

CASE REPORT

AN UNCOMMON CAUSE OF DEATH IN A PEDAL CYCLIST

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Abstract

A body found by the road without obvious fatal injury presents a considerable challenge to the forensic pathologist. A thorough autopsy is instrumental in eliciting the cause of death (COD) and reconstruction of events leading to the death in an unusual case. In the case described following autopsy, COD was given as hemorrhagic shock due to penetrating injury to the left jugular vein caused by glass. Retrospective examination of the crime scene helped in the reconstruction of events where a pedal-cyclist died after knocking on the side mirror of a parked lorry. The contributory factors highlight the need for a blood alcohol concentration limit for pedal-cyclists.

Keywords: pedal-cyclists, fatalities, penetrating, neck injury, trauma

Introduction

A body found with an unknown circumstance and cause of death requires an inquest and an autopsy. When a dead body is found by the side of the road, with no obvious evidence of cause of death and lacking an eyewitness to corroborate the circumstance of death, the role of the forensic pathologist is critical.

Case Presentation

A 23-year-old man was found dead by the side of a busy road by the police soon after midnight. Nearby were a bicycle, and a parked lorry. The side mirror on the drivers side of the lorry was broken. History given by the father of the deceased revealed the deceased to be a previously healthy labourer, who had allegedly consumed alcohol at a friend's party where he was last seen around 9 p.m. the previous day leaving the party on his bicycle. The body was found midway on the route home from the friend's house.

At autopsy, an irregular, gaping cut injury 5 x 2.5cm was found on the anterior triangle of the neck. A cylindrical penetration was present between the two heads of the left sternocleidomastoid. The underlying left jugular vein was pierced by a triangular shaped glass particle measuring 14 x 16 x 25mm(Fig.1). There was a surrounding hematoma of approximately 1250 ml. The height of the person was 165 cm. Distance from the buttocks to the injury was 63 cm. Toxicological analysis of the victim's blood revealed a blood alcohol level of 0.18 g/dL. The cause of death was given as hemorrhagic shock, due to penetrating injury to the left jugular vein caused by glass.

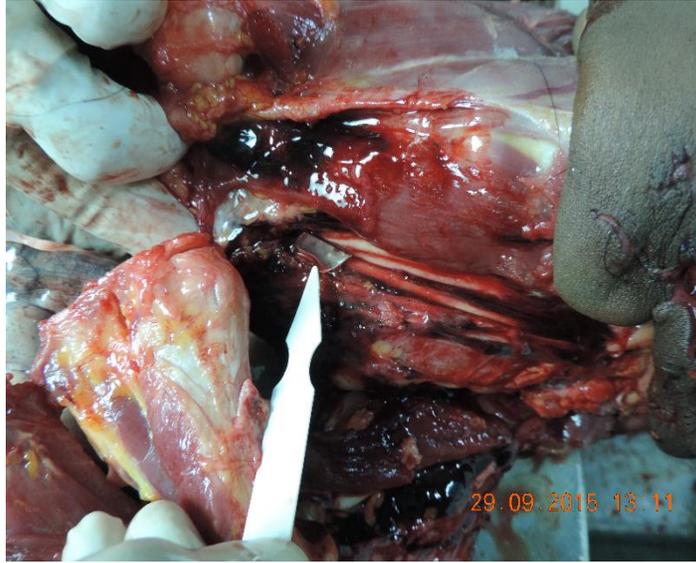


Figure 1- Pierced left jugular vein with piece of glass in-situ

Discussion

In the case of a body found near a road, the question remains as to whether it was a 'hit and run', an accident, a homicide or a post mortem disposal.

Retrospective assessment of vehicles involved revealed the height of the bicycle seat from the ground to be 90 cm. The calculated height from the road to the injury on the victim's neck, if the victim was riding the bicycle in an erect posture, was 153cm. The height of the side mirror connecting shaft from the ground was 132 cm. When considering the crouched posture commonly assumed by pedal cyclists, the heights are compatible for a collision of a pedal cyclist with the side mirror.

Thus, the autopsy findings, retrospective evaluation of measurements taken of the vehicles and the deceased, together with evidence at the scene indicated that the man had collided with the connecting arm of the side mirror of the stationary lorry while travelling on the bicycle, pushing a particle of glass through the left jugular vein, causing death due to hemorrhagic shock.

Consequently, it was concluded that the death was accidental.

Penetrating neck injuries are found in 5-10% of all trauma cases¹. Adolescents and young adults (15-29 years) and adults aged 45 years and older have the highest bicycle



Figure 2 - Connecting arm of side mirror

death rates². Although this is true for most collisions, fatal penetrating injuries sustained by a pedal-cyclist hitting a stationary vehicle is rare. This is due to the low relative velocity of impact. No similar cases were found in the available literature.

The primary contributory factor was the presence of a blood alcohol level of 0.18 g/dl in the victim. A recent study conducted by the US department of transportation found one-fifth (20%) of pedal-cycle fatalities of 2013 in the United States had blood alcohol concentrations (BAC) of 0.08 g/dl or higher³. In the United Kingdom, the motor traffic law does not permit use of a pedaled bicycle while under the influence of alcohol⁴. A BAC limit for pedal-cyclists of Sri Lanka would invariably be helpful in the prevention of traffic collisions and fatalities. In most modern vehicles, the side mirrors are made of plastic and manufactured to fold on impact, thereby reducing damage on impact. The side mirror of the lorry was found to be made from non-foldable, rigid plastic. The metal connecting rod had been modified to extend the mirror arm to promote better visibility for the driver (Fig.2). This projection probably caused the pedal cyclist to collide with the mirror. Therefore, implementation of laws against the modification of side mirrors would be useful in prevention of similar accidents. A literature search revealed the lack of clearly defined rules on side mirrors, foldability and length of connecting arm in Sri Lanka. A clear definition of the perpendicular distance from body of vehicle to the outer frame of the side mirror, and foldability are issues necessary to be mentioned in the primary vehicle laws.

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