DOI: 10.26693/jmbs07.06.124
UDC 616.311:616
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# Clinical Characteristics of the Oral Mucosa of Patients with Red Lichen Planus, Depending on the Anatomical Location

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*The purpose of the study* was to state the clinical characteristics of the oral mucosa in patients with red lichen planus depending on the anatomical localization of the process.

*Materials and methods.* Examinations and a complex of treatment measures were carried out on the basis of the department of Therapeutic Dentistry of the I. Horbachevsky Ternopil National Medical University and the licensed private dental clinic "DVM», Ternopil. 42 patients with red lichen planus were examined.

The patients underwent a general clinical dental examination with the registration of indicators in the medical cards of the dental patient, form 043/y, and assessment of the state of oral hygiene according to J. C. Green, J. R. Wermillion, by objectifying the state of periodontal tissues based on index analysis in the modification of C. Parma.

*Results and discussion.* The most typical places of lesions by this nosological unit are the cheeks along the line of teeth closure, the retromolar area. The papules are small silver-grey or white-grey in colour with a characteristic waxy sheen, which is most visible under side lighting conditions. Taking into account the regional features of the structure of the mucous membrane of the back of the tongue, the lesion elements are visualized in the form of plaques that merge into shapes and resemble rings and chains in appearance. When the process spreads to the gums, there is a tendency to an increase in the volume of the interdental gingival papillae and a change in the structure of the gums in the form of maceration and colour of the gums. Features of the clinical picture of the course of this disease on the red border of the lips in the form of a plaque reflect the regional anatomical and morphological features of the red border itself, namely the insignificant thickness of the epithelial plate and the submucosal base.

The above-mentioned differences in the clinical picture of red lichen planus should be taken into account at the stage of applying the main clinical methods, as well as the topographic and morphological features of the structure of the mucous membrane at the stage of verification of the lesion elements by a dentist.

*Conclusion.* It is advisable to take into account the visualized differences in the clinical picture of red lichen planus at the stage of application of the main clinical methods as well as the topographical and morphological features of the structure of the mucous membrane at the stage of verification of the lesion elements by a dentist. Thus, in this way, a wide variety of clinical manifestations, complex etiopathogenetic mechanisms of the development of red lichen planus, require a personalized, complex analysis based on an individual approach to each patient, taking into account the aetiology, clinic and regional features of the oral mucosa.

**Keywords:** red lichen planus, Wickham striae, oral mucosa, red border of the lips.

**Connection of the study with scientific programs, plans, topics.** The research was carried out as a part of the research project "Increasing the Efficiency of Providing Dental Care to Patients with Primary and Secondary Lesions of the Tissues of the Oral Cavity Based on the Study of the Regularities of the Clinical Course and Chains of Pathogenesis", state registration No. 0120U104151.

**Introduction.** Since the description of red lichen planus by Wilson in 1869, there have been many classifications of dermatosis, which distinguished its typical and atypical forms that did not have a clear systematization. Currently, clinical variants of red lichen planus are distinguished depending on the configuration of foci, morphological structure and localization of the lesion elements. Typical papules can undergo

changes with a change in localization, distribution and morphology of the element itself. In addition, when assessing the features of dermatosis and the dynamics of its course, it is necessary to take into account not only the nature of morphological elements, and their localization, but also the degree of their prevalence [1, 2].

The initial signs are not the same. In some cases, the process begins with limited foci of skin damage and persists throughout the disease, in others, the rashes immediately become widespread, and in the same patient, as the dermatosis develops, the prevalence of the lesion elements can change from localized to disseminated rashes and, conversely, at the regression of disseminated elements, individual foci may persist for a long time. Therefore, it is advisable to divide red lichen planus into three variants according to the prevalence of the lesion elements (localized, disseminated, generalized). This division is conditional, as it often reflects only a stage in the course of dermatosis [3, 4].

Clinical forms according to the location of the primary element. Linear red lichen planus is characterized by the location of lesion elements in the form of stripes, and lines, as a rule, asymmetrically, more often on the extremities in the projection of the neurovascular bundle, above varicose veins.

The linear form of red lichen planus is described in patients with hepatitis C; in a 14-year-old boy with vitiligo; in the event of transplant rejection. Linear foci, located along the course of peripheral nerves, can be grouped similarly to papular rashes in the case of shingles. Such localization is called zosteriform. The arrangement of typical nodular elements in the form of a tree branch drawing, a fern on the mucous membrane of the cheeks are also considered a linear form. The literature describes quite a lot of observations regarding this form of dermatosis [5].

Ring-shaped red lichen planus is characterized by the presence of grouped lesion elements in the form of rings, semi-rings, and arcs. After the rash disappears, pigmentation and atrophy often remain. A rare variant of ring-shaped red lichen planus is described: serping, the clinical manifestations of which resemble serping nodular syphilid, centrifugal erythema, or a spotted form of lipoid necrobiosis. Diagnosis of this variety is based on histological studies [6].

Clinical forms based on the nature of the morphological element, in particular the erythematous form, are rare, mainly in the acute period of the disease. Diffuse erythema appears on the limbs and body, on the background of which there are isolated papules. Diffuse erythema prevails over other elements and can take a widespread or even universal character. Rashes are accompanied by severe itching and often a temperature reaction. Typical elements of dermatosis can sometimes be seen on mucous membranes, or they appear after the stabilization of the pathological process [7].

The characteristic clinical feature of the papular form is the multiplicity of papular elements, disseminated or prone to grouping in typical places (flexing surfaces of the forearms in the area of the wrist joints, the lower third of the lower legs, ankles, back of the feet). This form of dermatosis is usually accompanied by intense itching [8].

In the case of an atrophic form, the rash is represented by atrophic scars of a polygonal shape. The colour of the skin atrophy areas is greyish-yellow, with a brown border. The mucous membranes are whitish in colour. Nodules that barely rise above the level of healthy skin often accompany a pigmented form. Foci are localized in large folds, on the skin and mucous membranes of the genitals [9, 10, 11].

Summing up the analysis of literary sources and developments in this scientific direction, it is advisable to note a rather detailed description of the clinical and morphological forms of red lichen planus, provided the elements of the lesion are located on the skin. However, the question of detailing the clinical characteristics of this disease, under conditions of isolated localization on the oral mucosa, depending on the anatomical site, remains quite relevant [10].

**The purpose of the study** was to state the clinical characteristics of the oral musoca in patients with red lichen planus depending on the anatomical localization of the process.

**Materials and methods.** Examinations and a complex of treatment measures were carried out on the basis of the department of Therapeutic Dentistry of the I. Horbachevsky Ternopil National Medical University and the licensed private dental clinic “DVM”, Ternopil. 42 patients with red lichen planus were examined.

Patients with red lichen planus underwent a general clinical dental examination, followed by an assessment of oral hygiene. The indicators of the clinical dental examination were recorded in the medical cards of the dental patient, form 043/y. The hygienic index (HI) was calculated according to J. C. Green, J. R. Vermillion (OHI-S, 1964), the condition of periodontal tissues was objectified on the basis of the analysis of the papillary-marginal-alveolar index (PMA) in the modification of C. Parma (1960). Clinical characteristics of the nosological unit were provided, depending on the randomization of the process location according to the topography of the oral mucosa area (cheeks, tongue, gums, red border mucosa).

The study was carried out in compliance with the basic provisions of the “Rules of ethical principles of scientific medical research with human participation”, approved by the Declaration of Helsinki

(1964-2013), ICH GCP (1996), EEC Directive No. 609 (dated 24.11.1986), Orders of the Ministry of Health of Ukraine No. 690 (dated 23.09.2009), No. 944 (dated 14.12.2009), No. 616 (dated 03.08.2012). All the participants were informed about the goals, organization, methods of examination and signed an informed consent to participate in the completely anonymous study.

**Research results.** The universal element of the lesion, characteristic of all clinical and morphological forms of red lichen planus, was a keratinized papule – a cavity-free infiltrative element formed due to the infiltration of the papillary layer of the lamina propria by lymphocytes and plasma cells. However, the appearance, the size of the papular elements of the lesion, their location, and the ability to merge with each other, largely reflect the regional features of the structure of the oral mucosa and the red border. These discrepancies are due to the systematics of the types of the oral mucosa, in particular the masticatory (gingiva), lining (cheeks) and specialized (back of the tongue), the thickness of the epithelial plate, the presence and prominence of the lamina propria and the submucosal base [12].

The most typical sites of lesions by this nosological unit are the localization of lesion elements on the cheeks, along the line of teeth closure, and in the retromolar area – mucosa of the lining type.

At the same time, the papules are small silver-grey or white-grey in colour with a rather characteristic wax-like shine, which is most noticeable under conditions of side lighting. It should be noted that at this anatomical location, the papules have a persistent tendency to group and merge, forming a kind of keratinized bridges, a greyish-white mesh pattern, which is especially clearly visualized after irrigation of the mucous membrane with oil solutions – "Wickham striae". The formation of these pathognomonic signs is associated with uneven hyperplasia of the granular layer of the epithelium – granulosis.

It should be noted that precisely under the condition of the lesion elements location in this anatomical area, which is most often traumatized during eating, accidental biting of the mucous membrane of the cheeks, new papules appear, located linearly – an isomorphic reaction (**Fig. 1**).

If the elements of the lesion are located on the back of the tongue, the papules merge into plaques up to 1 cm in size, sometimes larger (**Fig. 2**).

Taking into account the regional features of the mucous membrane of the back of the tongue structure, namely, the ability of the epithelium to keratinize and desquamate, functional features in the form of providing chewing, the formation of a food lump and speech, the lesion elements undergo constant maceration, acquire the appearance of white-grey plaques

**Fig. 1** – Clinical characteristics of the oral mucosa of a patient with red lichen planus, provided that the elements of the lesion are located in the area of the cheeks

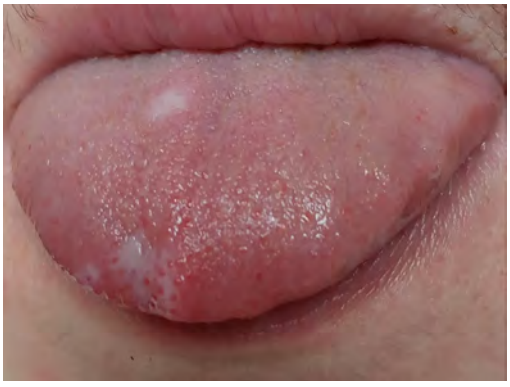

**Fig. 2** – Clinical characteristics of the oral mucosa of a patient with red lichen planus, subject to the location of the lesion elements in the area of the tip and back of the tongue

and merge into figures that mostly resemble rings and chains in appearance (**Fig. 3**).

If the process spreads to the gums, during a clinical examination, a tendency to increase in the volume of the interdental gingival papillae can be observed, both due to hypertrophy and swelling, loss of scalloping of the gingival margin, and a change in the

**Fig. 3** – Clinical characteristics of the oral mucosa of a patient with red lichen planus, subject to the location of the lesion elements in the area of the tip and back of the tongue

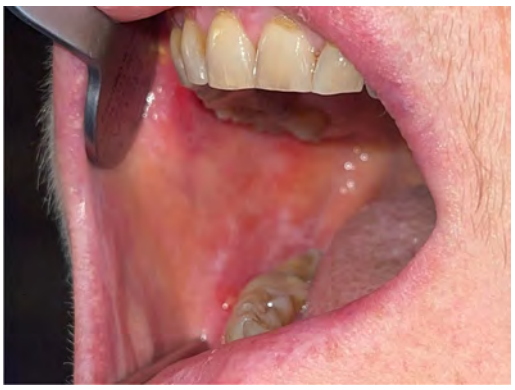

**Fig. 4** – Clinical characteristics of the oral mucosa of a patient with red lichen planus, provided that the elements of the lesion are located in the area of the tip and back of the tongue

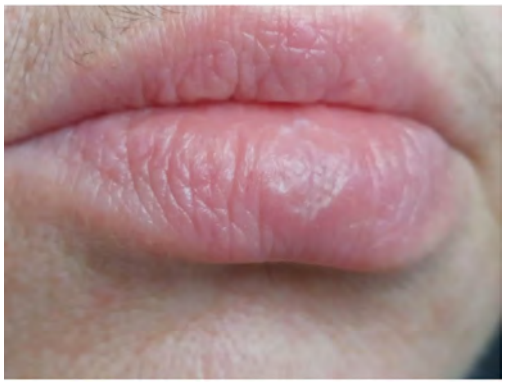

**Fig. 5** – Clinical characteristics of the oral mucosa of a patient with red lichen planus, provided that the elements of the lesion are located on the red border

structure of the gums in the form of maceration and the colour of the gums due to the presence of a white mesh on their surface (mainly in the area of the papillae and the marginal part of the gums). These clinical manifestations are due to the peculiarities of the morphological structure of the mucous membrane of the gums, namely the absence of a submucosal base as a specificity of the masticatory type, intensive keratinization, massive thickness of the stratum corneum and its active functional load, due to ensuring the act of food chewing (**Fig. 4**).

If the elements of the lesion are located on the red border, in most clinical cases on the red border of the lower lip, a plaque, 0.5 to 1 cm in size, with slight peeling of a whitish-pink, sometimes purple shade, is initially formed, on the surface of which greyish-white grid is visualized. Features of the clinical picture, in the form of a plaque, also reflect the regional anatomical and morphological features of the actual red border, namely the insignificant thickness of the epithelial plate and the submucosal base. It should be noted that in some cases red lichen planus can primarily manifest itself from the area of the red border, taking into account numerous exogenous effects on the latter of exogenous factors (ultraviolet, humidity) and harmful habits (smoking, etc.). Subjective sensations are usually absent in patients (**Fig. 5**).

**Discussion.** Under the condition of the most classic variant of the lesion elements location at this dermatosis in the area of the cheeks, the papules have a persistent tendency to group and merge, forming a kind of keratinized bridges, a greyish-white mesh pattern – “Wickham striae” [5, 6, 7].

Suppose the elements of the lesion are located in the area of the back or the lateral surfaces of the tongue. In that case, the typical elements of the lesion will be papules of a reasonably large size, which, merging, take on the appearance of white-grey plaques, and in appearance, they mostly resemble rings and chains. In the case of gum lesion, the primary factors are an increase in volume, loss of scalloping of the gingival margin, and persistent maceration of the mucous membrane against the background of the presence of a white mesh on their surface. If this dermatosis manifests on the red border, the element of the lesion is a whitish-pink plaque with slight peeling in the centre, on the surface of which a greyish-white mesh is visualized [1, 2].

The above-mentioned differences in the clinical picture of red lichen planus should be taken into account at the stage of applying the main clinical methods, as well as the topographic and morphological features of the structure of the mucous membrane at the stage of verification of the lesion elements by a dentist. Thus, in this way, a wide variety of clinical manifestations, and complex etiopathogenetic mechanisms of the red lichen planus development require a personalized, complex analysis based on an individual approach to each patient, taking into account the aetiology, clinic, and regional features of the oral mucosa [11, 12].

**Conclusion.** According to the results of a comprehensive examination, it is advisable to note a number of differences in the clinical picture of the mucous membrane of patients with red lichen planus. The cited discrepancies are due to the topographical and morphological features of the structure of the oral mucosa and its systematics according to the masticatory lining and specialized type.

**Perspectives of further research.** In the future, it is planned to introduce the results of the conducted research into the pathology clinic of the oral mucosa, which will make it possible to optimize the diagnostic process of both primary lesions of the oral mucosa and manifestations of dermatoses with an autoimmune component on it under the conditions of an isolated lesion, through the use of minimally invasive diagnostic methods.

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**УДК** 616.311:616

## КЛІНІЧНА ХАРАКТЕРИСТИКА СЛИЗОВОЇ ОБОЛОНКИ ПОРОЖНИНИ РОТА ПАЦІЄНТІВ ІЗ ЧЕРВОНИМ ПЛОСКИМ ЛИШАЄМ, В ЗАЛЕЖНОСТІ ВІД АНАТОМІЧНОЇ ЛОКАЛІЗАЦІЇ

***Божик С. С.***

**Резюме.** *Мета.* Навести клінічні характеристики слизової оболонки порожнини рота у пацієнтів із червоним плескатим лишаєм в залежності від анатомічної локалізації процесу.

*Матеріал і методи.* Обстеження та комплекс лікувальних заходів проводились на базі кафедри терапевтичної стоматології Тернопільського національного медичного університету імені І.Я. Горбачевського та ліцензованої приватної стоматологічної клініки «DVM», м. Тернопіль. Обстежено 42 хворих на червоний плоский лишай.

Пацієнтам проведено загальний клінічний стоматологічний огляд із реєстрацією показників у медичних картках стоматологічного хворого форми 043/у, та оцінкою стану гігієни порожнини рота за J.C. Green, J.R. Wermillion, об'єктивізацією стану тканин пародонта на основі аналізу індексу (PMA) у модифікації C. Parma.

*Результати.* Найбільш типовими місяцями ураження даною нозологічною одиницею є щоки по лінії змикання зубів, ретромолярна ділянка. Папули дрібні сріблясто-сірого, або біло-сірого кольору із характерним воскоподібним блиском, який є найбільш помітним за умови бічного освітлення. Беручи до уваги регіонарні особливості будови слизової оболонки спинки язика, елементи ураження візуалізуються у вигляду бляшок, що зливаються у фігури та за зовнішнім виглядом нагадують кільця та ланцюги. При розповсюдженні процесу на ясна, спостерігається тенденція до збільшення в об'ємі міжзубних ясенних сосочків та зміни структури ясен у вигляді мацерації та кольору ясен. Особливості клінічної

картини перебігу даного захворювання на червоній облямівці губ у вигляді бляшки відображають регіонарні анатомо-морфологічні особливості власне червоної облямівки, а саме незначну товщину епітеліальної пластинки та підслизової основи.

*Висновки.* Візуалізовані відмінності клінічної картини червоного плескатого лишаю доцільно враховувати на етапі застосування основних клінічних методів і брати до уваги топографо-морфологічні особливості будови слизової оболонки на етапі верифікації елементів ураження лікарем стоматологом. Отже, таким чином, велика різноманітність клінічних проявів, складні етіопатогенетичні механізми розвитку червоного плоского лишають, вимагають персоніфікованого, комплексного аналізу, заснованого на індивідуальному підході до кожного хворого з урахуванням етіології, клініки та регіонарних особливості слизової оболонки порожнини рота.

**Ключові слова:** червоний плоский лишай, сітка Уікхема, слизова оболонка порожнини рота, червона облямівка губ.

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A – Work concept and design, B – Data collection and analysis,
C – Responsibility for statistical analysis, D – Writing the article,
E – Critical review, F – Final approval of the article.

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*The authors of this study confirm that the research and publication of the results were not associated with any conflicts regarding commercial or financial relations, relations with organizations and/or individuals who may have been related to the study, and interrelations of coauthors of the article.*

Стаття надійшла 30.09.2022 р.
*Рекомендована до друку на засіданні редакційної колегії після рецензування*