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Multidisciplinary Approach for the Evaluation of Firearm Injuries

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Abstract

Evaluating firearm injuries for its manner of infliction is of major concern for the forensic surgeon as well as investigating agencies. The profound morbidity and significant mortality not only invites various forensic perspectives to be addressed, but also poses a challenging task to the forensic surgeon to deduce the manner of death. A case of fatal firearm injury, in an adult man with four firearm wounds in the neck is reported and discussed. The case apparently raised suspicion regarding the manner of death as 'suicide' due to the nature and disposition of wounds. A forensic autopsy supplemented with a retrospective evaluation of scene of occurrence and weapon of offence, reconstructed the event as deliberately inflicted by self.

Key words: Deliberate; Firearm injury; Scene of occurrence; Retrospective scene visit; Weapon.

Introduction

Evaluation of firearm related fatalities, are not deemed to be complete until a thorough approach is made from forensic autopsy, analysis of scene of occurrence and weapon of offence. While the former is done in a fairly reasonable manner, the latter two are compromised more often than not. In forensic practice, the scene of occurrence may be the place of the crime or incident that eventually led to the victim's death or the place of recovery of the victim's remains. Scene analysis is one of the most crucial elements of a forensic investigation into an unnatural death, whose value may exceed that of the autopsy itself, at times. Scene visit by the forensic surgeon when the body is 'in-situ' is perhaps more rewarding but the prevailing investigating system in the Indian sub continent provides a very minimal scope for such a practice. Hence majority of 'forensic evaluation of the scene' becomes retrospective, which is usually made after the autopsy, on the request of the forensic surgeon.

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A case of multiple firearm injuries, which possibly could not have been considered as suicide at autopsy is presented and discussed. The crucial information obtained from the retrospective scene visit, which included an examination of the alleged weapon of offence restructured the approach of arriving at the exact manner of death.

Case report

The case subject was an adult man who worked as an arm guard for a bureaucrat, at Mysore district, South India. He was found dead at his residence with four firearm injuries on front and back of the neck. A forensic autopsy was conducted at the department of Forensic Medicine and Toxicology, JSS Medical College, Mysore. As a pre-requisite, head and neck was radio-graphed for possible location of projectiles. A radio-opaque shadow suggestive of path traversed by projectiles was observed. However no projectiles could be visualized (Figure 1). On external examination, four circular penetrating wounds were present on front and back of neck. The said wounds were numbered as 1 to 4, for further evaluation. Wound No 1 was circular in shape, measured 1X1 cm and muscle deep, on right half of neck, 8 cm above sterno-clavicular joint (Figure 2). The margins were inverted with powder tattooing around

the adjacent area of 8X7 cm. On further dissection, underlying soft tissues showed blackening and charring. Wound No 2 was circular in shape, measured 2X1 cm, and muscle deep, on the left half of neck, 14 cm above the middle 3rd of clavicle (Figure 3). The margins were inverted, with blackening, smudging and abrasion of adjacent area. On further dissection, underlying soft tissues showed blackening and charring. Wound No 3 was oval in shape, measured 2X1.5 cm and muscle deep, on the left half of neck, 4 cm below the mastoid process (Figure 4). The margins were everted and irregular in shape. Wound No 4 was oval in shape, measured 2X1 cm and muscle deep, on the back of neck, 12 cm below the external occipital protuberance, with everted and irregular margins (Figures 5). With the observed findings, wounds numbered 1 and 2 were assigned as due to entry of the projectiles and that 3 and 4 were due to exit. No exact wound track could be established. However, there were diffuse contusions in the neck muscles. There were no other external injuries present on the person.

Other gross findings at autopsy were unremarkable, except for dried blood stains on face, neck, chest and a cherry red colored postmortem staining on the back. The cause of death was opined as hemorrhagic shock due to gunshot wounds sustained to the neck. A retrospective scene visit was made after 4 hours of autopsy. The room was said to have been secured from inside, which the investigating team had forced opened for the initial recovery of the body. The deceased was said to have found lying on the cot with legs resting on the floor and weapon held in left hand, the photograph of which was procured from the police (Figure 6).

Figure 1: Antero-posterior view of radiograph of neck, with a faint 'wound track' and no projectiles

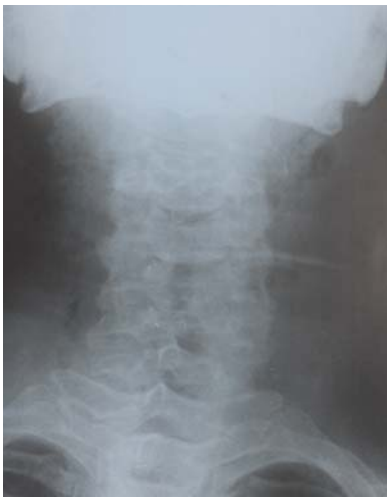


Figure 2: Entry wound on front of right half of neck

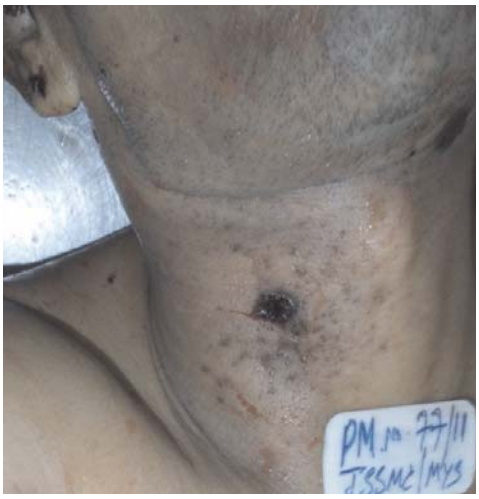


Figure 3: Entry wound on front of left half of neck

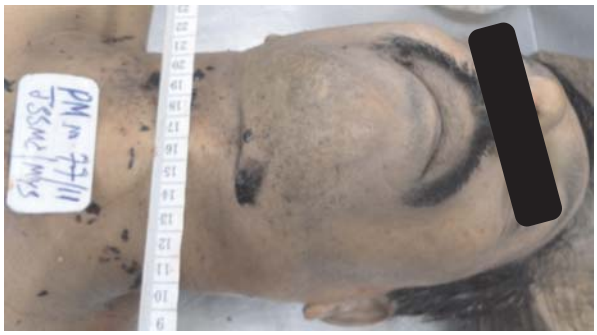


Figure 4: Exit wound on back of left half of neck

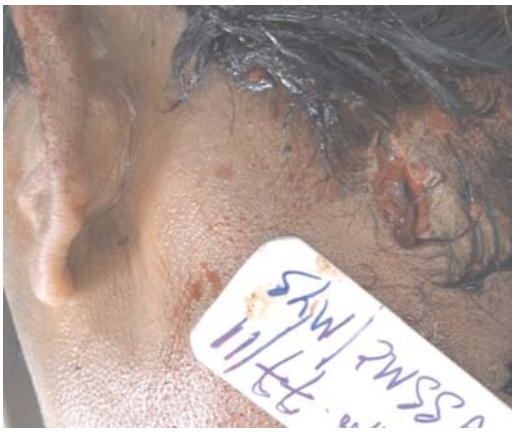


Figure 5: Exit wound on back of right half of neck

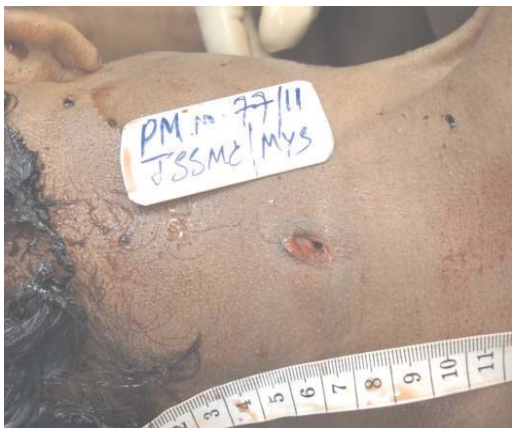
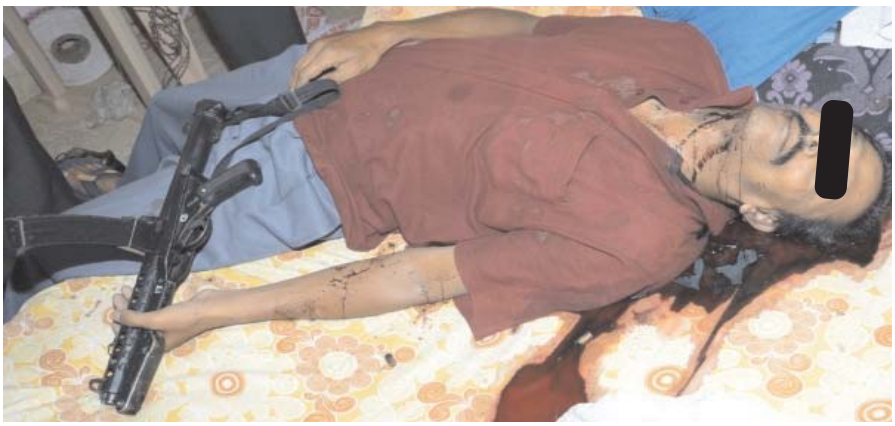


Figure 6: Attitude of the deceased with weapon in hand



The bed was found stained with blood. The adjacent wardrobe was found to be tethered by bullets over the outer wall and inner compartment, while the window had the effects of grazing bullet on the frame and grill. The concrete roof too had a recently incurred dent. This possibly would have caused by the richocheting of the bullets, after exit, whose exact sequencing could not be ascertained. The said firearm was found to be a *'semi-automatic submachine gun 9 mm 1A1'* (Figure 6), which would fire 5 shots on single trigger. The '35 slot' cartridge box, which was found nearby had 10 empty slots. This was concurring with the five empty cartridges recovered at the scene along with five live cartridges in the magazine.

Discussion

Suicides associated with multiple gunshot wounds are often uncommon in forensic practice[1]. Their identification raises significant suspicion regarding the participation of another person in the act, creating a dilemma about the manner of death. A reasonable interpretation of such injuries poses a significant challenge to the forensic surgeon. A multidisciplinary approach of a forensic autopsy, analysis of scene and examination of weapon of offence could positively affect the course of investigation.

Scene investigations involving the police and forensic specialists have been accepted as one

of the important tenets of a complete medico-legal inquiry in such cases[2].

In suicidal firearm injuries, the weapon of offence would usually be found at the scene and sometimes held in the hands of the victim, as was found in the present case. If it were to be cadaveric spasm, that would further clinches the diagnosis as 'self-inflicted'. Majority of the reported suicidal firearm injuries were by using pistol, with a few circumstances of shotgun related incidents[3]. Multiple firearm wounds in self-infliction may involve a solitary area, like head, or multiple areas, like head and chest. Multiple gunshot wounds confined exclusively to the head are the least common, whereas those of the chest are the most common[4,5]. The case subject had multiple firearm wounds in neck sparing the head and chest, which is in contrast with the retrieved literature. A reported study had observed that unusual sites for the suicidal gunshot wounds were the dorsal part of the neck, the right nostril and the right ear[6].

The make-up of the weapon had explained the multiple injuries sustained by the deceased subject. A plausible restructuring of the incident revealed that, the man was reportedly suffering from domestic discords, confined himself in a room, secured bolt, shot himself at neck with a *'semi-automatic submachine gun 9 mm 1A1'*. A single firing had expelled 5 projectiles, whose empty cartridges were recovered at the scene. The magazine had 5 live cartridges and the cartridge case of 35 slots, had 10 empty *niches*. Thus a positive conclusion of the manner of death was made as 'suicidal'. Hence it necessitates the need of acquiring the knowledge of nomenclature and operation of commonly used firearms in the geographical area of the forensic surgeon, which would be rewarding in explaining multiple firearm injuries.

Conclusion

Differentiation between suicidal and homicidal firearm injuries often becomes difficult owing to the presence of more than one firearm wound. The issue of homicide should often be ruled out in such cases, after a careful evaluation. This is best done by correlating the morbid anatomical findings at autopsy with the analysis of death scene and weapon of offence. A retrospective scene visit must be contemplated when the nature of injuries are of doubtful origin, or of unfamiliar pattern. Such visit will afford the forensic surgeon with an appreciation of the nature of the surroundings, so as to offer an objective opinion for the overall judicial inquiry of the case.

Conflict of interest

The third author has presented this case report under oral presentation in the VIII

annual conference of South India Medicolegal Association (SIMLA) held at

Calicut, Kerala, India.

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