E52 Men on Fire! Two Murders Solved by a Multidisciplinary Approach

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Learning Overview: The goal of this presentation is to highlight the importance of a multidisciplinary approach in complex cases. The scientific method represents an essential tool in crimes in which the murderer tries to conceal the homicide in order to help the court reconstruct the dynamics of the events.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by showing that in criminal cases, the use of a multidisciplinary approach is essential. This approach involves different specialists, depending on the cases, to guarantee a complete and correct scientific evaluation to support the investigation.

The concealment of the body following a homicide is a frequent occurrence in forensic pathology. Killers can hide the body of the victim to destroy crucial evidence and divert the investigation. There are various ways of concealment from simple abandonment in an isolated place to dismemberment. In many cases, it can be difficult to distinguish between antemortem and postmortem injuries and to find the cause of death. Two cases of murder concealed by carbonization analyzed by the Forensic Pathology Department of Foggia are presented.

The first case concerns an unknown corpse, found charred in an isolated countryside, on the left side of a burned car. The coroner, called by the prosecutor, inspected the body: the bones of the skull roof were destroyed, while part of the skull base and the mandibular bone and soft tissue were recognizable. The thoracic and abdominal walls were absent, such as the heart, lungs, and spleen. Due to the position of the corpse (it laid on the ground between the open car doors), the police assumed an accidental death or a suicide. According to the accidental hypothesis, the person could not escape from the sudden fire of the vehicle. On the other hand, the person could have set fire to the car and taken drugs to lose consciousness.

The forensic pathologist required a total body Computed Tomography (CT) scan. The CT scans showed metal objects in the mandible and in the thighs, maybe belonging to the car. So, an autopsy was performed. The pathologist found a rounded metal body in the soft tissue of the mandible. Carbon residues were not found on tracheal mucosa. The forensic pathologist understood that the unknown person had already died before the car fire. The forensic pathologist delivered the metal fragment to the investigative scientific core. The laboratory technicians discovered that the object was the lead core of a 7.65mm Browning® bullet. By combining all the evidence, the police had a new hypothesis: someone killed, then burned the man to conceal the body and divert the investigation.

The second case concerns the body of a man found inside a warehouse, behind a burnt car. The prosecutor requested the intervention of the forensic pathologist. The corpse laid prone on the flame-burned floor. Only the scalp, the skin of part of the face, and the back were charred. The external examination revealed the presence of a hole in the occipital region, with scarcely evident features due to the carbonization of the scalp, the absence of the right upper central incisor tooth, and hemorrhagic infarction of soft tissues of the right part of the oral cavity. A total body radiological examination performed before the autopsy showed the presence of two metal bodies, placed in the frontal region of the brain and anterior to the odontoid process of axis vertebrae, respectively. The autopsy determined that one of the two bullets had entered the right occipital lobe, right cerebellar hemisphere, brain stem, optic chiasm, and left frontal lobe of the brain. The second bullet was found in the prevertebral region, anterior to the axis. Blood was found in the lumen of the trachea and the main bronchi. Histological stains performed with hematoxylin-eosin showed the presence of subarachnoid hemorrhage in the samples taken from cerebral holes, erythrocytes between the muscle fibers in the sample taken from the oral cavity, and the absence of carbon particles in the lumen of the trachea. The sodium rhodizonate test performed on the skin sample taken from the hole in the occipital region was negative. There were no traces of carbon monoxide in the blood. By using a multidisciplinary approach, the forensic pathologist determined that the cause of death was due to cranioencephalic trauma caused by two gunshots and confirmed that combustion occurred postmortem. Subsequent police investigations revealed that the murderer set fire to the warehouse to conceal the body. Unfortunately, a passerby called the firemen who extinguished the fire and found the body.

Murder, Carbonization, Corpse Concealment