D69 An Unusual Homicidal Cervical Stab Wound With Complete Section of the Spinal Cord Examined by Postmortem Angio-Computed Tomography

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After attending this presentation, attendees will understand the interest of a Multiphase Postmortem Angio-Computed Tomography (MPMACT) examination in cases of numerous and multidirectional injuries.

This presentation will impact the forensic science community by providing an example of an unusual case of homicidal stab wound with complete transversal section of the cervical spinal cord.

Introduction: Cases of spinal cord injuries secondary to stab wounds are rare in the literature. In North America, spinal cord traumatisms represent 2.6% of all the traumas and only 1% of them is secondary to stab wounds. In most of cases, those injuries are secondary to ballistic trauma. In a South African study consisting of 450 cases of stab wounds, the complete cervical spinal cord represented only 4.5% of the cases. Furthermore, lethal cases are rare and, in most cases, victims survive and present neurological sequels like tetraplegia or Brown-Sequard syndrome.

Case: The case of a 26-year-old woman killed by her boyfriend secondary to numerous stab wounds is presented. An MPMACT was performed before the medicolegal autopsy. The body was prepared with a surgical cannulation of the femoral vessels. After a non-enhanced Multi-Slice Computed Tomography (MSCT) exploration, a controlled perfusion device (Virtangio® machine) was used with paraffin oil mixed with a special contrast agent (Angiofil®), allowing for three time-different acquisitions (arterial, venous, and dynamic).

This exploration revealed multiple stab wounds (facial, thoracic, and cervical) with two lethal cervical lesions. One of the cervical lesions was located at the upper posterior part of the neck with a horizontal trajectory and complete transversal section of the cervical spinal cord between the first and the second cervical vertebrae. This lesion was accompanied with venous and arterial sections. The second cervical lesion was anterior, located on the right side at the base of the neck and presented along its trajectory an injury of the right internal jugular vein and a section of the right transverse apophysis of the seventh cervical vertebrae. At the facial level, fractures of the right mandible were noted along the path of one stab wound. At the chest level, a right hemo-pneumothorax was noted with one scapula bone lesion secondary to one posterior stab wound.

Discussion: Only one similar case of complete transversal section of the cervical spinal cord with a lateral and horizontal trajectory between C1 and C2 was found. In this case, Rubin *et al.* enhanced the usefulness of radiologic investigation in instances of spinal injuries. Furthermore, exploration of the spinal cord is always a particular challenge at the autopsy. In this case, the dissection was easier because of the imaging conclusions and the realization of different-time acquisitions was essential for detection and comprehension of the origin of the bleeding. The precise localization of the injured vessels at the upper cervical posterior area was possible only with imaging. Moreover, MPMCTA permitted better *in situ* lesions' illustration and documentation.

Only the external examination permitted an exhaustive description of the different wounds. This unusual case due to stab wounds illustrates the complementarity of the MPMACT and autopsy in instances involving those types of lesions.

Stab Wound, Homicidal, Postmortem Angio-CT

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