



Pathology Biology Section - 2012

G77 Wounds Vitality Evaluation in Decomposed Corpse: The Application of Monoclonal Antibody Against Hemoglobin Alpha Chain

Luisa Andrello, and Petra R. Basso, University of Insubria, Viale borri, 57, Varese, 21100, ITALY; Luca Tajana, Ospedale di Circolo e Fondazione Macchi - Varese, Viale borri, 57, Varese, 21100, ITALY; Terezio Congiu, University of Insubria, Via Monte Generoso, 2, Varese, 21100, ITALY; and Antonio M.M. Oscualti, University of Insubria, Viale Borri, 57, Varese, 21100, ITALY*

After attending this presentation, attendees will become familiar with this immuno-histochemical method for wound vitality evaluation. This presentation will also identify the difficulty of diagnosis of injury vitality in putrescent corpses.

This presentation will impact the forensic science community by demonstrating a method that allows for the assessment of whether wounds are antemortem or postmortem in decomposed bodies. This can benefit the forensic community by adding to the methodology available for the identification of wounds vitality in decomposed bodies, especially in murder.

Forensic pathologists usually evaluate injury vitality through the identification of red blood cells in wounded tissues. Hematoxylin and eosin stain is one of the most commonly used histology stains to do this evaluation. Unfortunately this microscopic technique is not reliable in decomposed bodies, because erythrocytes are often lysed and not recognizable.

Although a lot of researches have attempted to use histological and immuno-histochemical methods to analyze the vitality of lesions of soft tissues, there is still no conclusive tools to determine whether a wound is antemortem or postmortem in decomposed corpse.

The inability to recognize red blood cells in histological samples with hematoxylin and eosin stain does not exclude the possibility to identify red blood cells specific components. In particular hemoglobin chains seem to be one of the most resistant elements to putrescence.

The immuno-histochemical method was used in some cases in which corpses were decomposed and where it was really hard to understand which lesions were caused antemortem and which were postmortem.

In this case, a homicide presented problems regarding injury diagnosis, because there were no existing tests that allowed the confirmation of the diagnosis of vitality. Gross observation and light microscopy examination of the samples (H&E histological samples) seemed to indicate that only some wounds had characteristics of vitality. That was important to determine because all the wounds were potentially dealt either to kill or to try to dismember the corpse. Application of monoclonal antibody direct against Hemoglobin alpha chain allowed the detection of the remaining red blood cells in soft tissues near some of wounds and not in others. Therefore, it could be identified, with some certainty, which wounds were inflicted in the attempt to hide the corpse. These results agreed with the case's reconstruction made by the police.

In another homicide case, when a female corpse was found about three months after the young lady disappeared, the immuno-histochemical method was used to determine which wounds were caused intra-vitam during the struggle and which were made postmortem.

This method was also used in a third case of homicide, when a decomposed body was found in a wooded area, about four months after the disappearance. In this case, it was important to understand which wounds were antemortem and which lesions were due to animal scavenging. The majority of the wounds took place in the neck and it was difficult to determine which were made by a blade and which by animal teeth, because of the decomposition of the skin. This method confirmed the hematoxylin and eosin light microscopy analysis and helped to determine which lesions were really meant to kill and which were not.

Preliminary data presented here suggests that this method will be of great use in determination of wound vitality, even greater number of samples will have to be observed to validate this method for forensic routine use.

Wounds Vitality, Immuno-Histochemical, Decomposed Corpses