

STUDY OF HEAD INJURIES WITH REFERENCE TO EXTRADURAL HAEMORRHAGE

S. Krishna Prasad¹, P. Brahmaji Master²

¹Professor, Department of Forensic Medicine & Toxicology, S. V. S. Medical College, Mahaboobnagar.

²Associate Professor, Department of Forensic Medicine & Toxicology, Government Medical College, Ananthapuramu.

ABSTRACT

OBJECTIVES

An autopsy study of extradural haemorrhage in head injuries was done. Extradural haemorrhage is a common manifestation in trauma in vehicular accidents, head injuries due to blunt force, falls, being hit by a moving object, etc.

METHODS

Data was collected from the police, relatives, and photographic evidences from the scene, post-mortem findings. 78 cases of deaths due to extradural haemorrhage in head injuries were studied.

RESULTS

The presence of EDH in injuries with blunt weapons, vehicular accidents, falls, minor accidents were 48.71%, 33.33%, 16.67%, 0.6%.

CONCLUSION

Extradural haemorrhages are very common in blunt weapon injuries followed by vehicular accidents, falls and minor accidents.

KEYWORDS

Extradural haemorrhage, Blunt Injuries, Vehicular accidents, Falls, Minor accidents.

HOW TO CITE THIS ARTICLE: Prasad SK, Master PB. Study of head injuries with reference to extradural haemorrhage.

J. Evid. Based Med. Healthc. 2016; 3(26), 1182-1184. DOI: 10.18410/jebmh/2016/271

INTRODUCTION: Any trauma to head or face that has the potential for damaging the brain can have devastating consequences. Normally the brain is protected within the bony skull, but it is not well restrained within this compartment and injuries to the brain result from differences between the motion of the solid skull and the relatively 'fluid' brain. The clinical significance of any space occupying lesion within the cranial cavity is the effect that the raised intracranial pressure caused has on brain structure and function. Bleeding compresses the brain and, if it continues for sufficient time, and in sufficient quantity, can raise the intracranial pressure. As pressure increases, blood flow to the brain decreases and, if the pressure reaches the point where it equals or exceeds arterial blood pressure, the blood flow to the brain will cease. The dura is strong and bluish connective tissue membrane and is firmly attached to the skull. Extradural haemorrhage is caused almost exclusively due to trauma. Extradural haemorrhage is a common manifestation in head injuries due to blunt trauma due to falls, blow with blunt weapon, traffic injuries, crushing of the head, etc., At the moment of impact, the skull moves relative to the dura beneath it, and the dura is stripped from the bone. This produces an empty extradural space at the site of trauma.

A blood vessel may be injured at the same time and results into haemorrhage depending upon the site of blood vessel.¹

METHODS: The present study has been carried out in the Department of Forensic Medicine, Government Medical College, Ananthapuramu on 78 cases containing cases of falls, vehicular accidents, blunt injuries to head during the period 2013-2015. Data was collected from the police, relatives, and photographic evidences from the scene, post-mortem findings.

Inclusion Criteria: Head injury cases due to blunt force.

Exclusion Criteria: Head injury cases due to sharp force.

RESULTS:

Injuries due to	No. of cases with EDH	Percentage of cases
Blunt weapon injuries	38	48.71%
Vehicular accidents	26	33.34%
Falls	13	16.67%
Minor accidents	1	1.28%
Total	78	100%

Table 1: Table showing proportion of various types of cases with Extradural Haemorrhage

Submission 19-02-2016, Peer Review 06-03-2016,

Acceptance 14-03-2016, Published 31-03-2016.

Corresponding Author:

Dr. S. Krishna Prasad,

Professor, Department of Forensic Medicine & Toxicology,

S. V. S. Medical College, Mahaboobnagar.

E-mail: skrishnaprasadmd@gmail.com

DOI: 10.18410/jebmh/2016/271



Fig. 1: Autopsy of skull showing extradural haemorrhage

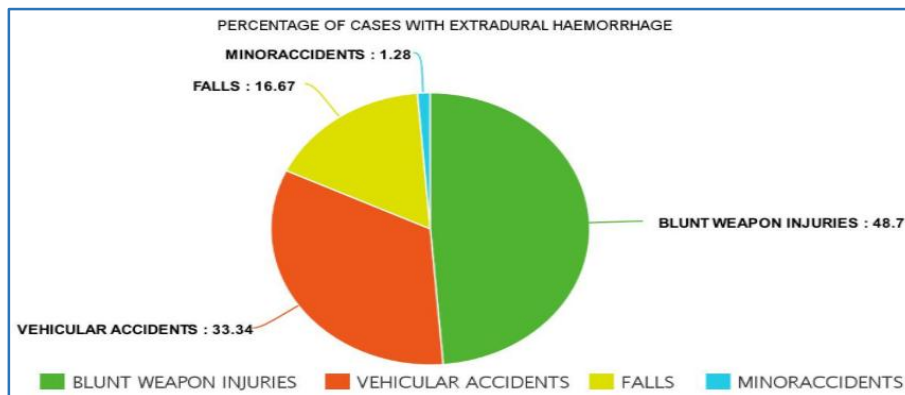


Fig. 2: Pie-chart showing proportion of cases with extradural haemorrhages due to various reasons

Extradural haemorrhages are seen in the form of clots. These are usually present in the temporoparietal area, or in the frontotemporal area or parieto-occipital area. Occasionally, these are also seen in frontal or posterior fossa. Of all the 78 cases, 13 were due to falls with 16.67%, 26 were due to vehicular accidents with 33.34%, 38 were due to blunt injuries with 48.71%, 1 was a minor accident with 1.28%.

DISCUSSION: Accumulation of blood and blood clot between the inner aspect of the skull and the outermost layer of brain membranes (dura matter) is known as extradural haemorrhage.² It is the least common of all the three brain membrane haemorrhages.³ EDH is most commonly due to tear of middle meningeal artery and an associated fracture is present.⁴ Pure extradural haemorrhage only is less common and it is most commonly with subdural haemorrhage.⁵ In a typical case, there is a history of head injury which starts the bleeding, and will usually cause temporary unconsciousness followed by normal consciousness and the time interval between them is known as Lucid Interval.⁶ Bleeding from damaged perforating veins, dural sinuses, in which case the development of symptoms will be slower.⁷

Study conducted by Graham et al⁷ showed that this type of haemorrhage is common in 5-10% of fatal head injuries. Study conducted by Koc et al⁸ showed significant percentage of EDH (20-30%) can also occur in frontal and posterior cranial fossa and is more common in children in these

regions. Separate studies conducted by Phonprasert et al⁹ and Servedai et al¹⁰ showed that imaging studies have confirmed that about 50% cases are associated with subdural haemorrhage and/or contusional brain injury. Studies conducted by Viljoen and Wessels¹¹ showed that acute and chronic EDH can be differentiated by histopathological examination. Henderson et al¹² said in their report that it can also occur spontaneously. A study conducted by Mustafa and Subramaniam,¹³ Matsumoto et al¹⁴ showed that the extradural haemorrhages occur due vascular malformations. A study conducted by Rodriguez et al¹⁵ showed that EDH occurs also with anticoagulant therapy.

CONCLUSION: A study on extradural haemorrhage in head injuries is conducted on 78 cases. Of them the presence of EDH in falls, vehicular accidents, injuries with blunt weapons, minor accidents were 17.9%, 33.33%, 48.71%, 0.6%. Extradural haemorrhages are very common in blunt weapon injuries followed by vehicular accidents, falls and minor accidents.

BIBLIOGRAPHY:

1. Narayan Reddy KS. The essentials of forensic medicine and toxicology. 1999;18th ed:208.
2. Knight. Lawyers guide to forensic medicine. Cavendish Publishing Limited 1998;2nd edn:110.
3. Bernard Knight, Pekka Saukko. Knight's forensic pathology. CRC PRESS 2015;4th ed:182.

4. <http://radiopaedia.org/articles/extradural-haemorrhage>.
5. Helen L Whitwell. Forensic neuropathology, Hodder Arnold publications. CRC press London 2005;2nd edn:62.
6. Jason Payne-James, Cliona McGovern, Richard Jones, et al. Simpson forensic medicine: Irish version, Taylor and Francis group CRC Press 2014;13th edn:116.
7. Graham DI, Gennarelli TA, McIntosh TK. Trauma. In Graham DI and Lantos PI, eds. Greenfield's Neuropathology, London: Arnold, Chapter 14, 2002;7th edn.
8. Koc RK, Pasaoglu A, Menku A, et al. Extradural haematoma of the posterior cranial fossa. Neurosurg Rev 1998;21(1):52-57.
9. Phonprasert C, Suwanwela C, Hongsaprabhas C, et al. Extradural haematoma: analysis of 138 cases. J Trauma 1980;20(8):679-683.
10. Servedai F, Nanni A, Nasi MT, et al. Evolving brain lesions in the first 12 hours after head injury: analysis of 37 comatose patients. Neurosurgery 1995;37(5):899-906.
11. Viljoen JJ, Wessels LS. Subacute and chronic extradural haematomas. S Afr J Surg 1990 Dec;28(4):133-137.
12. Henderson RT, Pittock S, Piepgras DG, et al. Acute spontaneous spinal epidural haematoma. Arch Neurol 2001;58(7):1145-1146.
13. Mustafa M, Subramanian N. Spontaneous extradural haematoma causing spinal cord compression. Int Orthopaedics 1996;20(6):383-384.
14. Matsumoto K, Akagi K, Abekura M, et al. Vertex epidural haematoma associated with traumatic arteriovenous fistula of the middle meningeal artery: a case report. Surg Neurol 2001;55(5):302-304.
15. Rodriguez Y, Baena R, Gaetani P, et al. Spinal epidural hematoma during anticoagulant therapy. A case report and review of the literature. J Neurosurg Sci 1995;39(1):87-94.