



Pathology/Biology Section - 2015

H60 Burned Human Remains: The Importance of a Multidisciplinary Approach

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After attending this presentation, attendees will understand the complexity and critical issues related to forensic activity in cases of charred remains and will learn how to proceed with these types of cases.

This presentation will impact the forensic science community by illustrating an effective methodological approach to forensic activity and the identification of charred corpses. The recovery of burned skeletal remains may in fact represent an interesting, but sometimes difficult, challenge for forensic evaluation, given the frequently serious damage of the bodies. In such cases, it is essential to ascertain if the victim was exposed to fire before or after death. The forensic pathologist is called upon to determine the cause and manner of death and to discern if it was a case of homicide, suicide, or an accident. Another forensic need arising in such circumstances, both for the discovery of isolated bodies and in mass disasters, is the identification of the bodies, which is required for judicial reasons as well as ethical or religious causes. By developing a case report, the problems and strengths of the forensic activities carried out will be identified, thus providing useful information for the solution of fire-related deaths.

In December 2013, a group of forensic experts (two pathologists, an odontologist, a geneticist, and a toxicologist) were appointed by a judge in Prato, Italy, to identify seven victims recovered after a textile factory fire and to establish the cause of death.

In four cases, the toxicological investigations revealed very high levels of carbon monoxide ranging between 88.05% and 95.77%. Two people died from cyanide intoxication (with concentrations between 5.17mcg/ml and 8.85mcg/ml). In one case, there was a synergistic effect of the two substances (carbon monoxide and cyanide). The autopsy showed indicators of exposure to fire before death, with no traumatic injuries that could suggest a different cause of death.

The identification proceeded in accordance with the International Criminal Police Organization (INTERPOL) Antemortem (AM) and Postmortem (PM) protocols; in every case, one of the primary identifiers was satisfied. Given the high resistance of teeth to high temperatures, odontological examinations provided relevant data and genetic investigations confirmed all identities. Secondary means of identification, including personal descriptions, medical findings and devices, body piercing, clothing, and jewelry also proved to be very useful in correlating possible identities.

The primary difficulties were encountered in gathering AM information, due both to the language barrier (most of the relatives spoke only Chinese) and especially due to the lack of medical and dental information about the victims. The AM phase therefore required careful investigation by the forensic experts to overcome these problems and obtain data to compare with the examination on the remains.

Another critical issue, often causing mistakes in the identification process and in dynamics reconstruction, was the designation of the remains during the different forensic and investigation phases (recovery of the bodies, arrival at the morgue, then at the Forensic Science Department in Florence, Italy).

The contribution of each expert in charge was essential in solving the forensic issues, showing the multidisciplinary and integrated approach in every step of the activity (from the site inspection to the final report) as key to the solution of fire-related deaths.

Charred Corpses, Identification, Multidisciplinary Approach