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Fatal Delayed Extradural Haemorrhage A Case Report

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Abstract:

Extradural hemorrhage (EDH) may prove to be a fatal complication of head injury; however, it is the most easily diagnosed and treatable form of traumatic intracranial hemorrhage. It usually occurs at the site of impact and as a cause of death, it is extremely rare with only a few cases being reported till now. In this paper, an unusual case of fatal traumatic delayed EDH (subacute) brought as sudden death has been reported. The interesting aspect of the case is that the death occurred while the person was standing in a queue at a COVID-19 vaccination centre, which he did after a gap of two weeks following a road traffic accident. Gross inattention to one's own health supplemented with depressed conscious level under the influence of alcohol resulted in the fatal outcome, which was otherwise avertible. The case has been reported considering its unusual presentation and rarity.

Keywords: *Extradural Haemorrhage, Alcoholism, Delayed Death*

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Introduction

Extradural haematoma (EDH) or "Epidural haemorrhage", is a traumatic accumulation of blood which is present between the dural membrane and skull periosteum. It is generally, located beneath a skull fracture. It occurs in 1-2 % of patients following head injuries and more frequently seen in males and middle-age group of population **(Salam *et al*., 2017)**. Road traffic accidents are the most potentially lethal cause of head injuries. The extradural haemorrhage is easily diagnosed and treatable, but the mortality rate remains high when compared to other types of intracranial haemorrhages **(Bir *et al*., 2015)**. The present case report deals with an unusual case of traumatic delayed EDH (subacute type) which was brought as sudden death to our centre.

Case Report

A 26-year old male suddenly fell down, while he was standing in a queue in a vaccination centre for 2nd dose of COVID-19 vaccine in the month of July at 1:25 pm. Initially, he was responding well to commands. Later, his voice muffled and failed to respond to verbal command, and he went into a semiconscious state.

He was immediately evacuated to a tertiary care teaching hospital at around 2:00 pm. On clinical examination, he was found semiconscious, disoriented, afebrile, BP was 160/100 mmHg, pulse rate, 92 beats/min and SpO2 was 90. However, later in the day, his condition deteriorated despite the treatment given and the coma deepened. He was not responding to external stimuli and the blood pressure and heart rate were unrecordable. He was declared dead by the doctors at around 4.30 PM. The body was brought for autopsy by the police to our centre.

During the police investigation, it was found that he was found to be chronic alcoholic for the last 20 years and met with a self-road traffic accident about two weeks back. He had sustained injury on the forehead and was treated in a hospital near his residence. But, he was allowed to go home on the same day as his CT scan report was normal. He was drunk all the time and attention was never was given to his health neither by himself nor by the members of his family even though he had disorientation off and on.

Autopsy Findings

On external examination, the body was of average physique. The body looked pale and both the eyes were congested. Rigor mortis was fully developed and post mortem lividity was present on the back and fixed. We had noticed a lacerated wound measuring 1.5cm x 0.1 cm, on the forehead which was situated 153 cm above heel and just left to midline, all the margins were opposed and healed (Figure No. 1).

Figure No. 1: Showing Healed Lacerated Wound on Forehead

On internal examination, a scalp hematoma measuring 14cm x 7cm on the right temporo-occipital region (Figure No. 2), and an extradural haematoma on the right temporo-occipital region measuring 4.5 cm x 3cm x 1 cm, (partly organized) (Figure No. 3) were observed with diffused thin layer of subdural haemorrhage and subarachnoid haemorrhage on both sides of cerebral hemispheres (Figure No. 4).

Figure No. 2: Showing Scalp Hematoma on Right Temporo-occipital Region

Apart from these, no other important findings were noticed. For further investigation, we also sent viscera for histopathological and toxicological analyses. The cause of the death was given as cerebral compression and oedema resulting from delayed extradural haemorrhage produced by blunt force injury to head.

Figure No. 3: Showing partly organized Extradural Haematoma on the Right Temporo-occipital region

Figure No. 4: Showing Diffuse Thin Layer Subdural Subarachnoid Haemorrhages on both Cerebral Hemispheres

Discussion

Several hypotheses of EDH development are given and the primary mechanism was stripping of dura mater from calvaria and the secondary one was bleeding into the space between the dura and the periosteum, and further dural detachment**.** In certain cases, it reaches maximum size within a few minutes after injury, and clinical deterioration following a lucid interval does not reflect progressive growth of the clot, but exhaustion of the compensation mechanisms of the brain **(Milo *et al.*, 1987)**.

It may also develop slowly and may take several days for the symptoms to develop, and in rare cases may manifest many days after trauma. EDH maybe

i) Acute (within 3 days)
ii) Sub-Acute (4-15 days) and
iii) Chronic (more than 2 weeks) **(Ford and McLaurin, 1963)**.

In our case, the deceased sustained head injury two weeks back and developed sub-acute EDH leading to sudden fall and later death. In delayed extradural hematoma (EDH), CT scan within the first 24 hours after trauma may reveal normal findings or it may be insignificant EDH. However, subsequent CT scan shows a significant EDH. **(Abe *et al.*, 1988)**.

In this case, he was drunk all the time and neither the members of his family nor himself paid attention to his health. Further, the repeat CT scan was not taken in time and significant EDH was detected only during autopsy. In this case, the external injuries were insignificant and CT scan report was also normal. The history for any lucid interval could not be retrieved as he was a chronic alcoholic, and delayed seeking of medical attention had resulted in the fatal outcome in this case. Draining of extradural haemorrhage without delay is the most cost-effective treatment for life saving. It is a known fact that the earlier the intervention, the greater is the benefit for patients. **(Rieth *et al.*, 1979; Bulters and Belli, 2009)**.

Some of the causes of delayed EDH include escape of the blood through a fracture line (or) an arteriovenous fistula (or) temporary hemostasis by the formation of a pseudoaneurysm (or) strong attachments of the dura to the skull (or) low-tension bleeding source and brain oedema were claimed to be responsible for the delay. **(Domenicucci *et al.*, 1995)**. In our case, the delayed EDH could be a low-tension bleeding source.

Conclusion

In this case, the textbook sequence of initial concussion, lucidity, and unconsciousness, together with pupillary dilatation, circulatory disturbance, and hemiplegia were not present. A detailed history of the victim and a meticulous examination are required while giving the final opinion. A depressed conscious level after head injury is often attributed to alcohol effect. It is, therefore, useful to be able to differentiate between the depression of the conscious level due to primary brain damage or a secondary intracranial event, such as a haematoma from drunken state.

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