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Serum Immunoglobulins IgG, IgA and IgM in Patients with Oral Lichen Ruber

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A B S T R A C T

The aim of this study was to determine level of serum IgA, IgG and IgM in patients with OLR as indicators of humoral immunity which might reflect cell-mediated immunity. This study was conducted on 30 patients (age 60.17± 11.75) with clinically and histopathologically confirmed diagnosis of OLR and 30 healthy controls (age 56.16±11.82) Determination of serum IgA, IgG and IgM was performed by use of standard laser nephelometry in both patients and controls. Statistical analysis was done using Mann-Whitney U test and the level of significance was determined as p values lower than 0.05. Serum IgA and IgM in patients with OLR were significantly increased in comparison to the control group, while serum IgG levels were higher in patients with OLR but they did not reach significance. We might conclude that elevated levels of serum IgA and IgM show that humoral immunity is implicated in the pathogenesis of OLR.

***Key words**: serum immunoglobulin A, G, M, oral lichen ruber*

Introduction

Lichen ruber is a quite frequent chronic inflammatory disease of the skin and mucous membranes. Various mucous membranes could be affected such as oral, vaginal, anal and stomach mucosa[1]. OLR might manifest itself in different clinical findings such as papular, reticular, plaque-like, anular, atrophic, bullous, erosive and ulcerative which altogether makes its diagnosis more difficult. Lesions of OLR might appear on any part of the oral cavity, but are most commonly found on the buccal mucosa and tongue[2,3].

Etiopathogenesis of OLR is still not yet clear. It has been suggested that metabolic disruptions are part of the pathological process seen in OLR. This creates possibility that local antigens most probably bacterial ones might explain the appearance of local immune response, probably as a reaction of late hypersensitivity[4–6].

Alteration of the keratinocytes as a result of unknown antigen penetration may start immune reaction which leads to degeneration of keratinocytes themselves[7].

It is considered that the immunological changes in OLR are connected to cell-mediated reaction which can otherwise imply different immunological changes in the oral mucous membranes[8]. The other example are recurrent aphthous ulceration which are also consequence of cell-mediated immune reaction and might result in elevated serum IgA levels, whereas serum IgM and IgG levels remain unchanged[20].

Other authors have reported no difference in serum immunoglobulins between patients with OLR and controls[9–11] whereas others found lower[11–13] or higher levels when compared to the healthy controls[9,13,14].

Most commonly lower levels of serum IgA and IgM (11, 15, 16) and higher levels of serum IgG in patients with OLR were found[9,13,14].

The change in the humoral immunity is not specific and the consequence of the changed immune reaction seen in OLR patients might be due to some other immune change such as immunodeficiency with hypogamaglobulinemia[17–19].

The research of humoral immune reaction in patients with OLR is rare and so far has not been done in the Croatian population. Therefore, the aim of this study was to

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determine level of serum IgA, IgG and IgM in patients with OLR as indicators of humoral immunity which might reflect to cell-mediated immunity.

Materials and Methods

Prior to this investigation informed consent according to Helsinki II was obtained from each participant. Thirty patients with OLR were included in this study, of which 70% had reticular OLR, 13% reticulo-erosive OLR, 8% erosive OLR, 5% plaque-like OLR and 4% papular OLR, which is coherent with the other investigations[2,3]. All the patients with OLR were in acute phase of the disease before any local or systemic therapy was administered to them. There were 22 females and 8 males; their average age was 60.17±11.75 years. The diagnosis of OLR in every patient was made on the basis of clinical picture[19] together with histopathologically confirmed diagnosis of OLR. The control group consisted of thirty controls who had burning mouth syndrome and were free of any systemic diseases. There were 15 females and 15 males. Their average age was 56.16±11.82.

Level of IgA, IgG and IgM was determined by laser nephelometry (Orion Diagnostica Turbox immunoglobulin assay, Espoo, Finland) according to the previous studies[22,23].

Statistical analysis was performed by use of Mann-Whitney U test and values lower than 0.05 were considered as statistically significant ($p<0.05$).

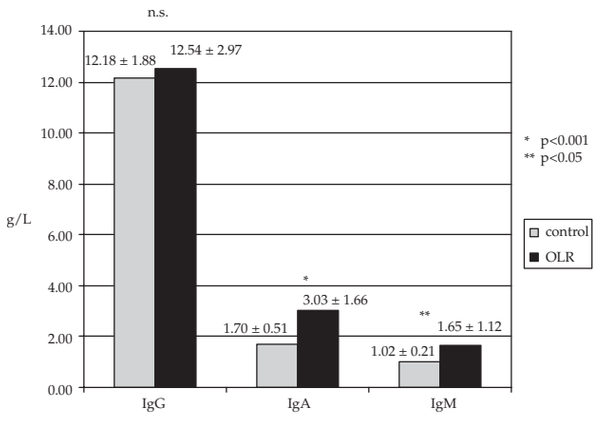

Fig. 1. Concentrations of serum immunoglobulins (IgG, IgA and IgM) in patients with oral lichen ruber (OLR) (N=30) and in control group (N=30).

Results

Levels of serum immunoglobulin IgA and IgM in patients with OLR are significantly increased in patients with OLR when compared to the controls ($p<0.05$) (Figure 1).

Levels of serum immunoglobulin G in patients with OLR are higher when compared to the controls but not significantly (Figure 1).

Discussion

Our data on the level of serum immunoglobulin IgG in patients with OLR are similar to the control group. This might be explained by the fact that all samples were taken during the acute stage of the disease when primary immune reaction takes part and when synthesis of IgM begins. In this stage of the disease switching of the IgM to IgG has still not begun and IgG stays dominant in the secondary immune reaction. It is also possible that unknown antigen not dependant on the thymus plays a role in the OLR therefore IgM remains dominant in comparison to the IgG. Other studies have shown either unchanged serum IgG levels[9–11] or increased levels of serum IgG in patients with OLR[14,16].

The results of this study show that serum IgA levels are significantly higher in patients with OLR when compared to the control group. This might indicate that immunological reaction has started and IgA has the well-known protective role of the mucous membranes. The other authors have reported lowered[12,13,15,16] or unchanged levels of serum IgA in the patients with OLR.

The levels of serum IgM in patients with OLR in this study were significantly increased in comparison to the healthy controls. This finding might suggest that specific immune reaction to unknown bacterial antigen possibly leads to acute inflammation. IgM is created in primary immune reaction and its main role is protection of intravascular space from bacteremia. Other authors have reported unchanged or even lowered levels of serum IgM in patients with OLR[9,17]. They concluded that this could be a result of changed humoral immune reaction as a consequence of possible immunodeficiency associated with hypogamaglobulinemia. Obtained differences between studies might reflect the fact that the samples were taken in the different stages of the OLR.

We might conclude that elevated levels of serum IgA and IgM show that humoral immunity is implicated in the pathogenesis of OLR where significantly elevated serum IgA and IgM might indicate emergence of defense mechanisms starting from the local level and might suggest that this immunological mechanism is attempt to eliminate bacterial antigen as possible etiological factor in the development of OLR.

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IMUNOGLOBULINI SERUMA IgG, IgA I IgM KOD BOLESNIKA S ORALNIM LIHEN RUBEROM

SAŽETAK

Cilj ovog istraživanja bio je odrediti koncentraciju imunoglobulina IgA, IgG i IgM u serumu oboljelih od OLR-a kao pokazatelj stausa humoralne imunoreakcije koja se može odraziti I na stanično posredovanu imunoreakciju. U ovo istraživanje bilo je uključeno 30 bolesnika (dob 60,17±11,75) s klinički i histopatološki potvrđenom dijagnozom OLR-a i 30 zdravih osoba kao kontrolna skupina (dob 56,16±11,82). Određivanje imunoglobulina seruma IgA, IgG i IgM provedeno je metodom standardne laserske nefelometrije. Rezultati su statistički obrađeni metodom Mann-Whitney U testa, a smatrani su statistički značajnima ako je razina značajnosti bila manja od 0,05 ($p<0,05$). Koncentracije imunoglobulina seruma IgA i IgM kod bolesnika s OLR-om bile su statistički značajno povišene u odnosu na kontrolnu skupinu zdravih soba, dok je koncentracija IgG u serumu bila viša u oboljelih od OLR-a u odnosu na kontrolnu skupinu, ali ne statistički značajno. Dobiveni rezultati povišenih vrijednosti imunoglobulina u serumu IgA i IgM upućuju na uključenost humoralne imunosti u patogenezu OLR-a.