SOURCE OF BLEEDING AND PER-OPERATIVE FINDINGS IN EXTRADURAL HEMATOMA (EDH): A THREE -YEAR EXPERIENCE IN LADY READING HOSPITAL PESHAWAR

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ABSTRACT:

OBJECTIVES:

The purpose of this study was to analyze the main source of bleeding and operative findings in an extradural hematoma (EDH).

METHODOLOGY:

This study was conducted in the Department of Neurosurgery, Lady Reading Hospital, Peshawar. The sample size of the study was analyzed through WHO sample size calculator and 300 diagnosed patients were recruited by purposive sampling technique. Ethical approval was taken from the College of Physicians and Surgeons Pakistan (CPSP) and the hospital's ethical committee. By using the SPSS version 23.0, all the collected data were analyzed.

RESULTS:

The mean age of enrolled patients was 27.96±12.71 years. There were 65.7% male and 34.3% female. The most common age group was 21–30 years followed by 31 to 40 years and 11 to 20 years with the most common source of bleeding was middle meningeal artery, 39.7% of patients fall in the temporal parietal category.

CONCLUSION:

Middle meningeal artery is the most common source of bleeding in EDH. Therefore, proper management of this vessel is significant to avoid the chances of re-bleed and re-do surgeries.

KEYWORDS: *Extradural Hematoma, Source of Bleeding, Middle Meningeal Artery*

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INTRODUCTION:

Brain injury is a major cause of death and disability that can lead to a number of neurological disorders, unconsciousness and memory disturbance[1,2]. Globally, Traumatic brain injury (TBI) is a critical public health issue affecting 20 per 1, 00,000 people annually[3,4]. The impact of TBI is very alarming in countries like Pakistan[5,6]. Pakistan is a developing country with a high rate of TBIs[5,7]. Extradural hematoma (EDH) also known as epidural hematoma is extra-axial bleeding between the skull and dura of the brain[8]. The bleeding source is usually from a torn meningeal artery[9]. EDH is a neurosurgical emergency. It is a life-threatening disorder and can be associated with significant health problems and death[8,10]. There is a need for rapid intervention to minimize the rate of mortality[11]. Usually, it results from traumatic head

injury. About 2% of all head injuries patients are affected by EDH. As compared to females, the male gender is affected more with the mean age of 20-30 years[8]. The etiological cause of EDH is road accident, fall, physical Assault, direct blow to the head, sports related injuries and firearm[12,13]. The main treatment procedure is Surgery for patients with EDH having volume >30ml on the CT-scan brain. To evacuate the hematoma Craniotomy procedure is carried out to remove a part of the skull bone surgically to uncover the brain[14].

METHODOLOGY:

This descriptive study was conducted at the Neurosurgery Department, Lady Leading Hospital, Peshawar. The sample size was 300 keeping the 51.8% proportion, 95% confidence interval, 10% margin of error using WHO sample size calculator. Duration of the study was 3 years (April 2019-April 2021). Patients were recruited by non-probability and purposive sampling techniques. Those patients who were operated for EDH, age group of 2 years and above, and both gender (male and female). Those patients having bleeding problems, and patients using anticoagulants drugs. According to inclusion criteria, a total of 300 patients diagnosed as EDH were enrolled. Approval was obtained from College of Physicians and Surgeons Pakistan (CPSP) and the hospital"s ethical committee. Demographic data was obtained in predesigned proforma. Presenting GCS, CT scan findings, operative findings, size and site of hematoma, presence or absence of skull fracture and the source of bleeding were also noted in predesigned proforma. The bleeding source of all the enrolled patients was middle meningeal artery, fracture site, diploic vein, and dural venous sinus or generalized ooze from the dura. By using the SPSS version 23.0, all the collected data were analyzed. Descriptive statistics was used to calculate mean+standard deviation for quantitative variables i.e., age. Frequency and percentages were presented for the qualitative variable i.e., gender, source of bleeding, operative findings, and location of hematoma.

RESULTS:

Table 1: Distribution of Patients According to Gender (n=300)

Variable	Frequency	Percentage
Gender		
Male	197	65.7
Female	103	34.3
	Mean	**SD**
Age	27.96	12.71

Table 2: Distribution of Patients According to Age Group (n=300)

Age Group (Years)	Frequency	Percentage
2 to 10	28	9.3
11 to 20	61	20.3
21 to 30	90	30.0
31 to 40	87	29.0
Above 40	34	11.3
Total	300	100

Table 3: Distribution of Patients According to Source of Bleeding (n=300)

Source of Bleeding	Frequency	Percentage
Middle Meningeal Artery	130	43.3
Fracture Bone	92	30.7
Venous Sinuses	45	15.0
Generalized Ooze	24	8.0
Not Identified	9	3
Total	300	100

Table 4: Distribution of Patients According to Location of Hematoma (n=300)

Location of Hematoma	Frequency	Percentage
Temporo Parietal	119	39.7
Frontal	83	27.7
Parietal	53	17.7
Occipital	37	12.3
Posterior Fossa	8	2.7
Total	300	100

In order to evacuate the hematoma in enrolled, patients craniotomy was done.

Table 5: Distribution of Patients According to Operative Findings (n=300)

Operative Findings	Frequency	Percentage
Skull Fracture	141	47.0
Contralateral Hematoma	40	13.3
Underlying Contusion	76	25.3
Associated Subdural Hematoma	32	10.7
Dural Laceration	11	3.7
Total	300	100

DISCUSSION:

Head injury is an injury of the brain and other parts of the head i.e. skull and scalp. It is a worldwide serious issue. Serious head injury may lead to death or some neurological complication. Head injury is of two types: primary and secondary. The primary injury is a direct mechanical blow to the head while secondary injury is associated with a cascade of primary injury. Secondary injury evolves changes over a period of time. In our country Pakistan head injury cases are increasing rapidly with poor safety considerations, and everyday incidents of terrorism[4]. According to our results in this study the most common age group was 21-30 years. This age group people are more energetic and hence do different physical tasks and have high exposure to the surroundings and therefore the people have more chances of different types of accidents that cause head injury. In our society the male prefers to do outside tasks. That is why male in the Pakistani community are more prone to head trauma and hence EDH. In our study 65.7% patients were male and 34.3% were female. This study is resembled by the study conducted in Ayub teaching hospital Abbottabad[15]. Another studies conducted by Rahman L et al. and Sohail Amir also resemble our findings[13,16]. In this study the patients are distributed according to the source of bleeding and find out that middle meningeal artery was the most common source of bleeding followed by fracture bone, which is resembled by a study conducted by Sohail Amir in Pakistan[13]. According to our results a skull fracture was the most common operative finding. A skull fracture is the injury of the cranial bone and the primary cause of head trauma. It is a disruption in the continuity of one or more skull‟s bones. Our study results were supported by a number of studies[13,17]. CT-scan of the brain should be recommended to identify skull fracture and associated comorbidities. Kumar et al. stated that the most often fractured bone in head injury is parietal bone, temporal bone, occipital bone, and frontal bone[18]. Neurological presentation differs according to location and size of the hematoma. Craniotomy procedure was carried out in order to identify the location of the hematoma. During craniotomy procedure some parts of the skull are removed to expose the brain. Early removal should be carried out through craniotomy to uncover the blood clot and the bleeding vessel. In our study the patients were classified on the basis of location and it was found that the most common location of hematoma is temporo parietal. Our study was similar to a Pakistani study[13].

CONCLUSION:

Middle meningeal artery is the most common source of bleeding in EDH. Therefore, proper management of this vessel is significant to avoid the chances of re-bleed and re-do surgeries. Bleeding sites also pay to form hematomas.

CONFLICT OF INTEREST: None

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