VILNIUS UNIVERSITY

Arūnas Rimkevičius

THE STUDY OF PATIENTS WITH ORAL LICHEN PLANUS: CLINICAL INDICES, RISK FACTORS AND QUALITY OF LIFE

Summary of Doctoral Dissertation

Biomedical sciences, Odontology (07 B)

Vilnius, 2018

The dissertation was prepared in the years 2010–2018 at Vilnius University.

Submission of the dissertation is external.

Scientific adviser: prof. dr. Alina Pūrienė (Vilnius University, biomedical sciences, odontology – 07 B)

The dissertation is defended at the Dissertation Defence Board:

Chairman:

prof. dr. Vytautė Pečiulienė (Vilnius University, biomedical sciences, odontology – 07 B)

Members:

prof. dr. Rimantas Stukas (Vilnius University, biomedical sciences, public health – 09 B)

prof. habil. dr. Jurgis Algirdas Juozulynas (Vilnius University, biomedical sciences, public health – 09 B)

assoc. prof. Vilma Brukienė (Vilnius University, biomedical sciences, odontology – 07 B)

prof. dr. Mare Saag (University of Tartu, biomedical sciences, odontology – 07 B)

The defence of the dissertation will take place at a public meeting of the Dissertation Defence Board, on 8 June 2018, at 10:00 a.m., in the Big Hall of Žalgiris Clinics of Vilnius University Hospital, at the address: Žalgirio g. 117, LT-08217 Vilnius, Lithuania.

The summary of the dissertation has been sent out on 8 May 2018.

The dissertation is available for reviewing in the library of Vilnius University, at the address: Universiteto g. 3, LT-01122 Vilnius, Lithuania and on the VU internet website: *www.vu.lt/lt/naujienos/ivykiu-kalendorius*

VILNIAUS UNIVERSITETAS

Arūnas Rimkevičius

SERGANČIŲJŲ BURNOS PLOKŠČIĄJA KERPLIGE KLINIKINIŲ RODIKLIŲ IR RIZIKOS VEIKSNIŲ BEI GYVENIMO KOKYBĖS TYRIMAS

Daktaro disertacijos santrauka

Biomedicinos mokslai, odontologija (07 B)

Vilnius, 2018

Disertacija rengta 2010–2018 metais Vilniaus universitete
Disertacija ginama eksternu.

Mokslinė konsultantė – prof. dr. Alina Pūrienė (Vilniaus universitetas, biomedicinos mokslai, odontologija – 07 B)

Disertacija ginama viešame disertacijos Gynimo tarybos posėdyje.

Pirmininkas:
prof. dr. Vytautė Pečiulienė (Vilniaus universitetas, biomedicinos mokslai, odontologija – 07 B)

Nariai:
prof. dr. Rimantas Stukas (Vilniaus universitetas, biomedicinos mokslai, visuomenės sveikata – 09 B)

prof. habil. dr. Jurgis Algirdas Juozulynas (Vilniaus universitetas, biomedicinos mokslai, visuomenės sveikata – 09 B)

doc. dr. Vilma Brukienė (Vilniaus universitetas, biomedicinos mokslai, odontologija – 07 B)

prof. dr. Mare Saag (Tartu universitetas, biomedicinos mokslai, odontologija – 07 B)

Disertacija bus ginama viešame disertacijos gynimo tarybos posėdyje 2018 m. birželio 8 d. 10.00 val. Vilniaus universiteto ligoninės Žalgirio klinikoje didžiojoje auditorijoje. Adresas: Žalgirio g. 117, LT – 08217 Vilnius, Lietuva.

Disertacijos santrauka išsiuntinėta 2018 m. gegužės mėn. 8 d.

Disertaciją galima peržiūrėti Vilniaus universiteto bibliotekoje ir Vilniau. Adresas: Universiteto g. 3, LT-01122 Vilnius, Lietuva ir VU interneto svetainėje adresu: *www.vu.lt/lt/naujienos/ivykiu-kalendorius*

Abbreviations

HPV – human papilloma virus
HIV– human immunodeficiency virus
HCV – hepatitis C virus
HBV – hepatitis B virus
SLV – systemic lupus erythematosus
GVH – „*Graft versus host*“ disease
HSV – *herpes simplex* virus
FFA – fibrotic frontal alopecia
MDA – malondialdehyde
DNA – deoxyribonucleic acid
df – number of degrees of freedom
mln – million
n – absolute term
p – statistical significance
proc. – per cent
PI – Confidence interval
SD – Standard Deviation
χ^2 – chi-square test
Žalgiris Clinics – Žalgiris Clinics of Vilnius University Hospital

1. INTRODUCTION

1.1. Problem under investigation and its relevance

Lichen planus is a chronic inflammatory disease of the skin and mucous membranes and presents itself as specific rash, clinical and histological changes. Lichen planus may present itself not just on the skin and mucous membranes, but may also affect nails and the hairy part of the head. It is a disease with a number of clinical variations.

Different countries count from 0.5 to 2.6 per cent of diagnosed cases of the disease. It may occur just in the skin (up to 44 per cent), in the mouth and skin, just in the mouth (up to 70 per cent) [1, 2, 3]. Most often it is middle-aged and elderly people that suffer from it. According to some of the authors, it is more frequent among female than male, 2.2 and 1.6 per cent, respectively [4]; there are countries where it is more frequent among male [5]. Lichen planus is found in families and it is believed that genetic predisposition of the disease is possible [6], sometimes children have it [5, 7, 8, 9]. Lichen planus is a disease resulting in discomfort for patients, often causing painful lesions in the skin and mucous membrane, having a doubtful treatment prognosis and questionable potential for malignancy [10]. Malignancy of lichen planus lesions is specified irregularly [11]. It has been established that 1.0-3.0 per cent of all lichen planus lesions tend to turn malignant [12]. More frequent malignancy is of erosive – ulcerative rather than of the atrophic forms of the disease [13].

The occurrence of lichen planus is influenced by: chronic sicknesses, disorders of autoimmune disbalance, genetic predisposition towards the disease, reactions caused by medicines, dental materials, traumas of tissues, specific nutrition, addictions and psycho-emotional conditions of the patient [3, 14, 15, 16, 17, 18, 19, 20, 21]. It is believed that conditions like depression, stress or just excessive anxiety may cause appearance of the disease. [22].

No doubt that endocrinal pathology: thyroid diseases [23], diabetes mellitus [24], as well as hepatitis [15], gastrointestinal diseases [25], cardiovascular diseases, hypertension [9] and other sicknesses influence the occurrence of the disease and its progress.

The following are the local etiological risk factors: periodontal pathology, teeth restoration and/or improper oral hygiene, dental materials [26–30]. Addictions, such as smoking and use of alcohol are also named as etiological factors [31, 32, 33].

Many of lichen planus risk factors may be unknown so far [34]; therefore the research of potential risks associated with the disease are of importance.

Lichen planus considerably aggravates the quality of life of the patients [35, 36-38]; therefore, when investigating changes in the quality of life, the ability for adaptation in lichen planus, regular observation of such patients is recommended and the treatment orientated to secure the quality of life should be ensured by the therapist

No precise data on the lichen planus risk factors nor on the quality of life of the patients are available neither in Lithuania nor in the neighbouring countries; therefore, aiming to improve the quality of treatment and prevention, to assess the predisposition factors of lichen planus and their influence on the disease, malignancy of the affected tissues, the quality of life of the patients, further investigations of the disease are significant.

1.2. Originality of the study and its practical value

Patients suffering from lichen planus experience not only physical discomfort but psychological as well. It is difficult to assess their quality of life because understanding of the quality of life differs among individuals, and the expectations of the patients are different. Variety of the clinical forms of the disease determines its different progress, the nature and the impact on the quality of life. So far no investigations of the condition of the

oral lichen planus patients and the influence of the disease on the quality of life have been performed in Lithuania.

The frequency of clinical forms and localisation of lesions of the Lithuanian lichen planus patients has been investigated and assessed for the first time, the prevalence of oral candidosis among the patients has been identified, the prevalence of malignancy of tissues affected by lichen planus has been assessed, the relationship with dermatosis, cardiovascular and gastrointestinal diseases, hepatitis, diabetes mellitus has been assessed. Oral health of the lichen planus patients has been investigated and assessed. A relationship between lichen planus and the factors of social and clinical risks has been established.

With the help of psychometric scale various aspects of lives, daily activities, social relationships of lichen planus patients have been assessed; therefore the results of the study allows making recommendations for the lichen planus patients regarding improvement of the quality of life.

Practical value of the study: the data collected and scientific evidence – based research which will be valuable in individual assessment of social and clinical factors determining the occurrence of the disease and its progress for each patient. The study will be useful in organisation of medical assistance for lichen planus patients, implementing modern standards of diagnostics and treatment, modelling the attitude of odontology and medicine students, residents, dental practitioners and specialists of odontology and skin diseases towards establishment, treatment, prevention of the disease and the importance of improvement of the quality of life of the patients.

1.3. Goal and objectives of the study

Goal of the study is to investigate clinical indices of the patients suffering from oral lichen planus, the correlation between the disease and the risk factors and the quality of life of the patients.

Objectives of the study:

1. To assess socio-demographic and clinical indices of the oral lichen planus patients.
2. To establish the relationships between the risk of occurrence of oral lichen planus and the socio-demographic, local, generic factors and chronic diseases and health conditions.
3. To establish and assess the quality of life of the oral lichen planus patients.
4. To identify the risk factors which influence the quality of life of the oral lichen planus patients.

2. RESEARCH MATERIAL AND METHODS

2.1. Design of the study

For settlement of the objectives of the scientific study the analytical observational case- control study was selected and a permit No 158200-02-148-056 LP11 of the Ethics Committee of the Biomedicine Research of Lithuania was obtained.

Persons participating in the research were verbally and in written form informed about the planned research and written consents of all patients regarding participation in the research were obtained.

Scope of the research. The research on oral lichen planus was performed during the years 2010–2014 at Žalgiris Clinics. The total number of patients was 312; of those 274 patients agreed to participate in the research and were investigated, 137 lichen planus patients and the same number of patients without it.

2.2. Test groups

2 groups of patients were chosen for the research. One group consisted of the lichen planus patients (case group). The patients of the control group - the patients without lichen planus - were of similar age, sex and social status.

The group of lichen planus patients (case group) included all patients from the period 2010 to 2014 that were referred to Žalgiris Clinics for consultancy and treatment, and who had histologically confirmed lichen planus diagnosis. Based on the clinical symptoms of the disease all cases of lichen planus were divided into the following groups: papular, reticular, erosive-ulcerous, bullous, atrophic and plaque-like forms. The plaque-like lichen planus form was diagnosed for none of the patients participating in the research so it will not be mentioned in the study hereinafter.

The patients in control group were selected from those arriving to Žalgiris Clinics for consultations on other than lichen planus sicknesses. The patients in the control group were of similar age, sex and social status, and were interviewed and investigated the same way as the lichen planus patients.

2.3. Investigation of patients

All participants in the scientific study were interviewed using "General Patient's Health Questionnaire" and "Quality of Life Questionnaire" which were responded by the participants of both groups. An additional "Clinical Investigation Questionnaire" was answered only by the lichen planus patients. The lichen planus patients were investigated clinically, histologically; they were also subjected to the investigation of cytological mucous membrane scrapings from the lichen planus lesions.

2.3.1. Patients' survey

Information about the demographic data, oral health and local and systemic risk factors of the participants was collected with the help of a structured questionnaire. Aiming to reduce the number of unanswered issues,

the questionnaire was not explicitly filled in; further personal interviewing was performed. The persons of other than the Lithuanian origin, speaking poor Lithuanian, were also interviewed individually. The questions in the questionnaires were presented with suggested answer alternatives. The participants of the study had to choose the most acceptable for them answer.

2.3.1.1. Questionnaire on the quality of life

All participants were asked to answer questions about the quality of life (Annex 8). Based on similar studies on the quality of life of sick persons performed internationally and in Lithuania, an adapted questionnaire WHOQOL–100 of the WHO was used [40]. The questionnaire was designed based on similar international and Lithuanian studies on the patients' quality of life. The participants were asked about the demographic data and about the key factors which might have influenced their quality of life. By the content three groups of the questions about the quality of life are distinguished: satisfaction with the condition of oral health, satisfaction with own life and satisfaction with the overall health.

2.3.1.2. Questionnaire for evaluation of the patient's overall health condition

All participants filled in the questionnaire adapted and translated according to Karolinska institute (Sweden, 2004) questionnaire for evaluation of overall condition of the patient's health. Demographic data (sex, age, place of residence and marital status) were collected as well as the information about the way of life (smoking, use of alcohol) and social-economic information (education, social status). Aiming to find out the aetiology all patients were asked about generic risk factors: experienced stress, infections, chronic illnesses, use of medications and genetic factors (lichen planus among the family members). The patients were also asked to self-assess their health condition.

2.3.1.3. Questionnaire of clinical inspection

The same researcher additionally performed a clinical investigation employing a clinical investigation questionnaire aimed to find out if the patient was consulting for the first time or repeatedly, what the progress of the disease was, if there were any exacerbations of the disease; the clinical form of the disease was also established, as well as localisation of lesions and the link between lichen planus and other diseases of the mucous (psoriasis, bullous, seborrhoea, lupus erythematosus and etc.)

2.3.2. Collection of data

Before the research, aiming to reduce the influence of informational errors, the credibility of the questionnaire on the quality of life was checked (under the same questionnaire a group of 10 patients was interviewed, and the same group was interviewed again after two weeks using the same questionnaire). It was attempted to find out whether the questions were understood by the patients, were they adequate and if there had been any problems when answering the questions.

The credibility of the questionnaire was assessed by test-retest, which was established assessing the correlation (correlation coefficients) between the primary and the repeated interview using the same methods.

2.3.3. Clinical examination of the oral lichen planus patient

Oral clinical examination consisted of assessment of the forms of lichen planus and investigation of possible local and systemic risk factors associated with the oral environment. Locations of the lichen planus lesions were assessed.

Clinical investigation of the lichen planus patient was performed by examination of the patient's mouth. The form of the disease (papular, reticular, erosive-ulcerous, bullous, plaque-like (hyperkeratosis), atrophic), the location in the mouth (buccal mucosa, gums, tongue, lips, the vestibule

of the mouth, the palate) and its prevalence (skin, nails, genitals) were established. Examination of the skin and of the genitals was performed by a doctor dermato-venereologist. For the purpose of assessment of the aetiology of lichen planus the following local risk factors were assessed: bimetallism, poor oral hygiene, sharp edges of the teeth, tooth roots, chronic endodontic infection, chronic periodontal pathology, tooth decay, dental amalgam, composite fillings and removable and nor removable dental prosthesis.

2.3.4. Histology test

Incisive biopsy was used for confirmation of the lichen planus diagnosis. Biopsy was performed to all patients that had the clinical diagnosis of lichen planus. Before the test all participants of the study were introduced to the methodology of biopsy sampling and the complications of the test: possible bleeding at the place of stick or incision injury, after-surgery pain. Prior to the planned biopsy the patients were warned to stop taking anticoagulant medicines. The biopsy samples were from 3–10 mm × 3–4 mm × 3–4 mm size.

Incisive mucous biopsy was performed under local surface infiltration anaesthesia with 0.5–1 ml 4 per cent *Ubistesini forte* anaesthetic, with prior disinfection of the mouth tissues with the solution of 0.12 per cent chlorhexidine for 1 min.

The piece of oral surface mucous epithelia was fixed in a buffer formalin solution, placed into a test-tube marked with the patient initials, and forwarded for further investigation to the State Pathology Centre, where the test –tubes were covered with paraffin, painted with haematoxylin and eosin, and the histology test was performed assessing the infiltration of the oral mucous with lymphocytes (T lymphocyte infiltration), hyperplasia of oral mucosa and hyperparakeratosis, ulceration of squamous epithelia due to erosion of basal layer and necrosis of keratinocytes. The presence of hyperplasia was assessed as the minimum, the medium and the maximum.

This way the lichen planus diagnosis was specified and the presence or absence of atypical cells in the lesions was verified.

All procedures were performed after assessment of the overall and the oral health of the patients. The histology test was performed at the Pathology Centre of VUH Santaros Klinikos.

2.3.5. Cytology test

Scrapings from the surfaces of lichen planus lesions in the mouth were taken with the help of a scoop and spread on a glass slide and further forwarded to the laboratory for investigation. Aiming to establish the presence of *Candida* and atypical cells exfoliative cytology of the surface cells was used. The cytology tests were performed at the laboratory of VUH Žalgiris Clinics.

2.4. Statistical analysis

The statistical analysis was performed by IBM SPSS Statistics® software package – *Statistical Package for Social Sciences 22 for Windows*. For assessment of interdependency of qualitative features (or homogeneity) the criterion of chi square *(χ2)* was used, in cases of low samples – the precise *χ2* criterion. Pairwise comparisons were made applying z criterion.

Socio-demographic, clinical local (related to the oral environment) and general factors, such as chronic diseases, use of medications, allergies, factors of life style, such as smoking and use of alcohol, influencing lichen planus disease were assessed applying the method of logistical regression. The results of univariate and multivariate logistic regressive analysis are described presenting the SR – odds ratio, and 95 per cent PI – confidence interval of probability ratio.

In the analysis of the quality of life of the patients the dispersive analysis and the General Linear Model of multiplicative analysis SPSS.22 was used. In the final step the necessary assumptions for this analysis were checked.

The compliance of the model was assessed by the determination coefficient R^2. Equality of variance, dependant variable, normality of its probability distribution and the null hypothesis of the coefficients of the linear model were verified.

The observed differences or links between the characteristics were considered statistically significant when the level of significance (p value) calculated during verification of statistical hypothesis was under the selected level of significance $\alpha = 0.05$ ($p - value < 0.05$).

3. RESULTS

137 lichen planus patients participated in the investigation: 24 male (17.5 per cent) and 113 female (82.5 per cent). The average age of the patients was 55.43±14.26. The eldest lichen planus patient was 80, the youngest – 17 years old. The majority of the patients were from 51 to 60 years old.

Analysing the distribution of lichen planus patients by education it was established that 38.0 per cent of the lichen planus patients had higher non-university education or uncompleted higher education, 32.1 per cent had university education, 22.6 per cent had secondary education, and 7.3 per cent had primary or uncompleted secondary education.

Assessment of the marital status of the lichen planus patients has established that the most of the patients (73.7 per cent) were married or cohabited. The majority of lichen (77.4 per cent) lived in a big city.

Analysing the distribution of lichen planus patients by the social status it has been established that 36.5 per cent were specialists or servants, 31.4 per cent were retired on pension, 9.5 per cent were workers or technical staff. The most of the female lichen planus patients (38.1 per cent) were specialists or servants, and the majority of male lichen planus patients were specialists or servants (29.2 per cent) and retired on pension (29.2 per cent).

It has been established that 11 (8.0 per cent) of the lichen planus patients had relatives suffering from the disease, and the rest 126 patients (92 per

cent) had ambiguous aetiology (idiopathic): male – 23 (18.3 per cent), female – 103 (81.7 per cent).

During the assessment of the clinical indices of the lichen planus patients it has been established that the most patients (45.3 per cent) had the diagnosis of the reticular form of lichen planus, 34.3 per cent – erosive-ulcerous, 8.0 per cent – papular, 10.9 per cent – atrophic and 1.5 per cent – bullous form of lichen planus. The plaque-like lichen planus form has been diagnosed for none of the patients participating in the investigation (Table 1). The reticular clinical form of lichen planus was more frequent among male (66.6 per cent) than among female (40.7 per cent), the difference was statistically significant (χ^2=8.756, p=0.003). No other statistically significant differences between male and female lichen planus patients have been found.

Table 1. Distribution of lichen planus patients by the clinical form of the disease

Clinical form	**Total (n=137)** n (per cent)	**Male (n=24)** n (per cent)	**Female (n=113)** n (per cent)	**p- value**
Papular	11 (8.0)	1 (4.2)	10 (8.8)	0.689*
Reticular	62 (45.3)	16 (66.6)	46 (40.7)	0.003
Erosive-ulcerous	47 (34.3)	6 (25.0)	41 (36.3)	0.290
Bullous	2 (1.5)	0 (0.0)	2 (1.8)	1.00*
Atrophic	15 (10.9)	1 (4.2)	14 (12.4)	0.469*
Plaque-like	Not found	Not found	Not found	

*Fisher's exact test

Analysis of the localisation of the lichen planus lesions showed that the patients most frequently had lesions on buccal mucosa (87.6 per cent), on gums (46.7 per cent), on the side surfaces of the tongue (39.4 per cent) and on the dorsum of the tongue (29.9 per cent). Other areas of the oral mucous were affected less frequently. It has been established that 6 lichen planus patients (4.4 per cent) had affected nails and genitals.

Analysing localisation of the lichen planus lesions by sex, it has been established that the gums were more frequently affected in females (53.1 per

cent) than for male (16.7 per cent); this difference was statistically significant (χ^2=10.555; p=0.001). It has also been established that the skin was more often affected in females (23.9 per cent) than in males (4.2 per cent); the difference was statistically significant (χ2=4.738; p=0.028).

The cytological test showed (Table 2) that at different forms of lichen planus in the scrapings of from the lesions bacteria were found. Abundant microbe flora was found in 59.6 per cent of the patients suffering from erosive-ulcerous form of lichen planus, in 45.5 per cent of the patients with papular form of lichen planus, in 33.9 per cent of the patients with reticular form and in 33.3 per cent of the patients suffering from the atrophic form of lichen planus.

Table 2. Distribution of cytological indices by the forms of lichen planus

Clinical form	Microbe flora		Candida			Actino-micetes		Atypical cells		Total
	abundant	sparse	abundant	sparse	none	present	none	present	none	
Papular	5 (45.5)	6 (54.5)	0 (0.0)	7 (63.6)	4 (36.4)	0 (0.0)	11 (100)	0 (0.0)	11 (100)	11
Reticular	21 (33.9)	41 (66.1)	10 (16.1)	20 (32.3)	32 (57.6)	5 (8.1)	57 (91.9)	0 (0.0)	62 (100)	62
Erosive-ulcerous	28 (59.6)	19 (40.4)	7 (14.9)	18 (38.3)	22 (46.8)	2 (4.3)	45 (95.7)	3 (6.4)	44 (93.6)	47
Bullous	0 (0.0)	2 (100)	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	2 (100)	0 (0,0)	2 (100)	2
Atrophic	5 (33.3)	10 (66.7)	2 (13.3)	8 (53.3)	5 (33.3)	1 (6.7)	14 (93.3)	0 (0.0)	15 (100)	15
Plaque-like	Not found									

Abundantly various types of *Candida* fungus were found in the participants, of those (N=10) 16.1 per cent of reticular and (N=7) 14.9 per cent of erosive-ulcerous cases. Of all clinical forms of lichen planus only in 5.8 per cent cases *Actinomyces* fungus was found. Of all lichen planus

patients atypical cells were found in 2.2 per cent cases. Assessing the cytology test it has been established that atypical cells were found only in the erosive-ulcerous form of lichen planus (3 cases).

After the histological investigation (Table 3) by which infiltration of oral mucous with lymphocytes (T lymphocyte infiltration), hyperplasia of oral mucous, hyperparakeratosis and ulceration of squamous cell epithelium were assessed, it has been established that the most obvious (3+) epithelia hyperplasia was found in 11.3 per cent of reticular, 10.6 per cent of erosive – ulcerous and 50 per cent of bullous forms of lichen planus. The most obvious leucocyte infiltration was in 55.3 per cent of erosive-ulcerous, 50 per cent of bullous, 30.6 per cent of reticular and in 20 per cent of atrophic form of lichen planus cases. Hyperparakeratosis was the most frequently (74.5 per cent) found in the cases of erosive-ulcerous form of lichen planus. Ulceration of epithelia has been found in 76.6 per cent of erosive –ulcerous and in 46.7 per cent of atrophic forms of lichen planus. 3 cases of squamous carcinoma were found in the erosive- ulcerous lichen planus (Table 3). No cases of plaque –like of lichen planus has been found.

Analysing overall condition of health of the lichen planus patients it has been established that 35.0 per cent of the lichen planus patients had chronic gastritis, 32.9 per cent had arterial hypertension, 25.6 per cent had benign tumours and 24.1 per cent suffered from thyroid diseases.

The results of the research showed that 13.1 per cent of the lichen planus patients were allergic to antibiotics, 8.0 per cent – to food products, 5.1 per cent – to tooth filling materials, plastic, metals, 3.6 per cent – to iodine and 11.7 per cent of the patients were allergic to other allergens. relationship between the socio-demographic factors and lichen planus.

By comparison of potential local factors of the patients and of those not sick with lichen planus (Table 4) it has been established that in the investigated group there were more patients with different metals in the mouth, with poor oral hygiene, sharp teeth edges, having chronic periodontal pathology and fixed dental prostheses than in the control group.

Table 3. Distribution of histological indices by the clinical form of lichen planus

Clinical form	Lymphocyte infiltration n (per cent)			Hyperparakeratosis n (per cent)		Hyperplasia n (per cent)			Ulceration of epithelia n (per cent)		Carcinoma n (per cent)		Total
	1+	2+	3+	Yes	No	1+	2+	3+	Yes	No	Yes	No	
Papular	2 (18.2)	9 (81.8)	0 (0.0)	4 (36.4)	7 (63.6)	7 (63.6)	4 (36.4)	0 (0.0)	0 (0.0)	11 (100)	0 (0.0)	11 (100)	11
Reticular	6 (9.7)	37 (59.7)	19 (30.6)	40 (64.5)	22 (35.5)	26 (41.9)	29 (46.8)	7 (11.3)	10 (16.1)	52 (83.9)	0 (0.0)	62 (100)	62
Erosive-ulcerous	2 (4.3)	19 (40.4)	26 (55.3)	35 (74.5)	12 (25.5)	11 (23.4)	31 (66.0)	5 (10.6)	36 (76.6)	11 (23.4)	3 (6.4)	44 (93.6)	47
Bullous	0 (0.0)	1 (50.0)	1 (50.0)	1 (50.0)	1 (50.0)	0 (0.0)	1 (50.0)	1 (50.0)	2 (100)	0 (0.0)	0 (0.0)	2 (100)	2
Atrophic	4 (26.7)	8 (53.3)	3 (20.0)	6 (40.0)	9 (60.0)	13 (86.7)	0 (0.0)	0 (0.0)	7 (46.7)	8 (53.3)	0 (0.0)	15 (100)	15
Plaque-like	Not found												

Table 4. Distribution of the local factors among the patients of lichen planus and those that not have the disease.

Factor	Total n=274 (per cent)	Control group n=137 (per cent)	Case group n=137 (per cent)	p value*
Different metals present in the mouth	37 (13.5)	5 (3.6)	32(23.4)	<0.001
Poor oral hygiene	85 (31.0)	19 (13.9)	66 (48.2)	<0.001
Sharp edges of teeth	45 (16.4)	18 (13.1)	27 (19.7)	0.096
Teeth roots	21 (7.7)	16 (11.7)	5 (3.6)	0.021
Chronic endodontic infection	21 (7.7)	14 (10.2)	7 (5.1)	0.171
Chronic periodontal pathology	144 (52.6)	54 (39.4)	90 (65.7)	<0.001
Decays	47 (17.2)	30 (22.1)	17 (12.4)	0.054
Amalgam fillings	51 (18.6)	23 (16.8)	28 (20.4)	0.535
Composite fillings	166 (60.6)	83 (60.6)	83 (60.6)	1.000
Fixed dental prostheses	156 (56.9)	66 (48.2)	90 (65.7)	0.005
Removable dental prostheses	39 (14.3)	24 (17.5)	15 (11.0)	0.166

*Chi square or Fisher's exact test

Statistically significant local factors related to lichen planus have been identified: different metals in the mouth, poor oral hygiene, teeth roots, chronic periodontal pathology, dental decay, fixed dental and removable dental prostheses.

It was searched for local factors which associate with lichen planus. All possible local risk factors were included into the multi-dimensional analysis and the influence of the age was also considered (Table 4). Stepwise backward elimination regression was chosen with the help of which variables were maintained in the model, based on which the model most specifically accounted the presence of lichen planus. 74.3 per cent of the respondents

–lichen planus patients and 72.8 per cent of those that did not have lichen planus were correctly classified. Totally, 73.5 per cent of the participants of the study were correctly identified.

The risk to get sick with lichen planus for the patients with different metals in the mouth was statistically significantly higher (SR=5.86) (p=0.001) if compared with those without metals in the mouth. The patients with poor oral hygiene were at statistically significantly higher risk of lichen planus (SR=6.68) (p<0.001) if compared with the patients with good oral hygiene. The patients that had roots of teeth in the mouth were at statistically significantly higher risk of lichen planus (p=0.014) (SR=0.19) if compared with the patients without teeth roots in the mouth. The patients having chronic periodontal pathology were at statistically significantly higher risk of lichen planus (p=0.001) if compared with the patients that did not have it. The patients with dental decay were at statistically significantly higher risk of lichen planus (SR = 0.28) (p=0.005) if compared with the patients without dental decay. The patients that had removable prostheses the possibility to get sick with lichen planus was statistically significantly higher (SR = 0.36) (p=0.023) if compared with the patients that did not have removable prostheses in their mouth (Table 5).

Table 5. Local factors significant for lichen planus in the multi-dimensional logistic analysis

Factors	SR (95 per cent PI)	p value
Different metals in the mouth	5.86(2.03-16.91)	0.001
Poor oral hygiene	6.68(3.19-14.00)	<0.001
Teeth roots	0.19(0.05-0.71)	0.014
Chronic periodontal pathology	2.57(1.44-4.60)	0.001
Dental decay	0.28(0.11-0.68)	0.005
Removable dental prostheses	0.36(0.15-0.87)	0.023

SR – odds ratio, PI – confidence interval, p – significance level.
Compliance of the model with the data – $\chi 2$= 87.47, df=6, p<0.001;
Model compliance – determination coefficient R^2=0.37.

The results of the research showed that in the group of the lichen planus patients (Table 6) there were more patients that had experienced stress, taking diuretics, anti-hypertension medicines, neuroleptics and other tranquilizers, and having contacts with chemical substances than in the control group.

Table 6. Distribution of generic factors among the lichen planus patients and those that do not have it

Factor	Total n=247 (per cent)	Control gr. n=137 (per cent)	Research gr. n=137 (per cent)	p value
Stress	181 (66.1)	75 (54.7)	106 (77.4)	<0.001
Infections	36 (13.1)	26 (19.0)	10 (7.3)	0.007
MEDICATIONS:				
Anti-inflammatory non-steroidal drugs	48 (17.5)	27 (19.7)	21 (15.3)	0.427
Diuretics or antihypertensive agents	77 (28.1)	32 (23.4)	45 (32.8)	0.106
Anti- TB agents	2 (0.7)	1 (0.7)	1 (0.7)	1.000
Neuroleptics, other tranquilizers	57 (20.8)	18 (13.1)	39 (28.5)	0.003
Steroid hormones	17 (6.2)	9 (6.6)	8 (5.8)	0.999
Antiarrhythmic drugs	22 (8.0)	8 (5.8)	14 (10.2)	0.180
Chemical substances	28 (10.2)	3 (2.2)	25 (18.2)	<0.001

*Chi square or Fisher's exact test

Statistically significant generic factors associated with lichen planus have been identified; namely, stress, infections, use of neuroleptics and other tranquilizers, chemical substances.

It was searched for generic factors which had the strongest link with lichen planus. All generic factors were included into the multivariate analysis; the influence of age has been considered as well. Stepwise backward elimination regression was chosen, with the help of which variables were maintained in the model, based on which the model most specifically prognosticated lichen planus. 81 per cent of the participants –lichen planus

patients and 51.1 per cent of those that did not have lichen planus were correctly classified. Totally, 66.1 per cent of the participants of the study were correctly identified.

Based on the developed model of multivariate logistic regression (Table 7), it is possible to state that the patients experiencing stress have were statistically significantly (SR=2.45) (p=0.002) higher the chances to get sick with lichen planus than those not experiencing stress. It has been established that for the patients suffering from chronic inflectional diseases the chances to get sick with lichen planus are statistically significantly (SR=0,3) (p=0,006) higher if compared with those that do not have it. The patients that used neuroleptics and/or other tranquilizers had statistically significantly higher (p=0.012) chances to get sick with lichen planus if compared with those that did not use those medications. The patients that have chemical substnaces in their work environment have statistically significantly higher (SR=10.63) (p<0,001) chances to get sick with lichen planus if compared with those that have no contacts with chemical substances.

Table 7. Generic factors significant for lichen planus, according to multivariate logistic analysis

Factors	SR (95 per cent PI)	p value
Stress	2.45(1.41-4.27)	0.002
Infections	0.30(0.13-4.59)	0.006
Neuroleptics, other tranquilisers	2.35(1.20-4.59)	0.012
Chemical substances	10.63(2.91-38.85)	<0.001

SR – odds ratio, PI – confidence interval, p – significance level.
Compliance of the model with the data – $\chi 2$= 50.33 df=4. p<0.001;
Model compliance – determination coefficient R^2=0.22;
The model prognosticated with the accuracy of 66.1 per cent.

Comparing the prevalence of chronic diseases and conditions in the control and the case groups (Table 8) it has been established that bullosa simplex, psoriasis, gastro-intestinal disorders, seborrhoea dermatitis and

diabetes mellitus were common in the case group. The most of the patients in the research group suffered from gastrointestinal disorders (31.1 per cent).

Table 8. Distribution of chronic diseases and conditions among the lichen planus patients and those that do not have it

Factors	Total n=274 (per cent)	Control gr. n=137 (per cent)	Research gr. n=137 (per cent)	p value*
Bullosa simplex	4 (2.9)	0 (0.0)	4 (2.9)	0.122
Psoriasis	8 (5.8)	0 (0.0)	8 (5.8)	0.007
Chronic gastritis, gastric ulcer, other gastro-intestinal diseases	44 (31.1)	0 (0.0)	44 (31.1)	<0.001
Seborrhoea dermatitis	4 (2.9)	0 (0.0)	4 (2.9)	0.122
Diabetes mellitus	8 (5.8)	0 (0.0)	8 (5.8)	0.003
Lupus erythematosus	0 (0.0)	0 (0.0)	0 (0.0)	1.000

*Chi square or Fisher's exact test

During the research experienced stress was assessed. The majority of the respondents (54.9 per cent) indicated stress at work (arduous work) (Table 9). In the research group more patients specified as stress a death of a close family member, of a friend and a personal sickness.

Analysing the overall condition of health it has been established that in the case group there were more patients suffering from epilepsy or another neurological disease, having experienced episodes of convulsions or fainting spells, undergoing psychiatric treatment, had cardiovascular diseases, chronic gastritis, thyroid diseases, underwent blood transfusion, had oncologic diseases or were allergic to medications.

The chronic diseases and conditions which had statistically significant correlation with oral lichen planus have been identified, namely, chronic gastritis, thyroid diseases, blood transfusion and malignant tumours.

Table 9. Distribution of experienced stress cases in the groups of lichen planus patients and those that do not have it

Experienced stress	Total n=244 (per cent)	Control gr. n=128 (per cent)	Research gr. n=116 (per cent)	p value*
Death of a spouse	37 (15.2)	19 (14.8)	18 (15.5)	0.999
Divorce	35 (14.3)	22 (17.2)	13 (11.2)	0.147
Conflicts in the family	55 (22.5)	28 (21.9)	27 (23.3)	0.999
Death of a close family member, of a friend	68 (27.9)	33 (25.8)	35 (30.2)	0.889
Personal sickness or trauma	66 (27.0)	31 (24.2)	35 (30.2)	0.672
Marriage	14 (5.7)	7 (5.5)	7 (6.0)	1.000
Stress at work, arduous work	134 (54.9)	68 (53.1)	66 (56.9)	0.904
Resignation, retirement	38 (15.6)	23 (18.0)	15 (12.9)	0.221
Change of the place of residence	21 (8.6)	14 (10.9)	7 (6.0)	0.172
Change of nutrition habits	13 (5.3)	10 (7.8)	3 (2.6)	0.085
Son or daughter leaving home	23 (9.4)	12 (9.4)	11 (9.5)	0.999
Personal victory, promotion at work	3 (1.2)	3 (2.3)	0 (0.0)	0.247
Financial problems, debts, loans	41 (16.8)	27 (21.1)	14 (12.1)	0.041
Problems with the law and order	30 (12.3)	27 (21.1)	3 (2.6)	<0.001
Other	10 (4.1)	2 (1.6)	8 (6.9)	0.103

*Chi – square test or Fisher's exact test

We searched for chronic diseases and conditions which had the greatest correlation with lichen planus. Multivariate logistic analysis assessed chronic diseases and the influence of the age. Stepwise backward elimination regression was chosen with the help of which variables were maintained in the model, based on which the model most specifically prognosticated lichen planus. 63.2 per cent of the respondents –lichen planus patients and 74.5 per

cent of those that did not have lichen planus were correctly classified. Totally, 68.9 per cent of the participants of the study were correctly identified.

Based on the multivariate logistic regression model (Table 10) it is possible to state that the patients with chronic gastritis have statistically significantly higher (SR=3.09) (p<0,001) risk to get sick with lichen planus if compared with those that do not have lichen planus. It has been established that for the patients with thyroid diseases the chances to get sick with lichen planus are statistically significantly (SR= 6.32) (p<0,001) higher if compared with those that do not have it. The patients that had a blood transfusion have statistically significantly higher (SR=3.47) (p=0.028) chances to get sick with lichen planus than the patients who had not experienced a transfusion. The patients who have or had malignant tumours have statistically significantly higher (SR= 6.22) (p<0.001) chances to get sick with lichen planus if compared with the patients without malignant tumours.

Table 10. Assessment of the influence of chronic diseases and conditions on occurrence of lichen planus, multivariate logistical analysis

Factors	SR (95 per cent PI)	p value
Chronic gastritis	3.09(1.64-5.83)	<0.001
Thyroid diseases	6.32(2.44-16.39)	<0.001
Blood transfusion	3.47(1.15-10.49)	0.028
Malignant tumours	6.22(2.24-17.33)	<0.001

SR– odds ratio, PI – confidence interval , p – level of significance.
Model compliance with the data – $\chi 2$= 60.79, df=4, p<0.001;
Model compliance – determination coefficient R^2=0.27;
The model prognosticated with accuracy 68.9 per cent.

Based on the data of the research, the lichen planus patients assessed the quality of life in lower points than the patients in the control group. It has been established that the mean life quality point of the lichen planus patients was 68.1 (stand. n. 8.3, med. 68,3), of those that do not have it – 75.9 (stand. N. 7.3, med. 76,9), the difference is statistically significant (p<0.001).

Analysing the life quality differences between male and female it has been established that the female lichen planus patients assessed the quality of life in lower points (the average 67 points) than those that did not have oral lichen planus (the average 75.7 points), the difference is statistically significant ($p<0.001$).

Analysing the assessment of the quality of life with the consideration of the age it has been established almost all oral lichen planus patients assessed the quality of life statistically significantly in lower points than those that did not have it, with the exception of the participants of the study from 31 to 40 years of age, whose assessment of the quality of life did not differ statistically significantly, irrespectively of having or not oral lichen planus.

Analysing the assessment of the quality of life with the consideration of education it has been established that the lichen planus patients with the secondary, higher non-university and the university education assessed the quality of life in statistically significantly lower points than the patients without lichen planus with the same education. The patients with lichen planus and without it who had primary and uncompleted secondary education assessed the quality of life the same.

Analysing the assessment of the quality of life of the patients with lichen planus and without it with the consideration of marital status it has been established that married and cohabiting, single and widows and widowers assessed the quality of life in lower points than the patients without lichen planus; the difference is statistically insignificant.

Analysing the assessment of the quality of life of the patients with lichen planus and without it with the consideration of the place of residence it has been established that both lichen planus patients living a big city and in countryside assessed the quality of life in lower points than the patients without the disease; the difference is statistically significant.

Investigating the assessment of the quality of life of the patients with lichen planus and without it with the consideration of the social status it has been established that workers, technical staff, specialists, servants, retired

persons, house-wives with lichen planus assessed the quality of life in lower points than those without lichen planus; the differences are statistically significant. It has been established that businessmen, top managers, students, school children and the unemployed both lichen planus patients ant patients without it assessed the quality of life the same.

Table 11 presents the data illustrating the link between the quality of life and the socio-demographic factors. It has been established that in the case group the quality of life is the most related to the sex (F=10.5, p=0.001), a little bit less with the place of residence (F=9.5, p=0.003). Meanwhile, it the control group the strongest link is between the quality of life and the education (F=4.14, p=0.008). Other socio-demographic factors did not have any statistically significant link with the quality of life.

Having assessed by the method of regressive analysis the intensity of the links (value of β coefficient, positive – increases, negative – decreases) between the quality of life and the socio-demographic factors (the age, the sex, the marital status, the place of residence) it has been established that in the case group the quality of life was better of the male (β=6.20; PI 2.42-9.98) comparing with the female, of those living in a big city (β=5.19; PI 1.85-8.53) comparing with the ones living in other cities and the countryside. In the control group the quality of life was better only of the participants with university education (β=7.34, PI 2.11-12.56) comparing with the respondents with primary and incomplete secondary education. Other socio-demographic factors did not have any statistically significant difference for the quality of life. Considering the above, the above-mentioned characteristics were not included into the stages of risk factors' investigation.

The data given in Table 12 show the correlation between the quality of life and the local risk factors. It has been established that in the research group the quality of life does not statistically significantly correlate with the local risk factors. Meanwhile, in the control group the most intensive correlation between the quality of life and the chronic periodontal pathology has been found (F=11.6, p=0.001). The other factors did not have any statistically significant correlation with the quality of life.

Table 11. Relationship between the quality of life and the socio-demographic factors

Factor	Case group[a]					Control group[b]				
	Sum of mean squares	df	Mean square	F	p	Sum of mean squares	df	Mean square	F	p
Model compliance	1901.8	11	172.9	2.9	0.002	1172.6	11	106.6	2.2	0.019
Free member	214356.8	1	214356.8	3609.0	<0.001	262139.9	1	262139.9	5376.5	<0.001
Age	208.8	5	41.8	0.7	0.622	401.5	5,	80.3	1.65	0.152
Sex	626.2	1	626.2	10.5	0.001	27.0	1	27.03	0.55	0.460
Education	38.7	3	12.9	0.2	0.884	605.2	3	201.7	4.14	**0.008**
Marital status	132.2	1	132.2	2.2	0.138	0.4	1	0.408	0.01	0.927
Place of residence	561.4	1	561.4	9.5	0.003	3.4	1	3.4	0.069	0.793
Random error	7424.3	125	59.4			6045.8	124	48.8		

a – $R^2 = 0.20$ (case); b – $R^2 = 0.16$ (control)

Table 12. Correlation between the quality of life and the local risk factors

Factor	Case group[a]					Control group[b]				
	Sum of mean squares	df	Mean square	F	p	Sum of mean squares	df	Mean square	F	p
Model compliance,	641.1	11	58.3	0.8	0.608	1313.9	11	119.5	2.5	0.007
Free member	45707.8	1	45707.8	**652.6**	< 0.001	53774.2	1	53774.2	1129.1	< 0.001
Different metals in the mouth	31.8	1	31.8	0.45	0.502	101.5	1	101.5	2.1	0.147
Poor oral hygiene	238.6	1	238.6	3.4	,067	40.1	1	40.1	0.8	0.360
Sharp teeth edges	117.8	1	117.8	**1.682**	,197	8.4	1	8.4	**0.2**	**0.675**
Teeth roots	2.952	1	2.952	**,042**	,838	105.2	1	105.2	2.2	0.140
Chronic endodontic infection	2.0	1	2.0	**,029**	,865	56.6	1	56.6	1.2	0.278
Chronic periodontal pathology	60.4	1	60.4	**,862**	,355	553.8	1	553.8	11.6	0.001
Dental decay	,1	1	,1	**,001**	,978	73.9	1	73.9	1.6	0.215
Dental amalgam	23.6	1	23.6	**,337**	,562	11.2	1	11.2	0.2	0.628
Composite fillings	193.0	1	193.0	**2.755**	,099	71.0	1	71.0	1.5	0.225
Fixed dental prostheses	4.3	1	4.3	**,061**	.805	116.8	1	116.8	2.5	0.120
Removable dental prostheses	1.1	1	1.1	**,016**	,899	4.1		4.1	0.1	0.771
Random error	8684.5	124	70.0			5905.8	124	47.6		

a – R^2=0.07 (case) b – R^2=0.18 (control)

Having assessed by the method of regressive analysis the intensity of the correlation between the quality of life and the local factors (different metals in the mouth, poor oral hygiene, sharp teeth edges, teeth roots, chronic endodontic infection, chronic periodontal pathology, dental decay, dental amalgam, composite fillings, fixed dental prostheses, removable dental prostheses) it has been established that only in the control group the quality of life is better of the respondents without chronic periodontal pathology (β=4.91, PI 2.06-7.76) if compared with the participants of the study that do have chronic periodontal pathology. The other local factors did not have statistically significant difference on the quality of life. Therefore the above-mentioned indications were not included into the steps of the study of risks factors.

Table 13 presents data showing correlation between the quality of life and the generic factors. It has been established that only in the case group the quality of life the most intensively correlates with the use of anti-inflammatory medications (F=7.3, p=0.008). The other generic factors had no statistically significant link with the quality of life.

Having assessed by the method of regressive analysis the intensity of the correlation between the quality of life and the general factors (stress, chronic infections, anti-inflammatory medications, diuretics, anti-TB drugs, neuroleptics, steroid hormones, antiarrhythmic medications, chemical substances) it has been established that only in the case group the quality of life was better of the patients that did not use anti-inflammatory non-steroid medications (β=5.35, PI 1.42-9.29) comparing them with the ones that took them. The other generic factors had no statistically significant link with the quality of life.

Table 14 presents data showing the link between the quality of life and the experienced stress. It has been established that in the research group the quality of life the most correlates with a personal sickness or trauma (F=5.5, p=0.020). In the control group the quality of life has the strongest link also with a personal sickness or a trauma (F=6.1, p=0.015), slightly less with the

Table 13. Correlation between the quality of life and the generic risk factors

Factor	Case group grupė[a]					Control group[b]				
	Sum of mean squares	df	Mean square	F	p	Sum of mean squares	df	Mean square	F	p
Model compliance	1240.5	9	137.8	2.2	,029	467.9	9	**52.0**	1.0	,462
Free member	12627.8	1	12627.8	198.3	< 0.001	14421.4	1	14421.4	271.2	< 0.001
Stress	120.7	1	120.7	1.9	,171	3.8	1	3.8	,1	,789
Chronic infections	2.1	1	2.1	,0	,858	25.6	1	25.6	,5	,489
Anti-inflammatory	462.5	1	462.5	**7.3**	,008	75.6	1	75.6	1.4	,235
Diuretics	17.8	1	17.8	,3	,598	37.5	1	37.5	,7	,403
Anti-TB drugs	1.2	1	1.2	,0	,892	,0	1	,0	,0	,988
Neuroleptics	186.6	1	186.6	2.9	,089	128.7	1	128.7	2.4	,122
Steroid hormones	93.9	1	93.9	1.5	,227	19.7	1	19.7	,4	,544
Antiarrhythmic medications	105.6	1	105.6	1.7	,200	10.0	1	10.0	,2	,666
Chemical substances	3.4	1	3.4	,1	,817	,0	1	,0	,0	,978
Random error	8085.7	127	63.7			6753.741	127	**53.2**		

a – R^2=0.13 (case) b – R^2 =0.07 (control)

Table 14. Correlation between the quality of life and the episodes of experienced stress

Factor	Case group[a]					Control group[b]				
	Sum of mean squares	df	Mean square	F	p	Sum of mean squares	df	Mean square	F	p
Model compliance	472.6	3	157.5	2.4	,074	712.5	3	237.5	4.9	,003
Free member	252846.0	1	252846.0	3798.3	<0.001	315436.4	1	315436.4	6445.3	<0.001
Death of the spouse	8.7	1	8.7	,1	,719	281.7	1	281.7	**5.8**	,018
Personal sickness or trauma	367.5	1	367.5	**5.5**	,020	298.9	1	298.9	**6.1**	,015
Stress at work	155.5	1	155.5	2.3	,129	2.7	1	2.7	,1	,813
Random error	8853.6	133	66.6			6509.1	133	48.9		

a – R^2 =0.051 (case) b – R^2=0.10 (control)

death of the spouse (F=5.8, p=0.018). No any other statistically significant links between the stress and the quality of life has been found.

Having assessed by the method of regressive analysis the intensity of the link between the quality of life and the experienced stress (death of the spouse, personal sickness or trauma, stress at work) it has been established that in the case group the quality of life was better of the patients that had no personal sicknesses or (β=3.79, PI 0.60-6.99), comparing them with those that had it. In the control group the quality of life was better of the participants in the study who did not have a personal sickness or trauma (β=3.59, PI 0.72-6.47), if compared with the ones that had it; and the same was with the patients that did not experience the death of a spouse (β=4.26, PI 0.75-7.78) comparing with those that did. Stress at work had no statistically significant influence of the quality of life. Considering that the above-mentioned factor has not been included into the risk factors' study steps.

In Table 15 the data showing correlation between the quality of life and the analysed risk factors are presented. It has been established that in the case group the quality of life the most correlates with the sex (F=11.7, p=0.001), the place of residence (F=7.7, p=0.006) and with poor oral hygiene (F=4.7, p=0.032). In the control group the quality of life the most correlates with chronic periodontal pathology (F=11.4, p=0.001), fixed dental prostheses (F=8.2, p=0.005), use of neuroleptics (F=4.4, p=0.039) and education (F=3.4, p=0.021).

Having assessed by the method of regressive analysis the intensity of correlation between the quality of life and the risk factors it has been established that in the case group the quality of life is better of the male patients (β=6.35, PI 2.68-10.02) if compared with female patients, of those living in a big city (β=4.55, PI 1.31-7.80) and of those with good oral hygiene (β=3.04, PI 0.27-5.81). In the control group the quality of life is better of the participants of the study with university education (β=7.01, PI 2.09-11.93), university education and incomplete higher education (β=5.16, PI 0.07-10.26), of those having no chronic periodontal pathology (β=4.51, PI 1.86-7.16) and of the ones not taking neuroleptics (β=3.67, PI 0.19-7.15).

Table 15. Correlation between the quality of life and the risk factors

Factor	Case group[a]					Control group[b]				
	Sum of mean squares	df	Mean square	F	*p*	Sum of mean squares	df	Mean square	F	*p*
Model compliance	2101.2	10	210.1	3.7	< 0.01	1753.2	10	175.3	4.0	< 0.01
Free member	59510.0	1	59510.0	1037.8	< 0.01	72546.1	1	72546.1	1671.6	< 0.01
Sex	671.1	1	671.1	11.7	,001	35.1	1	35.1	,8	,370
Place of residence	442.4	1	442.4	7.7	,006	24.3	1	24.3	,6	,456
Education	43.0	3	14.3	,2	,861	438.3	3	146.1	3.4	,021
Poor oral hygiene	270.2	1	270.2	4.7	,032	27.1	1	27.1	,6	,431
Chronic periodontal pathology	77.3	1	77.3	1.3	,248	492.6	1	492.6	11.4	,001
Fixed dental prostheses	35.2	1	35.2	,6	,435	356.9	1	356.9	8.2	,005
Neuroleptics	95.9	1	95.9	1.7	,198	189.5	1	189.5	4.4	,039
Age	55.4	1	55.4	1.0	,328	83.7	1	83.7	1.9	,167
Random error	7224.9	126	57.3			5468.4	126	43.4		

a – R^2 =0.23 (case); b – R^2=0.24 (control)

4. DISCUSSION

The study investigated the correlations between the clinical indices of the lichen planus patients and the risk factors and self-assessment of the quality of life of the patients.

Among the scientific literature a number of scientific studies showing that the disease is more common in female than in male can be found [4, 12, 41, 42, 43, 44]. In our research the majority (82.5 per cent) of the lichen planus patients were women.

Lichen planus is a disease of the middle-aged people, but scientific literature describes individual cases when it is found in the mouths of children [7, 13, 34]. The results of our study showed that the majority of the lichen planus patients were from 51 to 60 years old and the data corresponded to the data presented by the scientists from Brazil, Sweden and Italy [41, 43, 45].

According to the data of the study the majority (45.3 per cent) of the patients had reticular form of lichen planus, and none of the patients participating in the research had the diagnosed form plaque-like lichen planus. If compared with the data of the researches from other countries, our data corresponded to the data of the scientists from Sweden, Croatia, Pakistan, Bangladesh and Iran, who had established that reticular form of lichen planus prevailed the investigated residents, but in Thailand the obtained data were different: atrophic and erosive-ulcerous forms of lichen planus prevailed [42, 43, 46, 47, 48].

Of all oral lichen planus patients in 2.2 per cent of clinical cases in the places of lesions atypical cells were found. Investigation of Iran residents showed that the disease turned malignant in 0.07 per cent patients. In Holland the malignant form developed in 0.5 per cent of cases, in Island – 1.0 per cent, and in Israel – 5.8 per cent [46, 49, 50]. Swedish scientists note the malignancy trend in oral lichen planus as slow but increasing [51].

The results of our study showed that in 87.6 per cent of the patients lesions were on buccal mucosa and the data obtained corresponded to the data of scientists from Brazil, Pakistan, Japan and Sweden [41, 45, 47, 52]. Different data were obtained in Spain where investigation of the lichen planus patients established that the tongue is the most frequently affected place [4, 44].

According to the data of our research, the probability to get sick with lichen planus increases if oral hygiene is insufficient, when patients have different metals or tooth roots in the mouth, sick with chronic periodontal pathology or dental decay, with increased dental plaque, wearing removable dental prosthesis and experiencing stress. This is confirmed by the studies of other scientists. The study performed by *S.* Pourshahidi et al. (2011) proved that the patients of lichen planus had experienced statistically significantly more stress than the control group of healthy participants [53]. It is important to note that stress, anxiety, strain and depression might induce exacerbation of lichen planus and formation of erosions [48, 54, 55]. Medications, especially antibiotics, diuretics, anti-TB medications, neuroleptics of phenothiazine group [56, 57], dental materials [26–29], toothpaste, trauma [30], alcohol, spicy food, and smoking may provoke most frequently single-sided and unevenly spread lichenoid lesions in the mouth [31]. Increased amount of dental plaque as local irritant induces occurrence of lichen planus [29]. According to the data of our research, the patients taking neuroleptics and/or other tranquilisers have more chances to get sick with lichen planus than those that do not take it. Scientific research has proved that viruses and bacteria, among which *Helicobacter pylori* persisting in gastrointestinal tract, are significant for occurrence of lichen planus [58, 59]. The results of our research showed that the patients with chronic gastritis had 3.09 times higher risk of lichen planus, if compared with those that did not have the disease. Higher probability to get lichen planus has been established for the patients with malignant tumours, thyroid diseases, those who had experienced blood transfusion or for the patients that had chemical substances in their work environment.

It has been proved that of all human health parameters the oral health has the highest influence on the quality of life. The results of our study showed that in the case group the male had better quality of life than the female, the same with those living in the big city if compared with the countryside residents and the patients with good oral hygiene.

5. CONCLUSIONS

- The majority of the lichen planus patients were over 50 years old. 82.5 per cent of them were female. 87.6 per cent of the patients had lesions on buccal mucous. 45.3 per cent had the diagnosis of reticular form of lichen planus. Atypical cells were found only in the cases of erosive-ulcerous form of lichen planus (2.2 per cent of the cases).
- Statistically significant local lichen planus factors were different metals in the mouth, insufficient oral hygiene, tooth root, chronic periodontal pathology, dental decay and fixed and removable dental prostheses. Stress, chronic inflectional diseases, use of neuroleptics and tranquilisers, as well as work with chemical substances were the main generic risk factors for oral lichen planus.
- The probability to have oral lichen planus was higher for the persons with chronic gastritis, thyroid diseases, malign tumours and blood transfusion. Bullous simplex, psoriasis, disorders of the gastrointestinal tract, seborrhoea dermatitis and diabetes mellitus are more frequent with oral lichen planus than in its absence.
- The quality of life of the oral lichen planus patients was statistically significantly worse than of the persons not having the disease. The worse quality of life of the oral lichen planus patients was conditioned by: female sex, life in small settlements and insufficient oral hygiene.

6. PRACTICAL RECOMMENDATIONS

1. We suggest preparing an informational factsheet for dental practitioners, specialists in odontology and the patients suffering from the disease about the risk factors to be avoided and how to improve the quality of life in cases of oral lichen planus, and to periodically update it.
2. We recommend for the dental practitioners to actively participate in scientific conferences, seminars and practical workshops of topics of lichen planus and other premalignant sicknesses.
3. For the purpose of improvement of timely diagnostics of oral lichen planus dental practitioners and oral care professionals should carefully examine oral mucosa and, in case of discovered variations, to forward the patient for consultancy of professional doctors – specialists.

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ACKNOWLEDGEMENTS

I feel grateful to a lot of people who contributed in my scientific research and writing of the dissertation. First of all I would like to kindly thank the author of the idea of the dissertation and the consultant of the scientific study prof. dr. Alina Pūrienė.

Thanks to my teachers and counselors assoc. prof. dr. Jolanta Aleksejūnienė, prof. dr. Matilda Bylaitė-Bučinskienė, assoc. prof. dr. Rūta Bendinskaitė, dr. Valerij Dobrovolskij, dr. Rūta Žaliūnienė, dr. Rūta Rastenienė, doctor Dmitrijus Šeinin and engineer programmer Eglė Šepetauskienė, whose assistance made it possible to complete this time– and patience – consuming work.

Thanking in anticipation the Chairperson of the Dissertation Defence Board prof. dr. Vytautėi Pečiulienė, its members: prof. dr. Rimantas Stukas, prof. dr. Jurgis Algirdas Juozulynas, prof. dr. Mare Saag and assoc. prof. dr. Vilma Brukienė band the reviewers: assoc. prof. dr. Linas Zaleckas, assoc. prof. dr. Rūta Gancevičienė and prof. dr. Jurgis Algirdas Juozulynas for their comments and suggestions which I appreciated so much.

Thanks to the staff of Odontology Institute of the Faculty of Medicine of Vilnius University and of Žalgiris Clinics of Vilnius University Hospital. Their belief in my work and encouragement was the most important cornerstones developing and completing the study.

Finally, thanks to my family, my friends and colleagues for their genuine support which I felt all over the years of my work over the thesis.

CURRICULUM VITAE

A. Rimkevičius was born in 1969, in Šiauliai

Educational background:

- Šiauliai VIII secondary school, Lithuania (1975-1987)
- Faculty of Stomatology, Kaunas Academy of Medicine, Lithuania (1989-1994); Diploma – Medical Doctor in Stomatology.
- Faculty of Stomatology, Kaunas Academy of Medicine, Lithuania (1994-1995); Internship Certificate – Dentist General Practioner.
- Institute of Odontology, Faculty of Medicine, Vilnius University, Lithuania, postgraduate studies (1999-2001); Certificate – Specialist in Periodontology

Ocupations:

- 1995-1996 a general dentist in the Šiauliai clinic of Stomatology.
- 1996-1999 a general dentist in the Hospital of Vilnius University, Žalgirio Clinic
- 2001 to current, a periodontology doctor in the Hospital of Vilnius University, Žalgirio Clinic

SANTRAUKA

Įvadas

Plokščioji kerpligė yra lėtinė uždegiminė odos ir gleivinių liga, pasireiškianti būdingu bėrimu, klinikiniais ir histologiniais pokyčiais. Plokščioji kerpligė gali pasireikšti ne tik odoje ir gleivinėse, bet ir pažeisti nagus bei plaukuotąją galvos dalį. Tai liga, turinti keletą klinikinių variantų.

Skirtingose šalyse diagnozuojama nuo 0,5 iki 2,6 proc. susirgimo atvejų. Liga gali vystytis tik odoje (iki 44 proc.), burnoje ir odoje, tik burnoje (iki 70 proc.). Dažniausiai serga vidutinio amžiaus ir pagyvenę žmonės. Kai kurių autorių duomenimis, moterys serga dažniau nei vyrai, atitinkamai 2,2 proc. ir 1,6 proc., yra šalių, kur vyrai serga dažniau nei moterys. Plokščioji kerpligė aptinkama šeimose, todėl manoma, kad galima šios ligos genetinė predispozicija, kai kada serga vaikai. Plokščioji kerpligė – tai liga, sukelianti ligoniams diskomfortą, neretai lemianti skausmingus odos ir gleivinių pakitimus, turinti abejotiną gydymo prognozę ir diskutuotiną potencialą supiktybėti. Įvardijama nevienoda plokščiosios kerpligės pažeistų audinių malignizacija. Nustatyta, kad 1,0–3,0 proc. visų sergančiųjų plokščiąja kerplige pažeidimų linkę piktybėti. Dažniau piktybėja erozinė-opinė, rečiau – atrofinė ligos formos.

Plokščiosios kerpligės išsivystymui turi reikšmės lėtinės ligos, autoimuninio disbalanso sutrikimas, genetinis polinkis sirgti šia liga, vaistų, odontologinių medžiagų sukeltos reakcijos, audinių trauma, tam tikra mityba, žalingi įpročiai bei paciento psichoemocinė būklė. Manoma, kad tokios būklės kaip depresija, stresas ar tiesiog perdėtas nerimas gali lemti ligos atsiradimą.

Neabejotinai endokrininė patologija: skydliaukės ligos, cukrinis diabetas; taip pat hepatitai, skrandžio ir žarnyno ligos, širdies ir kraujagyslių ligos, hipertenzija bei kitos ligos turi įtakos plokščiosios kerpligės atsiradimui ir ligos eigai.

Vietinės etiologinės rizikos veiksniai: periodonto patologija, dantų restauracijos ar / ir netinkama burnos higiena, odontologinės medžiagos. Ža-

lingi įpročiai, pavyzdžiui, rūkymas ir alkoholio vartojimas, taip pat įvardijami kaip etiologiniai veiksniai.

Daugybė plokščiosios kerpligės rizikos veiksnių gali būti ir kol kas nežinomų, dėl to svarbūs tyrimai, nagrinėjantys galimas, susijusias su šia liga rizikas.

Plokščioji kerpligė itin blogina ligonių gyvenimo kokybę, todėl, tiriant gyvenimo kokybės pokyčius, žmonių sugebėjimą adaptuotis susirgus burnos plokščiąja kerplige, rekomenduojamas nuolatinis šių pacientų stebėjimas, būtinybė gydytojui taikyti į paciento gyvenimo kokybės užtikrinimą orientuotą gydymą.

Apie burnos plokščiosios kerpligės rizikos veiksnius ir pacientų gyvenimo kokybę Lietuvoje ir kaimyninėse šalyse tikslių duomenų nėra, todėl, siekiant pagerinti mūsų šalyje gyvenančių pacientų gydymo kokybę, profilaktiką, įvertinti plokščiosios kerpligės vystymąsi predisponuojančius veiksnius, jų įtaką ligai, pažeistų audinių malignizaciją, sergančiųjų gyvenimo kokybę, svarbūs tolesni ligos tyrimai.

Darbo tikslas – ištirti pacientų, sergančių burnos plokščiąja kerplige, klinikinius rodiklius, ligos sąryšį su rizikos veiksniais ir pacientų gyvenimo kokybe.

Darbo uždaviniai:

1. Įvertinti sergančiųjų burnos plokščiąja kerplige sociodemografinius ir klinikinius rodiklius.
2. Nustatyti rizikos susirgti burnos plokščiąja kerplige sąsajas su sociodemografiniais, vietiniais, bendriniais veiksniais bei lėtinėmis ligomis ir sveikatos būklėmis.
3. Nustatyti ir įvertinti sergančiųjų burnos plokščiąja kerplige gyvenimo kokybę.
4. Nustatyti rizikos veiksnius, turinčius įtakos sergančiųjų burnos plokščiąja kerplige gyvenimo kokybei.

Medžiaga ir metodai

Šios mokslinės studijos uždaviniams išspręsti buvo pasirinktas analitinis stebimasis atvejo ir kontrolės tyrimas, kuriam buvo gautas Lietuvos biomedicininių tyrimų etikos komiteto leidimas Nr. 158200-02-148-056 LP11 (5 priedas).

Asmenys, dalyvaujantys tyrime, buvo žodine ir rašytine forma informuoti apie numatomą vykdyti tyrimą (6 priedas) ir buvo gauti raštiškai visų pacientų sutikimai dalyvauti tyrime (7 priedas).

Tyrimo apimtis. Burnos plokščiosios kerpligės tyrimas atliktas 2010–2014 metais Žalgirio klinikoje. Iš viso kreipėsi 312 pacientų, iš kurių sutiko dalyvauti tyrime ir buvo ištirti 274 pacientai, t. y. 137 pacientai, sergantys plokščiąja kerplige, ir tiek pat asmenų, nesergančių šia liga.

Rezultatai

Tyrime dalyvavo 137 asmenys, sergantys plokščiąja kerplige: 24 vyrai (17,5 proc.) ir 113 moterų (82,5 proc.). Sergančiųjų amžiaus vidurkis buvo 55,43 ± 14,26 metų. Vyriausiam pacientui, sergančiam plokščiąja kerplige, buvo 80 metų, o jauniausiam – 17 metų. Didžioji dalis sergančiųjų plokščiąja kerplige buvo 51–60 m. amžiaus.

Vertinant sergančiųjų plokščiąja kerplige klinikinius rodiklius, nustatyta, kad didžiajai daliai (45,3 proc.) pacientų buvo diagnozuota tinklinė plokščiosios kerpligės forma, 34,3 proc. – erozinė-opinė, 8,0 proc. – papulinė, 10,9 proc. – atrofinė ir 1,5 proc. – pūslinė plokščiosios kerpligės forma. Apnašinė plokščiosios kerpligės forma nebuvo diagnozuota nė vienam iš tyrime dalyvavusių pacientų.

Analizuojant sergančiųjų plokščiąja kerplige pažeidimų lokalizaciją, pastebėta, kad pacientams buvo dažniausiai pažeista žandų gleivinė (87,6 proc.), dantenos (46,7 proc.), liežuvio šoniniai paviršiai (39,4 proc.) ir liežuvio nugarėlė (29,9 proc.).

Citologinis tyrimas parodė, kad, esant skirtingoms klinikinėms plokščiosios kerpligės formoms, pažeidimų nuograndose aptikta bakterijų. Ap-

tikta gausi mikrobinė flora 59,6 proc. sergančiųjų erozine-opine plokščiosios kerpligės forma, 45,5 proc. sergančiųjų papuline, 33,9 proc. sergančiųjų tinkline ir 33,3 proc. sergančiųjų atrofine plokščiosios kerpligės formomis.

Gausiai įvairių *Candida* grybelio rūšių buvo aptikta pas tiriamuosius, iš jų (N = 10) 16,1 proc. tinklinės ir (N = 7) 14,9 proc. erozinės-opinės plokščiosios kerpligės atvejų. Iš visų klinikinių plokščiosios kerpligės formų atvejų tik 5,8 proc. atvejų aptikta *Actinomyces* grybų. Iš visų sergančiųjų burnos plokščiąja kerplige 2,2 proc. klinikinių atvejų pažeidimų vietose aptikta atipinių ląstelių. Vertinant citologinį tyrimą, nustatyta, kad atipinės ląstelės buvo aptiktos sergant tik erozine-opine plokščiosios kerpligės forma (3 atvejai).

Atlikus histologinį tyrimą, kuriuo buvo įvertinta burnos gleivinės infiltracija limfocitais (T limfocitų infiltracija), burnos gleivinės hiperplazija, hiperparakeratozė ir plokščiojo epitelio opėjimas, nustatyta, kad ryškiausia (3+) epitelio hiperplazija yra 11,3 proc. tinklinės, 10,6 proc. erozinės-opinės ir 50 proc. pūslinės plokščiosios kerpligės formos atvejų. Ryškiausia leukocitų infiltracija buvo 55,3 proc. erozinės-opinės, 50 proc. pūslinės, 30,6 proc. tinklinės ir 20 proc. atrofinės plokščiosios kerpligės formų atvejų. Dažniausia (74,5 proc.) hiperparakeratozė buvo stebima erozinės-opinės plokščiosios kerpligės formos atvejais. Epitelio išopėjimas nustatytas 76,6 proc. erozinės-opinės ir 46,7 proc. atrofinės plokščiosios kerpligės formų atvejų. Tyrimo metu nustatyti 3 plokščialąstelinės karcinomos atvejai sergantiesiems erozine-opine plokščiąja kerplige. Apnašinės plokščiosios kerpligės formos ligos atvejų nenustatyta.

Analizuojant sergančiųjų plokščiąja kerplige bendrą sveikatos būklę, nustatyta, kad 35,0 proc. šių pacientų taip pat buvo diagnozuotas lėtinis gastritas, 32,9 proc. – arterinė hipertenzija, 25,6 proc. – nepiktybiniai navikai, 23,4 proc. – piktybiniai navikai ir 24,1 proc. – skydliaukės ligos.

Tyrimo rezultatai parodė, kad 13,1 proc. sergančiųjų plokščiąja kerplige buvo alergiški antibiotikams, 8,0 proc. – maisto produktams, 5,1 proc. – plombavimo medžiagoms, plastmasėms, metalams, 3,6 proc. – jodui ir 11,7 proc. – kitiems alergenams.

Pacientams, turėjusiems skirtingų metalų burnoje, galimybė susirgti plokščiąja kerplige buvo statistiškai reikšmingai (SR = 5,86) (p = 0,001) didesnė lyginant su pacientais, neturėjusiais skirtingų metalų burnoje. Pacientams, kurių burnos higiena buvo bloga, galimybė susirgti plokščiąja kerplige buvo statistiškai reikšmingai (SR = 6,68) (p < 0,001) didesnė lyginant su pacientais, kurių burnos higiena buvo gera. Pacientams, kurių burnoje buvo rasta dantų šaknų, tikimybė susirgti plokščiąja kerplige buvo statistiškai reikšmingai (p = 0,014) didesnė (SR = 0,19) lyginant su pacientais, kurių burnoje nebuvo dantų šaknų. Pacientams, kuriems būdinga lėtinė periodonto patologija, galimybė susirgti plokščiąja kerplige buvo statistiškai reikšmingai (p = 0,001) didesnė lyginant su pacientais, kuriems nebūdinga lėtinė periodonto patologija. Pacientams, turintiems dantų ėduonį, galimybė susirgti plokščiąja kerplige buvo statistiškai reikšmingai (SR = 0,28) (p = 0,005) didesnė lyginant su pacientais, kurie neturėjo dantų ėduonies. Pacientams, kurie turėjo išimamus protezus, galimybė susirgti plokščiąja kerplige buvo statistiškai reikšmingai (SR = 0,36) (p = 0,023) didesnė lyginant su pacientais, kurie neturėjo išimamų dantų protezų burnoje.

Remiantis sudarytu daugiamatės logistinės regresijos modeliu galima teigti, kad pacientams, patiriantiems stresą, galimybė susirgti burnos plokščiąja kerplige buvo statistiškai reikšmingai (SR = 2,45) (p = 0,002) didesnė lyginant su pacientais, nepatiriančiais streso. Nustatyta, kad pacientams, sergantiems lėtinėmis infekcinėmis ligomis, galimybė susirgti burnos plokščiąja kerplige statistiškai reikšmingai (SR = 0,3) (p = 0,006) didesnė lyginant su pacientais, nesergančiais lėtinėmis infekcinėmis ligomis. Pacientams, vartojantiems neuroleptikus ir / ar kitus raminamuosius vaistus, galimybė susirgti burnos plokščiąja kerplige statistiškai reikšmingai (p = 0,012) didesnė nei nevartojantiems šių vaistų asmenims. Pacientams, kurių darbo aplinkoje yra cheminių medžiagų, galimybė susirgti burnos plokščiąja kerplige buvo statistiškai reikšmingai (SR = 10,63) (p < 0,001) didesnė lyginant su pacientais, neturinčiais sąlyčio su cheminėmis medžiagomis.

Remiantis daugiamatės logistinės regresijos modeliu, galima teigti, kad pacientams, sergantiems lėtiniu gastritu, galimybė susirgti burnos plokščiąja kerplige buvo statistiškai reikšmingai didesnė (SR = 3,09) ($p < 0,001$) lyginant su asmenimis, nesergančiais lėtiniu gastritu. Nustatyta, kad pacientams, sergantiems skydliaukės ligomis, galimybė susirgti burnos plokščiąja kerplige statistiškai reikšmingai (SR = 6,32) ($p < 0,001$) didesnė lyginant su asmenimis, nesergančiais skydliaukės ligomis. Pacientams, kuriems buvo atliktas kraujo perpylimas, galimybė susirgti burnos plokščiąja kerplige statistiškai reikšmingai didesnė (SR = 3,47) ($p = 0,028$) nei pacientams, kuriems nebuvo perpiltas kraujas. Pacientams, kurie turi ar turėjo piktybinių auglių, galimybė susirgti plokščiąja kerplige statistiškai reikšmingai (SR = 6,22) didesnė ($p < 0,001$) lyginant su pacientais, kurie neturėjo piktybinių auglių.

Remiantis atlikto tyrimo duomenimis, sergantieji burnos plokščiąja kerplige gyvenimo kokybę vertino žemesniais balais nei kontrolinės grupės pacientai. Nustatyta, kad sergančiųjų burnos plokščiąja kerplige gyvenimo kokybės balo vidurkis buvo 68,1 (stand. n. 8,3, med. 68,3), nesergančiųjų – 75,9 (stand. n. 7,3, med. 76,9), skirtumas statistiškai reikšmingas ($p < 0,001$). Analizuojant gyvenimo kokybės skirtumus tarp vyrų ir moterų, nustatyta, kad sergančios plokščiąja kerplige moterys gyvenimo kokybę vertino žemesniais balais (vidurkis 67 balai) nei nesergančios burnos plokščiąja kerplige (vidurkis 75,7 balo), skirtumas statistiškai reikšmingas ($p < 0,001$).

Regresinės analizės metodu įvertinus ryšių stiprumą tarp gyvenimo kokybės ir rizikos veiksnių nustatyta, kad tiriamojoje grupėje gyvenimo kokybė geresnė pacientų vyrų ($\beta = 6,35$, PI 2,68–10,02) lyginant su moterimis, taip pat studijos dalyvių, gyvenančių dideliame mieste ($\beta = 4,55$, PI 1,31–7,80) ir turinčių gerą burnos higieną ($\beta = 3,04$, PI 0,27–5,81). Kontrolinėje grupėje gyvenimo kokybė geresnė studijos dalyvių, turinčių aukštąjį universitetinį išsilavinimą ($\beta = 7,01$, PI 2,09–11,93), aukštąjį universitetinį ir nebaigtą aukštąjį išsilavinimą ($\beta = 5,16$, PI 0,07–10,26), neturinčių lėtinės periodonto patologijos ($\beta = 4,51$, PI 1,86–7,16) ir nevartojančių neuroleptikų ($\beta = 3,67$, PI 0,19–7,15).

Išvados

1. Didžioji dalis sergančiųjų burnos plokščiąja kerplige buvo vyresni negu 50 m. amžiaus asmenys, 82,5 proc. jų – moterys. 87,6 proc. pacientų buvo pažeista žandų gleivinė. 45,3 proc. pacientų buvo diagnozuota tinklinė plokščiosios kerpligės forma. Atipinių ląstelių buvo aptikta sergant tik erozine-opine plokščiosios kerpligės forma (2,2 proc. atvejų).

2. Statistiškai patikimai reikšmingi vietiniai burnos plokščiosios kerpligės veiksniai buvo skirtingi metalai burnoje, nepakankama burnos higiena, dantų šaknys, lėtinė periodonto patologija, dantų ėduonis bei fiksuoti ir išimami dantų protezai. Stresas, lėtinės infekcinės ligos, neuroleptikų ir raminamųjų vaistų vartojimas bei darbas su cheminėmis medžiagomis buvo pagrindiniai bendriniai burnos plokščiosios kerpligės rizikos veiksniai.

3. Galimybė susirgti burnos plokščiąja kerplige didesnė asmenims, sergantiems lėtiniu gastritu, skydliaukės ligomis, turintiems piktybinių navikų ir po kraujo perpylimo. Paprastoji pūslinė, žvynelinė, virškinamojo trakto sutrikimai, seborėjinis dermatitas ir cukrinis diabetas dažniau nustatomi sergant burnos plokščiąja kerplige negu nesergant šia liga.

4. Sergančiųjų burnos plokščiąja kerplige gyvenimo kokybė buvo statistiškai reikšmingai blogesnė negu šia liga nesergančių asmenų. Sergančiųjų burnos plokščiąja kerplige blogesnę gyvenimo kokybę lėmė moteriškoji lytis, gyvenimas nedideliame mieste ir nepakankama burnos higiena.

Į anglų kalbą vertė
Rasa Gyska

Išleido Vilniaus universiteto leidykla
Universiteto g. 1, LT-01513 Vilnius