

Expression Of Collagen Type I And Type Iii Proteins As New Markers For Post Mortem Interval Estimation In Human Gingival Tissue

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Estimating the time since death is still a crucial aspect in forensic sciences and it is pursued by a variety of methods. However, most of these applied methods have practical limitations and provide insufficient results under certain circumstances.

After death, connective tissues undergo several morphological changes involving both the cellular components and the extracellular matrix. Indeed, proteins are subjected to increasing decay over the time, resulting in a modification of their concentrations in different tissues as well as in an increase of post-translational modifications.

In our previous study [1], we combined morphological and immunohistochemical analyses in post mortem gingival tissues to reach a more detailed knowledge on tissue organization and degradation after death, identifying typical morphological changes as well as different pattern of expression of HIF1alpha protein that correlate to the time of death.

In this study, we aimed at reaching a more accurate estimation of the post mortem interval by assessing the immunohistochemical detection of the extracellular matrix proteins collagen type I and collagen type III in post mortem gingival tissues at different PMIs.

Fragments of gingival tissues were collected from 20 cadavers at different post-mortem intervals during medico-legal autopsy and they were subsequently immunostained with anti-collagen type I and type III antibodies, in order to establish a correlation between the proteins presence and the time of death.

Results showed a progressive reduction in immunostaining with time, reflecting a significant variation in staining positivity that correlate to the different time of death.

In conclusion, although information on collagen degradation time is limited and further studies are needed, in our study degradation processes of sub oral connective tissues of gingival samples revealed to exhibit a discrete dependence upon time intervals after death demonstrating the applicability of immunolabeling techniques for PMI determination in forensic sciences.

References

- [1] Fais et al. (2018) HIF1a protein and mRNA expression as a new marker for post mortem interval estimation in human gingival tissue. *J. Anat.* 232: 1031 - 1037.

Key words

Post-mortem interval, immunolabeling, collagen fibers, ultrastructural morphological changes, gingival tissues.