IMMUNOPATHOLOGY OF T-LYMPHOCYTE SUBSETS IN JUVENILE AND RAPIDLY PROGRESSIVE PERIODONTITIS

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The immunopathology of T4 & T8 cell subsets in gingival tissues from 20 patients affected with either juvenile (JP) or rapidly progressive periodontitis (RPP) were studied using immunoperoxidase method for monoclonal antibodies of T4 & T8. Results were compared with gingival samples taken from systemically and periodontally healthy subjects. T4 subsets were found to be significantly elevated in JP & RPP, when compared with controls. Yet it was found to be higher in JP than in RPP, while T8 subsets were found to be depressed in both types of diseases. Those findings could contribute to the immunopathogenesis of JP & RPP.

INTRODUCTION:

T cells recognize processed antigenic peptides in association with class I or Class II molecules encoded by the major histocompatibility complex (MHC) (Schwartz, 1985). Class I and class II MHC restricted T cells can be distinguished from each other by the presence of the surface markers CD8 and CD4, respectively (Parnes, 1989).

CD4 was initially described as a phenotype marker for helper T lymphocytes (Reinherz et al, 1979). Similarly, CD8 expression was correlated with cytotoxic T lymphocytes and suppressor cell function. However, Swain (1981) observed that expression of the CD4 and CD8 molecules was more closely correlated with MHC specificity of the T cells than with function, also others suggested that antigen specificity of T cells is mainly attributed to the T cell receptor (TCR) (Yanagi et al, 1984; Hedrick et al, 1984; Tomogawa and Mack, 1987). These observations led to the hypothesis that CD4 and CD8 are receptors that interact with determinants on class II and class I MHC molecules, respectively and that these interactions modulate or augment the T cell response (Bierer et al, 1989). Whether a class II MHC restricted T cell, and for CD8 in concert with Class I, MHC restricted T cell, occurs intrathymically or upon antigen stimulation in the periphery is not known.

CD4 T cells (helper/inducer) lymphocytes are the most important cell subset in the immune system. It stimulates the effector cells by production of lymphokines which play an important role in activation and/or proliferation of B and T lymphocytes (Fung-Leung et al, 1991).

T4 also recognized antigens from a bank of memory cells (Bierer et al., 1989) and produce interleukine 2 (Taubeman et al, 1984 & Cole et al, 1986) and/or interleukin 3 (Suzuki et al, 1986).

CD8 T cells (suppressor / cytotoxic T lymphocytes) have a regulatory role for interferon production (Papermaster et al, 1983) which is necessary for immunoregulation (Demaeyer & Demaeyer Guigand 1982).

Control of antibody production (Johenson, 1980), regulation of antigen presentation (Steeg et al, 1982 & Nalsh et al, 1986), responding to antigenic challenge by lysis of target cells (Fung-Leung, 1991) and augmenta-