E34 Stabbing Exploration: An Essential Duality

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After attending this presentation, attendees will have learned about a stabbing case in which both a Computed Tomography (CT) scan and autopsy were essential to detect all the lethal injuries and explain the absence of defensive wounds on the victim's skin.

This presentation will impact the forensic science community by confirming the necessity of collaboration between radiologists and forensic pathologists, the importance of a systematic approach, and expanding the range of CT scan indications in stabbings.

Medical imaging investigations, such as a CT scan, have their own place in forensic medicine today, particularly in thanatology (postmortem imaging). They enable the constitution of an acceptable database of pictures for juries at the Assize Court, but are also a wonderful diagnostic tool thanks to the exploration of wounds, which are hardly accessible during a surgical autopsy.

Rouen Forensic Institute was requested following the homicide of a 54-year-old man, stabbed while he was standing in his workplace, where stigmata of an externalized hemorrhage were observed.

External examination brought to light seven cervical wounds, one of which was on the left side of the neck, facing cervical blood vessels, and six of which were on the right posterior side of the neck and were not initially suspected of being potentially lethal. No defensive wounds were visualized on the hands or the forearms, surprisingly, considering the number of blows which should have led the victim trying to fend off his aggressor.

The postmortem non-contrast CT scan, taken before the autopsy, showed a fracture of the fifth cervical vertebra's right lamina and lesions of the pedicle and vertebral body on the left side of the vertebra. The presence of air bubbles in the spinal canal was highly suspect of an associated spinal damage. Exploration of the cerebral and cervical vessels was impossible due to the absence of contrast.

During the autopsy, the left cervical wound was shown to have caused a left jugular vein injury, and one of the posterior cervical wounds was transfixing, associated with a right subclavian vein injury. Exploration of the wound, which caused vertebral and medullar injuries, was very difficult because of its location and its trajectory.

If a postmortem CT scan is actually recognized as the essential additional examination in some cases, in particular for putrefied bodies or ballistic trauma, its place in stabbing exploration is not totally defined. Indeed, a non-contrast CT scan doesn't allow the distinguishing of vascular lesions but provides a good detection of bone lesions, with the possibility of a non-invasive exploration of inaccessible areas at autopsy.

In this case, a non-contrast CT scan did not reveal the two serious vascular injuries; however, it highlighted vertebral and medullar injuries, which would have gone unnoticed or would have needed very damaging explorations during the autopsy because of their location. The absence of defensive wounds were also discovered as a result of vertebral and medullar injuries, which probably caused at least a tetra paresis with difficulty in moving the four limbs.

Thus, it seems to be crucial to systematically couple a CT scan and surgical autopsy, which are actually complementary and shall not, under any circumstances, substitute for each other, particularly in stabbings.

CT Scan, Forensic Autopsy, Stabbing