# THE INFLUENCE OF PSYCHOLOGICAL STATE ON ORAL LICHEN PLANUS

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SUMMARY – Oral lichen planus (OLP) is a T-cell mediated disease directed to a still unknown antigen, which may affect oral mucosa. The aim of this study was to determine whether differences in anxiety, depression and stress could be seen in patients with OLP in acute stage and in remission, as well as in comparison with healthy control subjects. The study included 50 OLP patients aged 22-79 (mean age 61.04) years and 50 control subjects who had healthy oral mucosa aged 38-80 (mean age 58.70) years. Patients with OLP filled out the State-Trait Anxiety Inventory for Adults and Beck Depression Inventory II test in acute stage and in remission. Control subjects also filled out the same tests. On detailed medical history, study subjects were asked about the possible stressors, which might have happened in the previous year. Statistical analysis was performed by use of descriptive statistics and t-test. There were no differences in the level of anxiety, depression and stress between the two stages of OLP disease (acute *vs*. remission period). Patients with OLP were significantly more anxious, depressed and stressed in both OLP stages as compared with healthy controls. It might be that psychological disturbances precede OLP development rather than worsening the disease process itself.

Key words: *Oral lichen planus; Anxiety; Depression; Stress*

## Introduction

It is well known that oral lichen planus (OLP) is an autoimmune disease mediated by T-lymphocytes to a still unknown antigen. However, in some patients, certain associated factors such as heredity, chronic liver disease in some parts of the world, autoimmune susceptibility and psychological disturbances play an important role. Collela *et al*.[1] and Vallejo *et al*.[2] have reported significantly elevated scores for anxiety and depression in patients with OLP. It has also been reported by Chaudhary[3], Soto-Araya *et al*.[4], Shetty *et al*.[5], Shklar[6] and Rojo-Moreno *et al*.[7]. On the contrary, Humphries and Field[8] as well as Macleod[9] could not confirm association between psychological disturbances and OLP. Neither could Allen *et al*.[10] and Girardi *et al*.[11] confirm that OLP patients were more anxious and stressed when compared with healthy controls. Therefore, the same authors conclude that psychological factors do not have a role in OLP. Contrary to this finding, many authors like Burkhart *et al*.[12], Andreasen[13], Shklar[6] and Ivanovski *et al*.[14] found that stressful events preceded development of OLP lesions. This finding was also confirmed by the authors who investigated psychological disturbances in patients with lichen planus of the skin, e.g., Manolache *et al*.[15], Picardi and Abeni[16] and Mansur *et al*.[17]. Hampf

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*et al*.[18] found only 48.2% of OLP patients to be mentally sane, whereas 21.4% had minor, 5.4% moderate and 25% severe mental disturbances. The same authors found that patients during mental stress had exacerbation of OLP lesions. Regarding psychological profile, McCartan[19] concluded that patients with OLP were self-sufficient, subdued, introvert and concrete thinking. Rojo-Moreno *et al*.[7] noticed that OLP patients were conservative, very emotional, self controlling and inflexible. From our clinical experience, many patients claimed during interview that exacerbation of OLP lesions was associated with increased exposure to stressful events. Although there are few studies regarding psychological state and OLP, the results of the published studies are controversial. Therefore, we aimed to investigate whether anxiety, depression and stress might lead to the acute stage of OLP. To our knowledge, none of the authors tested the same OLP patients in acute stage and in remission.

## Subjects and Methods

Prior to this investigation, all participants signed an informed consent according to the Helsinki II and the study protocol was approved by the Ethics Committee, School of Dental Medicine, University of Zagreb, Zagreb, Croatia. There were 50 patients with OLP (38 women and 12 men) aged 22-79 (mean age 61.04) years. OLP diagnosis was confirmed by histopathologic finding according to the World Health Organization[19]. Control group consisted of 50 subjects (35 women and 15 men) who all had healthy oral mucosa and negative medical history regarding oral diseases, aged 38-80 (mean age 58.70) years. Questions regarding stress are listed in Table 1.

Patients with OLP filled out both psychological tests twice, i.e. in acute stage and in remission. Control subjects filled out both tests only once. The following tests were employed: State-Trait Anxiety Inventory

*Table 1. Questions regarding stressful events in patients with oral lichen planus (OLP) and control subjects*

| | OLP patients | Control group | Total |
|---|---|---|---|
| Personal serious illness/injury | 18 | 7 | 25 |
| Serious illness/injury in close persons | 15 | 8 | 23 |
| Death of a close person | 15 | 5 | 20 |
| Unemployment in the family | 7 | 5 | 12 |
| Financial problems | 7 | 4 | 11 |
| Fear from pending lawsuit | 5 | 5 | 10 |
| Retirement | 8 | 1 | 9 |
| Frequent quarrels at home | 6 | 3 | 9 |
| Degradation at work | 4 | 2 | 6 |
| Allocation | 3 | 3 | 6 |
| Death of a child | 4 | 1 | 5 |
| Death of the spouse | 3 | 2 | 5 |
| Failure at work/school | 3 | 1 | 4 |
| Child has left home | 2 | 2 | 4 |
| Food scarcity | 2 | 1 | 3 |
| Partner's infidelity | 1 | 1 | 2 |
| Los of job | 1 | 1 | 2 |
| Unsolved housing essentials | 1 | 1 | 2 |
| Divorce | 1 | 0 | 1 |
| Marriage | 1 | 0 | 1 |
| Child being a drug abuser | 0 | 1 | 1 |

for Adults (STAI) by which the level of anxiety is measured as a current state and as a usual feeling of an individual; and Beck Depression Inventory (BDI-II) measuring the level of depression.

Statistical analysis was performed on the results obtained from the scores of the psychological tests; the mean value and standard deviation were calculated, and consequently the t-test, correlation and descriptive statistics were performed to obtain results between the study groups.

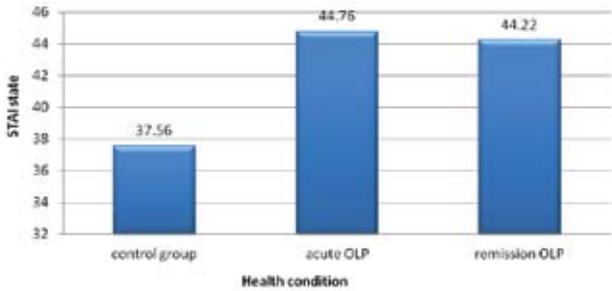


*Fig. 1. Results of STAI state tests in control group, acute oral lichen planus (OLP) and in remission (mean values).*

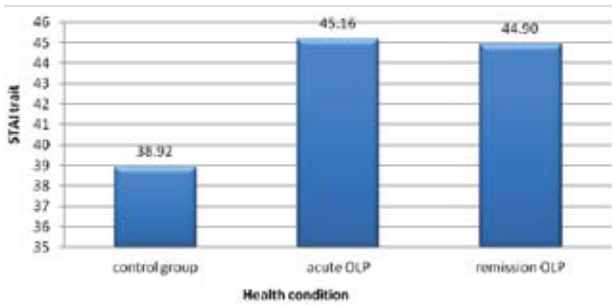


*Fig. 2. Results of STAI trait tests in control group, acute oral lichen planus (OLP) and in remission (mean values).*

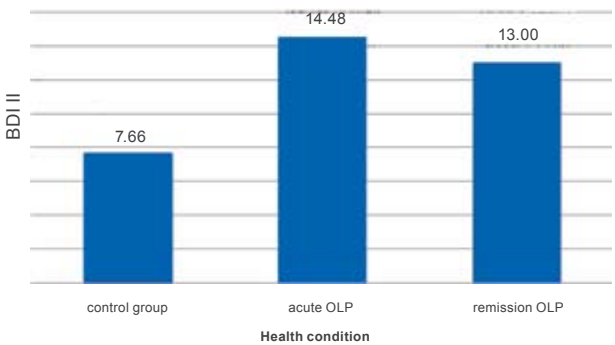


*Fig. 3. Results of BDI II tests in control group, acute oral lichen planus (OLP) and in remission (mean values).*

## Results

There were significant differences in the anxiety state scores between the control group and OLP patients in acute stage and in remission. However, there were no significant differences in the anxiety state scores between acute stage and remission in OLP patients (Fig. 1).

There were significant differences in the anxiety trait scores between control group and patients with OLP in acute stage and in remission. However, there were no significant differences in the anxiety trait scores between acute stage and remission in OLP patients (Fig. 2).

There were significant differences in the depression scores between control group and OLP patients in acute stage and in remission. However, there were no significant differences in the depression scores between acute stage and remission in OLP patients (Fig. 3).

## Discussion

Chaudhary[3] has reported higher scores of anxiety, depression and stress in patients with OLP in comparison to healthy controls. However, in comparison to the patients suffering from burning mouth syndrome (BMS), atypical facial pain (AFP) and myofascial pain syndrome (MPS), no significant differences could be found. Soto-Araya *et al.*[4] found that patients with OLP had higher scores of anxiety and stress in comparison to healthy controls. Again, when the results were compared with the ones obtained from patients with recurrent aphthous ulcers (RAU) and BMS, no significant differences regarding anxiety and stress could be found. However, only 9 patients with OLP were included, so obviously there were some limitations in this study. The results from the studies by Chaudhary[3] and Soto-Araya *et al.*[4] are not surprising, as it is known that psychological disturbances are of importance in BMS, RAU, AFP and MPS. Shetty *et al.*[5] found elevated scores for anxiety, depression and stress in patients with OLP when compared to control group. Depression scores were not significantly different between patients with erosive OLP and patients with non-erosive OLP, however, anxiety scores were significantly elevated in the erosive OLP group when compared with the non erosive OLP. Rojo-Moreno *et*

*al.*[7] report that patients with erosive OLP were more depressed when compared to the group of patients with non erosive OLP. Contrary to the results of Shetty *et al.*[5] and Rojo-Moreno*etal.*[7], Shah *et al.*[20] have reported increased scores of anxiety, depression and stress in patients with OLP without any significant differences between patients with erosive and non erosive OLP. However, Shetty *et al.*[5], Rojo-Moreno *et al.*[7] and Shah *et al.*[20] were evaluating psychological profile of OLP patients only once, whereas in our study we tested the same patients in two OLP stages, i.e. in acute stage and in remission. Lundquist *et al.*[21] have also reported elevated scores regarding depression, anxiety and stress in patients with erosive oral and genital lichen planus. The same authors concluded that due to disturbances in normal oral and sexual functioning, erosive lichen planus lesions led to increased anxiety, depression and stress. Contrary to these results, reports from the majority of studies on this topic claim that stressful events preceded lichen planus lesions and therefore might have resulted in anxiety and depression and finally in lichen planus lesions. The results of our study indicate that OLP is a consequence rather than the cause of psychological disturbances such as anxiety and depression. McCartan[22] reports that 50% of OLP patients were anxious, whereas only 12% were depressed. Questions regarding stress were analyzed with regard to stressful events experienced one year before OLP appearance. Most of the patients with OLP had two stressful events in the previous year, whereas control subjects had only one stressful event. Most of the patients in this study had stressors like their own disease, serious illness or death of a family member or close person. Burkhart *et al.*[12] found 51.4% of OLP patients to have experienced stressful events when OLP appeared in their mouth for the first time. The main stressors were death/serious illness of a close person, stress at working place, and stress due to interpersonal and family relationships. This was also confirmed by the findings reported by Andreasen[13] and Shklar[6]. However, it should be considered that certain stressors that might have happened in the past could also influence the appearance of OLP lesions. Hampf *et al.*[18] found an increased prevalence of mental disturbances in OLP patients, however, only three of 50 patients in this study had a psychiatric diagnosis. It is possible that a higher proportion of these patients had a psychiatric diagnosis, but were not routinely referred to a psychiatrist[22]. The last but not the least, as patients with OLP were more depressed, anxious and stressed in comparison to healthy controls, they need some psychological help, of course, together with standard oral therapy.

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## References

1. COLELLA G, GRITTI P, de LUCA F, de VITO M. The psychopathological aspects of oral lichen planus (OLP). Minerva Stomatol 1993;42(6):265-70.
2. VALLEJO MJ, HUERTA G, CERERO R, SEOANE JM. Anxiety and depression as risk factors for oral lichen planus. Dermatology 2001;203(4):303-7.
3. CHAUDHARY S. Psychosocial stressors in oral lichen planus. Aust Dent J 2004;49(4):192-5.
4. SOTO ARAYA M, ROJAS ALCAYAGA G, ESGUEP A. Association between psychological disorders and the presence of oral lichen planus, burning mouth syndrome and recurrent aphthous stomatitis. Med Oral 2004;9(1):1-7.
5. SHETTY S, THOMAS P, CHATRA L, SHENAI P, RAO P, BABU S. An association between serum cortisol levels in erosive and nonerosive oral lichen planus patients. Webmed Central DENTISTRY 2010;1(9):WMC00560.
6. SHKLAR G. Lichen planus as an oral ulcerative desease. Oral Surg Oral Med Oral Pathol 1972;33(3):376-88.
7. ROJO-MORENO JL, BAGÁN JV, ROJO-MORENO J, DONAT JS, MILIÁN MA, JIMÉNEZ Y. Psychologic factors and oral lichen planus. A psychometric evaluation of 100 cases. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1998;86(6):687-91.
8. HUMPHRIES G, FIELD EA. Psychological factors in oral lichen planus.Br Dent J 1992;173(10):331.
9. MACLEOD RI. Psychological factors in oral lichen planus. Br Dent J 1992;173(3):88.
10. ALLEN CM, BECK FM, ROSSIE KM, KAUL TJ. Relation of stress and anxiety to oral lichen planus. Oral Surg Oral Med Oral Pathol 1986;61:44-6.
11. GIRARDI C, LUZ C, CHERUBINI K, FIGUEIREDO MA, NUNES ML, SALUM FG. Salivary cortisol and dehydroepiandrosterone (DHEA) levels, psychological factors in patients with oral lichen planus. Arch Oral Biol 2011 Mar 3. [Epub ahead of print]

12. BURKHART NW, BURKER EJ, BURKES EJ, WOLFE L. Assessing the characteristics of patients with oral lichen planus. J Am Dent Assoc 1996;127(5):648, 651-2, 655-6.
13. ANDREASEN JO. Oral lichen planus. 1. A clinical evaluation of 115 cases. Oral Surg Oral Med Oral Pathol 1968;25(1):31-42.
14. IVANOVSKI K, NAKOVA M, WARBURTON G, PESEVSKA S, FILIPOVSKA A, NARES S, NUNN ME, ANGELOVA D, ANGELOV N. Psychological profile in oral lichen planus. J Clin Periodontol 2005;32(10):1034-40.
15. MANOLACHE L, SECELEANU-PETRESCU D, BENEA V. Lichen planus patients and stressful events. J Eur Acad Dermatol Venereol 2008;22(4):437-41.
16. PICARDI A, ABENI D. Stressful life events and skin diseases: disentangling evidence from myth. Psychother Psychosom 2001;70(3):118-36.
17. MANSUR AT, KILIC Z, ATALAY F. Psychological evaluation of patients with cutaneous lichen planus. Dermatol Psychosom 2004;5:132-6.
18. HAMPF BG, MALMSTRÖM MJ, AALBERG VA, HANNULA JA, VIKKULA J. Psychiatric disturbance in patients with oral lichen planus. Oral Surg Oral Med Oral Pathol 1987;63(4):429-32.
19. KRAMER IR, LUCAS RB, PINDBORG JJ, SOBIN LH. Definition of leukoplakia and related lesions: an aid to studies on oral precancer. Oral Surg Oral Med Oral Pathol 1978;46(4):518-39.
20. SHAH B, ASHOK L, SUJATHA GP. Evaluation of salivary cortisol and psychological factors in patients with oral lichen planus. Indian J Dent Res 2009;20(3):288-92.
21. LUNDQVIST EN, WAHLIN YB, BERGDAHL M, BERGDAHL J. Psychological health in patients with genital and oral erosive lichen planus. J Eur Acad Dermatol Venereol 2006;20(6):661-6.
22. McCARTAN BE. Psychological factors associated with oral lichen planus. J Oral Pathol Med 1995;24(6):273-5.

Sažetak

## UTJECAJ PSIHOLOŠKOG STANJA NA ORALNI LIHEN PLANUS

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Oralni lihen planus (OLP) je bolest posredovana T-limfocitima na još uvijek nepoznati antigen, koja može zahvatiti oralne sluznice. Cilj ovoga istraživanja bio je ustanoviti postoje li razlike u anksioznosti, depresiji i stresu između bolesnika s akutnim OLP-om u odnosu na fazu remisije OLP-a i u usporedbi s kontrolnom skupinom. U ispitivanje je bilo uključeno 50 bolesnika s OLP-om (starosti 22-79 godine, prosječne dobi 61,04 godine) i 50 kontrolnih ispitanika (starosti 38-80 godina, prosječne dobi 58,70 godina). Svaki pacijent s OLP-om je ispunio STAI i Beck Depression Inventory II. test za vrijeme akutne faze i za vrijeme remisije. Za vrijeme uzimanja anamneze je svaki ispitanik upitan o mogućim stresnim događajima koji su se dogodili unatrag godine dana. Statistička analiza je napravljena uz upotrebu deskriptivne statistike i t-testa. Nije bilo razlika u razini anksioznosti, depresije i stresa u bolesnika s OLP-om između dvije faze bolesti (akutna faza u odnosu na remisiju). Bolesnici s OLP-om su bili značajno više anksiozni, deprimirani i u stresu u obje faze bolesti u odnosu na zdrave kontrolne osobe. Moguće je da psihološki poremećaji prethode nastanku OLP-a prije nego što pogoršavaju tijek OLP-a.

Ključne riječi: *Oralni lihen planus; Anksioznost; Depresija; Stres*