

Characterization of tissue immunity defense factors of the lip in primary dentition children with Bilateral Cleft Lip Palate

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Objectives. Bilateral cleft lip and palate (BCLP) is one of the most common and severe orofacial multifactorial birth defects. The defect presents with various functional disturbances, including chronic inflammation. Immunity defense factors modulate immune response, inflammation, and healing of the tissues; therefore, they are vital in the assessment of the immunological status of the patient and in the understanding of morphopathogenesis and characteristics of BCLP. The aim was to assess the distribution of Gal-10, CD-163, IL-4, IL-6, IL-10, HBD-2, HBD-3, and HBD-4 in BCLP-affected tissue of primary dentition age children.

Materials and methods. Tissues were obtained from 5 patients (4 boys and 1 girl, 4–17 months old) during cheiloplasty. 5 controls were used for comparison. Immunohistochemistry, light microscopy, semi-quantitative evaluation and non-parametric statistical analysis were used to evaluate the tissue factors in patients and controls, as well as evaluate the statistically significant differences between the groups.

Results. A statistically significant increase of HBD-2, HBD-3, and HBD-4 positive structures was found in lip skin and mucosal epithelium, hair follicles, and blood vessels of patients. Notable increase was also noted in IL-4, IL-6, and IL-10 in the mucosal epithelium and CD163 in blood vessels. The connective tissue of patients presented with statistically significant decrease of Gal-10, IL-10, and HBD-3. Spearman's rank correlation revealed multiple significant correlations between all the factors observed.

Conclusions. The increase of human beta defensins indicate the formation of a line of defense to regain tissue homeostasis in chronically inflamed tissue. Upregulation of CD163 positive cells, increase of IL-4, IL-10, and decrease of Gal-10 points out the suppression of excessive damage from inflammatory reactions. A decrease of HBD-3, IL-10 in the connective tissue and an increase of IL-6 suggest decreased tissue healing, excessive scarring, and impaired protection against pathogens. The presence of various mutual correlations between the factors indicates mutually linked effects.