

ABSTRACT

IMMUNOPATHOGENESIS OF THE ORAL EPITHELIAL MUCOSAL DESTRUCTION DUE TO MONOMER METHYL METHACRYLATE EXPOSURE

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Many clinical facts showed that methyl methacrylate (MMA) widely used as dental material appliances causes irritations and allergic reactions in oral mucosa with some clinical symptoms such as hyperemia, mucosal edema, painful oral mucosa, burning mouth, and even oral ulcers. MMA penetration into mucosal tissue is possible, because its chemical structure is lipophilic that enable MMA to penetrate through barrier of oral mucosal tissue. This study showed that MMA induced IgG anti-MMA secondary response in local rabbit (*Oryctolagus cuniculus*), and MMA was immunogenic in patients exposed to MMA. This study examined the immunopathogenesis of oral mucosal tissue destruction in patients exposed to MMA, by detecting the concentrations of plasma and oral mucosal tissue IL-4, IFN- γ , and TNF- γ with direct sandwich ELISA, and serum IgG and IgE specific to MMA with indirect ELISA. Furthermore, this study examined the correlation between plasma and oral mucosal tissue IL-4, IFN- γ , and TNF- α in patients exposed to MMA. The results showed that there were significant increases of plasma and oral mucosal tissue IL-4, IFN- γ , and TNF- α . It can be concluded that immunopathogenesis of oral mucosal tissue destruction in patients exposed to MMA does not happen through irritation. This study proved that IgE specific to MMA in patients exposed to MMA was negative, but their plasma and oral mucosal tissue IL-4 were significantly increased ($p < 0.05$). Those facts showed that oral mucosal tissue destruction does not happen through type I hypersensitivity reaction mediated by IgE. Immunopathogenesis of oral mucosal tissue destruction in patients exposed to MMA happens through type II and / or type III hypersensitivity reactions. These are revealed by positive results of IgG specific to MMA and significant increases ($p < 0.05$) of plasma and oral mucosal tissue IFN- γ . Furthermore, there were significant increases ($p < 0.05$) of plasma and oral mucosal tissue TNF- α and IFN- γ in patients exposed to MMA. It can be concluded that oral mucosal tissue destruction happens through type IV hypersensitivity reaction. The study also proved that there were significant correlations between plasma and oral mucosal tissue IL-4, IFN- γ and TNF- α concentrations in patient exposed to MMA. This result can be used to develop diagnostic method for oral mucosal irritations and hypersensitivity reactions in patients exposed to MMA by assessing peripheral blood.

Key Words: methyl methacrylate (MMA), irritation, hypersensitivity, oral epithelial mucosal destructions.