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Immunohistochemical expression of transforming growth factor beta 1 and interferon gamma in hereditary gingival fibromatosis in comparison to inflammatory gingival over growth and clinically healthy gingiva

A Thesis Submitted to the Council of College of Dentistry/ University of Baghdad in a Partial Fulfillment of the Requirement for the Degree of Master of Science in Periodontics

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Abstract

Background:

Gingiva is a visible part of periodontium which normally appeared pink colour, firm and resilient consistency, scalloped knife edged margin, with stippled attached gingiva, inflammatory process due to dental plaque make gingival tissue lose these characteristics with increasing size, red blue colour, and bleeding, this condition called inflammatory gingival over growth.

Gingival tissue size may increased massively, which appeared more fibrous, due to hereditary factor called hereditary gingival fibromatosis. Transforming growth factor beta 1 is which may play role in pathogeneses of hereditary gingival fibromatosis as growth factor together with interferon gamma which are inflammatory cytokine.

Aim:

1. To evaluate immunohistochemical expression of TGF-β1and IFN-γ in hereditary gingival fibromatosis in comparison to inflammatory gingival over growth and clinically healthy gingiva.
2. To evaluate the immunohistochemical expression of TGF-β1and IFN-γ in hereditary gingival fibromatosis influenced or not by age, gender and site.

Martials and methods:

The study was performed on forty five formalin-fixed paraffin embedded tissue blocks, twelve of which diagnosed as clinically healthy gingival tissue which obtained from patient that underwent gingivactomy due to aesthetic demand such as crown lengthening, gummy smile or prior to teeth extraction.

The second group were composed of sixteen formalin- fixed paraffin embedded tissue blocks which were diagnosed as inflammatory gingival over growth, twelve of them obtained from archives of the department of oral pathology, college of dentistry, university of Baghdad from 1971 to 2018; and

other four blocks obtained from individuals attended to department of periodontology, college of dentistry, university of Baghdad.

The remaining seventeen formalin- fixed paraffin embedded tissue blocks were diagnosed as hereditary gingival fibromatosis, ten of them obtained from archives of the department of oral pathology, college of dentistry, university of Baghdad were dated from 1972 to 2018; and the other seven blocks from individuals attended to department of periodontology, college of dentistry, university of Baghdad.

The diagnosis of each case was confirmed by the examination of hematoxylin and eosin sections by a specialized pathologist. Tissue sampling was done by immersing the gingival tissue excisional biopsies in a sterilized plastic container that contain 10% formalin solution then tissue section were prepared and visualized under light microscope by histopathologist. Serial sections were cut as each sections was of 4μm thickness were mounted on glass slides, stained with hematoxylin and eosin, and histopathologically re-evaluated.

Immunohistochemical staining was done with polyclonal antibodies. Immunohistochemical signal specificity was demonstrated by the absence of immunostaining in the negative control slides and its presence in recommended positive controls.

The fibroblast cells with clear brown staining were considered positive cell immunostaining, while the fibroblast cells without brown stain considered negative cells. Blindly assessment for all slides without prior knowledge of the clinicopathological parameters was done, the readings were calibrated by pathologists.

Result:

Significantly increased transforming growth factor beta -1 score between hereditary gingival fibromatosis and both of inflammatory gingival over growth

and clinically healthy gingiva as well as between inflammatory gingival over growth and clinically healthy gingiva.

Non-significant statistical difference of interferon gamma score was seen between hereditary gingival fibromatosis and inflammatory gingival over growth. While difference was appeared between hereditary gingival fibromatosis and clinically healthy gingiva as same as between inflammatory gingival over growth and clinically healthy gingiva.

Conclusion:

Transforming growth factor beta 1 has important role in the pathogeneses of hereditary gingival fibromatosis, while IFN-γ show a vogue finding. Age has an obvious effect on interferon gamma expression in hereditary gingival fibromatosis .