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ORIGINAL ARTICLE

The Link Between Skull Fracture and Extradural Hematoma in Head Injury Patients who came to a Tertiary Care Hospital in Pakistan

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ABSTRACT

Aim: The purpose of our current study is to see if there is any connection between skull fracture and extradural hematoma in head injury patients who came to the tertiary care hospital in Pakistan.

Methods: From January 2020 to December 2021, this descriptive research was conducted at Chandka Medical College, Shaheed Mohtrama Benazir Bhutto Medical University Larkana. The research comprised those patients who have undergone extradural hematoma surgery during study period. Normal skull X-rays being taken, and the type and position of fractures were documented on the X-rays, CT scan, and during surgery. The frequency of skull fracture linked through extradural hematoma was studied in different ages. SPSS version 24.0 was utilized to investigate our current findings.

Results: A sum of 130 individuals were operated on for extradural hematoma. In 70 cases, a linear fracture was seen, and in 18 individuals, a depressed skull fracture was seen. Another ten individuals with no radiologically evident fracture reported discovered to also have a fracture line intra-operatively. As a result, 87 (78 percent) of the participants suffered a skull fracture. Here remained no statistically important variation in occurrence of skull fracture among age ranges.

Conclusion: Although there is a significant link between skull fracture and extradural hematoma, a normal X-ray does not rule out extradural hematoma.

Keywords: Skull fracture, extradural hematoma, head injury, Tertiary Care Hospital, Larkana, Pakistan.

INTRODUCTION

Head injuries account for about half of altogether trauma-related fatalities. Skull X-rays are very useful tool for evaluating individuals who have suffered a head injury [1]. In several studies, occurrence of skull fracture in individuals having extradural hematoma ranged from 66 to 87 percent [2]. The most significant prognostic marker is level of consciousness, that breaks down every delay in surgery, that occurs from a suspension in diagnosis and referral [3]. CT scans are not easily obtainable in Pakistan, particularly in rural locations, nonetheless X-rays can be used to diagnose skull fractures, that can help lead early referral to a neurosurgical institution [4]. The focus of this thesis was to see if there was a link between skull fracture and extradural hematoma in individuals who presented to the tertiary care hospital in Pakistan [5].

Any damage to the scalp, skull, or brain is considered acute head injury. The harm might be as small as a hit on the head or as serious as a brain injury. An open and closed head damage can result (penetrating). A serious head injury occurs when you get a strong blow to the head from hitting something, yet the item does not fracture the skull.

Major Types of Head Injuries:

Hematoma: A hematoma is an accumulation of blood beyond blood vessels. Hematoma in brain might remain quite unsafe. Clotting can cause fluid to build up within your head. It could lead to the loss of conscious or lasting brain damage.

Hemorrhage: Unrestrained bleeding is devoted to as the hemorrhage. Bleeding in area surrounding your brain, recognized as subarachnoid hemorrhage, or bleeding into your brain tissue, identified as intracerebral hemorrhage, can occur. Headaches and vomiting remain shared indications of subarachnoid hemorrhages. The seriousness of intracerebral hemorrhages is regulated by volume of bleeding, although slightly amount of blood may induce pressure accumulation over time.

Concussion: A concussion happens whenever a blow to head is severe adequate to injure the brain. It's hypothetical to remain produced by brain collapsing against hard walls of your skull, or by pressures of abrupt ascent and descent. In general, loss of function caused by the concussion is quite transitory. Recurrent blows to head, on the other hand, may result in enduring brain injury.

Edema: Any type of brain damage can cause edema, or swelling. Numerous traumas produce swelling of the surrounding tissues, but swelling of brain is much more dangerous. Your skull will not stand able to extend to lodge swelling. This causes pressure to build up in your brain, producing it to press on your skull.

Skull fracture: Contrasting most other bones in our body, your skull lacks bone marrow. As the result, skull is tremendously sturdy and hard to break. A cracked skull is incapable to engage influence of the hit, increasing the likelihood of brain injury. Find out more about skull fractures.

Diffuse axonal injury: A diffused axonal damage is brain injury that does not induce bleeding but harms brain cells.

The brain cells are unable to operate as a result of the injury. It may also cause edema, that can exacerbate injury. A diffuse axonal injury is one of most thoughtful sorts of head injuries, disdain the fact that it is not as clear as some other types of brain injury. This has potential to source lifelong brain damage and perhaps decease.

METHODOLOGY

Our current research was conducted at Chandka Medical College, Shaheed Mohtrama Benazir Bhutto Medical University, Larkana. The research involved 130 extradural hematoma individuals who've been operated on over the course of 2 years, from January 2020 to December 2021. Those having additional related hematomas, such as subdural hematomas, intracerebral hematomas, or intraventricular hematomas, have been barred from participating in the research. In all patients, standard antero-posterior in addition lateral skull X-rays were taken. The nature and position of the skull fractures were recorded. The results of the X-rays were verified by a CT scan of the head. The radiological results have been linked with both the post-operative findings. The overall amount of skull fractures detected using skull X-rays, CT scans, and per operatively significantly associated through extradural hematomas identified using CT scans and pre-operatively. SPSS version 24.0 was utilized to examine findings.

RESULTS

The incidence of skull fracture was comparable in most age categories, ranging from 69 to 79 percent, with the exception of the over-62-year-old age group, which had a rate of 93 percent (Table 1). X-rays of the skull: In 70 cases, a linear fracture was discovered, and in 17 individuals, a depressed skull fracture was discovered. As a result, 78 individuals had a noticeable skull fracture on radiography.

Table 1:

Study	Percentage of Fracture	No. of patients
Jamieson & Yelland, 1969	66%	168
McKissock et al, 1964	83%	128
Phonorecord .et al, 1985	64%	140
Galbraith and Smith, 1978	86%	138
Khan and Nadeem 2009	77%	130
Mazza et al, 1987	78%	68
Emirati and Tomita, 1987	85%	39

Table 2:

Age	No. of pts.	Depressed fracture	Linear fracture	Total (%)
0 – 10	23	03(14%)	12(55%)	15 (69%)
11- 20	12	03(18%)	06(57%)	09(75%)
31-40	19	04(18%)	12 (62%)	16 (82%)
21-30	27	04 (13%)	16(64%)	20 (77%)
41-50	15	07(93%)	02 (09%)	14 (87%)
51-60	13	05(18%)	08(63%)	10(81%)
>60	09	01(14%)	06(65%)	06(79%)
Total	130	15(14%)	69(62%)	85(76%)

Eight patients who had not any indication of fracture on radiography had skull fractures detected after surgery, while fracture was verified throughout all cases when fracture has been shown on radiography. As a result, 84 individuals (76 percent) sustained skull fractures. The most prevalent cause of extradural hematoma was middle meningeal artery. In the majority of instances, the cause of the hematoma might be determined (Table 2).

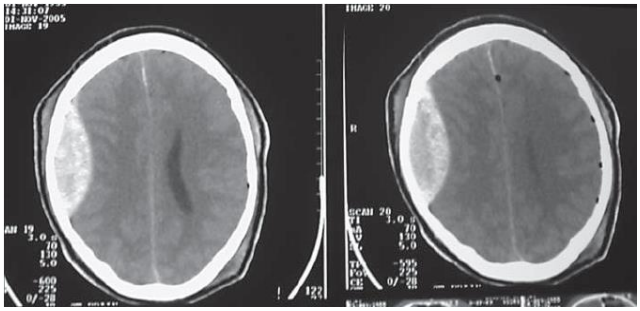

Figure 1:

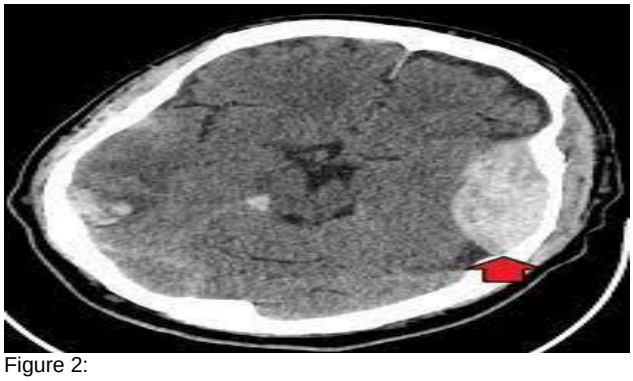

Figure 2:

DISCUSSION

The relevance of skull X-rays in individuals with modest head injuries were debated, and yield of X-rays may be ineffective [6]. In comprehensive research of over 23,500 individuals with head injuries, skull radiography remained performed; skull fracture remained observed in only 4% of the cases, and an intracranial hemorrhage was seen in just 0.7 percent of the total patient populations. Only 10% of individuals with such a skull fracture had an intracranial lesion, whereas 52% of individuals through an intracranial damage did not have a skull fracture [7]. As conferring Mandelker et al., orientated individuals in neurosurgical wards who had a fracture had a 210-fold higher risk of having an intracranial hemorrhage than other aware individuals who did not have a skull fracture. Individuals at the emergency room who are aware and thus have no complaints provide a challenge in determining whether they should be hospitalized or not [8]. In such circumstances, it has been shown that the presence of the skull fracture might be only indicator of harshness of hit. If there is a fractured skull within those individuals, the chance of developing an acute cerebral hematoma increases 400-500 times. Extradural hematomas in people over the age of 35 without a skull fracture are uncommon. In our investigation, we found no correlation between age and the occurrence of skull fracture. Thirteen (21%) of 54 individuals above the age of thirty did not have the skull fracture [9]. In large-scale investigations, the total incidence of skull fracture

varied from 61 to 87 percent, but in our series, it was 76 percent (Table 3). Depressed skull fractures accounted for 16 (19%) of the 86 fractures in our study. When opposed to certain other research, our series had a larger rate of depressed skull fractures. This might be tied to many types of traumas in our community. In our investigation, 29 individuals did not have a skull fracture on radiography and would not be identified post-operatively. Although there is no skull fracture, extradural hematoma cannot be ruled out [10].

CONCLUSION

In conclusion, researchers discovered a substantial relationship between fractured skull and extradural hematoma, although the normal X-ray does not rule out extradural hemorrhage. Researchers urge that individuals having cracked skulls be referred to a neurosurgical center as soon as possible, although there is no other indication of substantial brain damage. Patients who do not have a cracked skull and therefore are aware must be closely monitored for formation of extradural hematoma.

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