



G47 The Death of an Italian Soldier in Iraq: Murder or Fatality?

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The death of an Italian soldier in Iraq is presented. The goal of this study is to present a relatively quick and easy method for evaluation of gunshot residues, useful for interpreting gunshot wounds in cases where the circumstances of death are not clear. A specific histochemical stain with sodium rhodizonate and an analysis using a confocal type laser profile microscope was performed in order to clarify the exact death scenario.

This presentation will impact the forensic community and/or humanity by providing a relatively quick and easy method for evaluation of gunshot residues, using sodium rhodizonate staining on histological samples, that may help determine range of fire in cases of death caused by firearm, and in this particular case, in order to clarify whether it is an accident, homicide or a suicide case. This histochemical data may be supported by the use of a confocal microscope.

A young Italian soldier in Iraq, at 01:00 p.m. was discovered wounded in a shooting range, where he was training with his rifle, a "MINIMI" cal. 5.56 mm. **The rifle was found near the man and was seized. He was quickly taken by helicopter to the nearest military hospital in serious clinical condition, but he continued getting worse, so was transferred and hospitalized to Kuwait City, and died at 4:27 p.m. The body was transferred to Italy to the Department of Forensic Pathology of Foggia. A Military Prosecutor arranged the autopsy on the body because the circumstances of the wound suggested that the death could be an accident or, alternatively, a murder.**

A complete autopsy was performed. The head injury was massive with partial evisceration of the brain. A large gaping tear of the scalp was present. The exact sites of the entrance and the exit of the bullet were not apparent. Careful re-approximation of the scalp and the examination of the tear showed an irregularly circular wound with irregular margins, surrounded by a wide zone of raw abraded skin in the forehead. A large, V-shaped scalp laceration (18 x15 centimetres) radiated from this circular area up to the parietal and occipital bones. Gross identification of the entrance site was not possible. The brain was edematous, and the bilateral frontal and right parietal regions were lacerated with lost brain parenchyma.

The brain was sectioned with coronal cuts according to the Adams technique and showed right to left shift of the midline structure.

In the bilateral frontal region a small foci of hemorrhage was present and characteristic petechial hemorrhages continued throughout coronal cuts and affected the corpus callosum. Furthermore, in the right hemisphere, superficial subcortical hematomas extended into the parenchyma and the right lateral ventricle.

The cerebellum the subarachnoid space was affected by moderate hemorrhage, and the brainstem showed characteristic petechial hemorrhages.

The examination of the other organs was unremarkable. Routine histological investigation of skin specimens applying hematoxylin and eosin staining revealed a detachment of the upper epidermal areas mainly extending through the basal cell layers with flattened and stretched epidermis. The deeper parts of stratum papillare and underlying upper layers of the corium were homogenized. In these areas wide erythrocyte accumulation was present in the dermis and sub-epidermic adipose tissue. In superficial and deep layers of skin and dura mater were black foreign bodies. Brain sections showed intraparenchymal diffuse haemorrhages.

Frontal wound skin and dura mater samples were also stained with Rhodizonate dye technique. Rhodizonic acid exists as needle-shaped crystals of a dark orange colour and forms a sodium salt, which reacts with heavy metal ions (barium, antimony, lead, tin) contained in gunshot residues (GSR) with a red precipitate. On histological tissue sections, Rhodizonate reacts with heavy metal particles from the primer by generating a finely granular scarlet red pattern. The specimens were examined with a light microscope, in transmitted brightfield illumination and phase contrast mode.

In the samples collected from skin of the frontal region the NaRhodizonate reaction was positive for the presence of gunshot residues (GSR), showing dotted, non-contiguous, coarsely granulated deposits of rhodizonate, positive not only on the surface of skin, but also appearing within the gaps between connective tissue fibers. The same findings were observed in the dura mater specimens.

The GSR-positive samples were examined with confocal microscope using fluorescence emission of skin and antimony, a heavy metal contained in gunshot residues. A three-dimensional reconstruction was performed that confirmed the presence of GRS – positive granules on skin and dura mater surface.

Gunshot residue findings, their morphological aspects, and their location were indicative for a shooting distance less 40 centimetres.

In this reported case, the careful histological investigation of the wound skin through specific staining made the circumstances of the death clear, leading to the assessment of entrance site and firing distance. Furthermore the circumstantial data confirmed the hypothesized death scenario, that it was an accidental self-inflicted gunshot while the soldier was trying to unblock his rifle.

Soldier Death, Gunshot Wound, Shooting Range