



H65 The Vitality of Skin Lesions in Decomposed Corpses: A Morphological and Immunohistochemical Study

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Learning Overview: After attending this presentation, attendees will be better informed about a new combination of morphological and immunohistochemical methods useful in the evaluation of skin lesion vitality in decomposed corpses.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by experimentally validating a comprehensive protocol applicable, even in a judicial context, in cases of decomposed corpses when traumatic death is suspected.

The present research investigates three different aspects of the issue of skin lesion vitality, including the correlation between morphologic and immunohistochemical data, the differentiation between hypostasis and vital blood infiltration, and the identification of a suitable immunohistochemical panel of red blood cells markers (i.e., hemoglobin, glycophorin A and β -spectrin). The evaluation of wound vitality has always been one of the most debated topics in forensic practice. Especially in decomposed bodies, determining if a skin's hemorrhagic infiltrate should be considered a vital tissue reaction or just a postmortem phenomenon is still a challenge for forensic pathologists. As is well described in literature, morphological and immunohistochemical methods have proven to be useful in the assessment of skin lesion vitality.

In this study, ten cases of traumatic immediate death with a postmortem interval of <72 hours were selected. To delete confounding factors, corpses with poor hypostasis or cutaneous putrefactive changes were not included. At forensic autopsies, two skin samples were taken from each case (i.e., one from a recent lesion and one from a hypostatic region). Each sample was experimentally kept in incubator at a temperature of 20°C to allow for experimental decomposition. Histologic specimens were obtained at defined time intervals (i.e., 0, 7, 15, and 30 days) from each sample. Each specimen was formalin-fixed, paraffin-embedded, then stained with Hematoxylin-Eosin (H&E) and Masson's trichromic, as well as with Immunohistochemical (IHC) stains for hemoglobin and glycophorin A and β -spectrin. As a negative control, undamaged and non-hypostatic skin was utilized and treated as described above. Finally, the samples were examined with an optical microscope by two independent observers.

Study results showed good correlation between morphologic and immunohistochemical data in the early period of putrefaction. After longer postmortem intervals, IHC proved to be more effective than H&E and Masson's trichromic for the detection of bleeding and for differentiating bleeding from hypostasis. The usage of more than one IHC marker as opposed to a singular marker improved the evaluation. Overall, such results suggest the usefulness of performing complete skin dissection during putrefied bodies' autopsy, and collecting—for histologic analysis—all lesions suspected to be vital. These samples should be microscopically analyzed using both classic histologic methods as well as multiple IHC markers.

Wound Vitality, Decomposition, Immunohistochemistry