= moderate, 3 = severe The score for each area is the sum of [A] * ([E] + [I] + [D]). However, we considered a total OPASI the sum of TPASI + MPASI + PPASI + LPASI + GPASI for a total value between 0 and 135, or 27 *5.

RESULTS

Our results suggest an association between cutaneous symptoms and oral lesions in 10 out of 22 patients (45.5%). The observed changes were:

- isolated fissured tongue in 3 cases (30%)
- angular cheilitis and/or strong desquamation of lips in 3 cases (30%)
- isolated geographic tongue in one case (10%)
- fissured tongue and gum lesions in 1 case (10%)
- ectopic geographic tongue with a geographic tongue in one case (10%)
- geographic tongue and fissured tongue in one case (10%) (Table 1).

Isolated findings of fissured tongue were observed in 4/19 (21%) patients with psoriasis vulgaris. Moreover, we observed the existence of psoriasis familiarity in 10 patients out 22 (45.5%).

Regarding OPASI, we demonstrated that it rarely reached high values. We showed how different severity indexes were present in different parts of the oral cavity. In this report, we show the examples of the proposed OPASI score, mainly referred to the tongue and lip (Table I). Total OPASI reported: 8; TPASI: 7.5; LPASI: 4.

DISCUSSION

The presence of alterations on the oral mucosa of patients with psoriasis is controversial. Some authors correlated oral lesions with psoriasis on the basis of similar histopathological findings, others

Table I. *Oral manifestations in our study.*

	Number of manifestations	Percentage	
Geographic tongue	1	10 %	
Fissured tongue	3	30%	
Geographic tongue and the fissured tongue	1	10%	**TPASI: 68/9 = 7.5**
Angular cheilitis and/or strong desquamation of lips	3	30%	**LPASI: 12/3 = 4**
Fissured tongue and gums lesions	1	10%	
Ectopic geographic tongue and geographic tongue	1	10%	
Total	10	100%	**OPASI: 80/10= 8**

Table II. *Overview of frequencies of various signs and symptoms in psoriasis.*

	Average on the general population	Average on the psoriasic population	Predilection male/female
Geographic tongue	1-3%	5 -10.3%	Female
Fissured tongue	2-5%	6 -14.3%	-
Gengival and mucosal lesions	0%	Sporadic cases	-

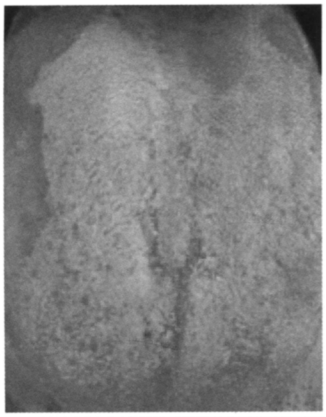

Fig. 1. *Geographic tongue with mild erythematous area of de-epithelization. tPASI = [Area involved]*([Erythema] + [Infiltration] + [De-epithelialisation]) tPASI = 1* (1+1+2) = 4 OPASI = TPASI + MPASI + PPASI +LPASI + GPASI OPASI= 4+0+0+0+0 = 4*

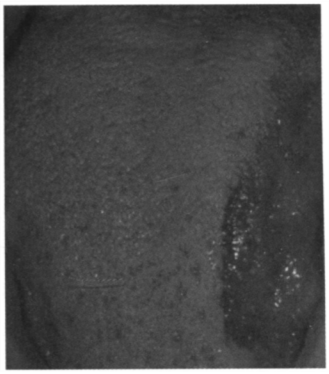

Fig. 2. *Geographic tongue with moderate erythematous area of de-epitelization. tPASI = [Area involved]*([Erythema] + [Infiltration] + [De-epithelialisation]) tPASI = 1*(1+2+2) = 10 mPASI = [Area involved]*([Erythema] + [Infiltration] + [De-epithelialisation]) mPASI = 1*(2+1+0) = 3 OPASI = TPASI + MPASI + PPASI +LPASI + GPASI OPASI = 10+3+0+0+0=13*

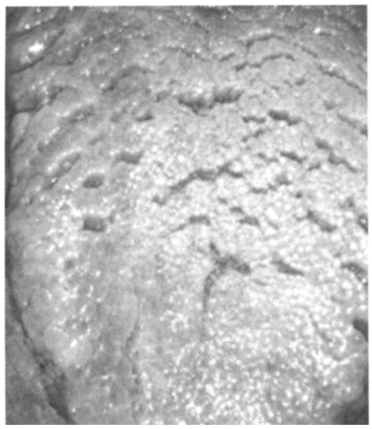

Fig. 3. *Fissured tongue with characteristic deep longitudinal grooves and mild erythema. tPASI = [Area involved]*([Erythema] + [Infiltration] + [De-epithelialisation]) tPASI = 3*(2+3+1) = 18 gPASI = [Area involved]*([Erythema] + [Infiltration] + [De-epithelialisation]) gPASI = 1*(1+2+0) = 3 OPASI = TPASI + MPASI + PPASI +LPASI + GPASI OPASI = 18+0+0+0+3=21*

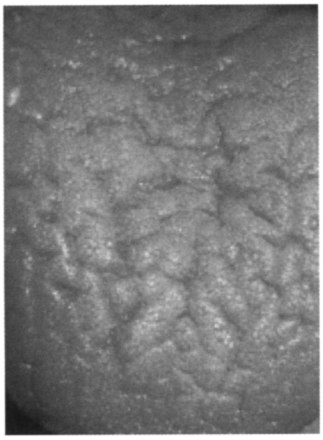

Fig. 4. *Fissured tongue with severe erythema. tPASI = [Area involved]*([Erythema] + [Infiltration] + [De-epithelialisation]) tPASI = 3*(2+2+1) = 15 lPASI = [Area involved]*([Erythema] + [Infiltration] + [De-epithelialisation]) lPASI = 1*(2+1+2) = 5 OPASI = TPASI + MPASI + PPASI +LPASI + GPASI OPASI = 15+0+0+5+0=20*

considered them manifestations of psoriasis that follow the same course as the skin lesions. Some studies analysed the prevalence of oral lesions in patients with psoriasis and in particular, the possible association with geographic tongue, fissured tongue, geographic ectopic tongue and angular cheilitis, has been previously described (11, 12). Due to higher frequency of these lesions in patients with psoriasis in comparison to the general population (Table II), these can be considered possible oral manifestations of this disease.

Hernandez Perez and collaborators observed that the frequency of geographic tongue and fissured tongue is higher in affected psoriatic patients (13). The studies conducted by Buchner and Begleiter (14), by Morris et al. (15), Brice et al. (11) and Bruce and Rogers (16) show a high incidence of geographic tongue and fissured tongue in patients with psoriasis. In addition, Hietaten (17), detected the presence of angular cheilitis in patients with psoriasis. However, epidemiological studies indicate that the frequency of angular cheilitis is similar in the normal population (3.8%) because of the variable aetiology of this condition (full denture irritation, lack of iron or vitamin B complex, candidiasis, etc.).

We report only 1 case (4.5%) of ectopic geographic

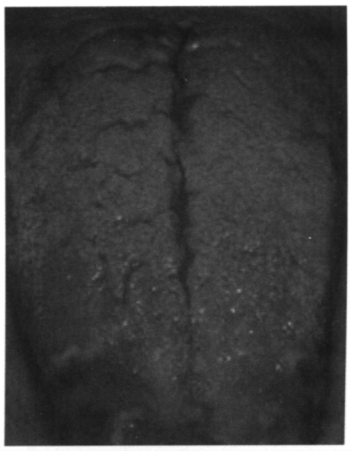

Fig. 5. *Mixed geographic and fissured tongue. tPASI = [Area involved]*([Erythema] + [Infiltration] + [De-epithelialisation]) tPASI = 3*(2+1+1) = 12 OPASI = TPASI + MPASI + PPASI +LPASI + GPASI OPASI = 12+0+0+0+0 = 12*

tongue and 3 cases (13.6%) of angular cheilitis in all patients. Pogrel (18) found angular cheilitis and ectopic geographic tongue respectively in 7% and 19% of psoriatic patients. The high frequency of oral lesions was observed by Pogrel et al, and might have been related to the fact that the patients he observed were in an acute phase of psoriasis. These authors suggest that these patients develop more oral

manifestations than patients with a chronic disease.

Other authors (19) have suggested that geographic tongue is a transient expression of psoriasis while fissured tongue is a late and permanent sign. In recent studies, Daneshpazhooh and collaborators (20) showed that fissured tongue was seen in 33% of patients with psoriasis and geographic tongue in 14%. This author observed various cases of fissured tongue in psoriasis vulgaris (30.4%) but his study also demonstrated a higher frequency of fissured tongue (53.8%) in generalized pustular forms. Our study showed that fissured tongue was seen mainly in the vulgaris form (15.8%) and in one case associated to the pustular form (100%).

According to Daneshpazhooh and Hietaten (17), fissured tongue was more frequent than geographic tongue, in accordance with the results of Pogrel (18), who observed fissured tongue in 7% and geographic tongue in 5% of patients with psoriasis. Also, in our study we observed a higher frequency of fissured tongue (22.7%) in comparison to geographic tongue (13.6%).

Recently, Shulman (21) reported that 28/292 (9.6%) of psoriatic patients with fissured tongue also had geographic tongue. We did detect, in a single case 1/22 (4.5%), the simultaneous presence of geographic and fissured tongue. Another interesting fact, observed by the same authors, was lower incidence of geographic tongue in patients who smoked. Zagari (22) confirmed this fact, suggesting the protective effect of tobacco on the onset of psoriatic oral lesions.

Dawson (23) suggested the possibility of a genetic link between psoriasis and geographic and fissured tongue, and other studies suggested (24) that both conditions depend on a polygenic hereditary transmission and that they share some common genes. This may explain the association between geographic tongue and fissured tongue. Moreover, the association between the two lesions may also, in part, be explained through their histopathologic aspect with tissue destruction and consequent scarring (25).

Other intra-oral involvements such as gums, superior and inferior lips, hard and soft palate, mucosa and floor of the mouth, are rare (13, 26, 27), although we reported one case of gum lesion in association to fissured tongue.

The existence of oral involvement in psoriasis has been widely discussed. The first description goes back to Oppenheim and Thimm in the early 1900s (28) and, although rare, it can still occur.

The frequency of geographic tongue in the general population is 1-5% (29, 30). Most authors suggest that fissured tongue is an inherited tract observed in 2-5% (31) of general population and its incidence increases with age (29, 30, 32, 34). The frequency of ectopic geographic tongue is not well documented.

Unlike the clear identification of lesions in cutaneous psoriasis (35), the oral manifestations are still discussed: geographic tongue and fissured tongue were not clearly identified as definitive oral manifestations of psoriasis.

Although these lesions were shown to exhibit histopathological similarities with psoriasis, they have not been linked to the severity of dermatologic manifestations of the disease (17). Different papers have reported the highest prevalence of these entities in patients with psoriasis compared to general population. This suggests that an association between them does exist. More genetic investigations will be necessary to confirm this data and to determine whether these lesions may indicate or predict the severity of the disease.

The high frequency of fissured tongue found in our study suggests, in agreement with reports from other authors, that this entity may be a consequence of geographic tongue. The combination of a dermatological and dental visit may be helpful for a correct diagnosis. We did not observe a total involvement of the oral cavity despite the accuracy of the clinical evaluation. Finally, we did not find any differences in oral symptoms between patients affected from the so-called vulgaris psoriasis in comparison to arthropathic and palmoplantar pustular psoriasis.

Our study also showed a clinical association between fissured tongue, geographic tongue, ectopic geographic tongue, angular cheilitis and psoriasis in 45.5% of cases. This may be due to genetic reasons.

In conclusion, observation of characteristic lesions in the oral cavity of patients with psoriasis is quite frequent, and this was confirmed in our study. We think that an interdisciplinary evaluation would be important in order to obtain an exact diagnosis. Furthermore, we believe that it would be useful to use a specific scale, that we named OPASI (Oral

Psoriasis Area and Severity Index), to determine the oral lesion severity and to monitor their clinical trend. On this basis, we believe that more studies with a large number of patients will be needed to reach a significant statistical data on the association of the two conditions (36-40).

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