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EXPLORATION OF THE LINK BETWEEN SKULL FRACTURES AND BRAIN DISEASES AFTER A HEAD INJURY DUE TO TRAFFIC ACCIDENTS

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Abstract:

Aim: *The goal of this review would have been to look at the link between skull fractures and intracranial abnormalities after a head injury.*

Methods: *To that end, 550 cases sent to the Sir Ganga Ram Hospital in Lahore owing to traffic accidents between April 2020 and March 2020 were studied prospectively. Depending on the outcomes of their cranium X-rays and brain topographies, they have been classified into three parts. 1- Cases involving head injuries and brain lesions 2- Instances with skull bone fractures but no brain lesions 3- Cases with brain abnormalities but no skull fractures.*

Results: *Patients have been thoroughly investigated in terms of age, gender, location of head wounds and brain abnormalities, and whether or not surgery was being used. There were 156 (32.5%) instances with just linear fractures, 71 (14.9%) with depressed fracture, 93 (19.5%) with linear fractures plus intracranial lesions, 48 (10.9%) with depressed fractures plus intracranial lesions, and 139 (28.7%) with just intracranial tumors. The incidence of intracranial lesion in belongings having skull fracture were 41.7 percent (143/368), but degree of skull fracture in patients without intracranial lesion remained 51.4 percent (142/277) (p0.002). The male to female ratios for straight fracture included 3.5/2, 6.3/2 for depressed fracture, and 4.6/2 for cerebral lesions. Females were more likely to have linear fracture, but men were much more likely to have depression fractures (2: 10.67, df: 5, p: 0.047). The average age was 27.4 years. Depressive fractures were more common in those aged 0 to 31. (2: 17.29, df: 4, p = 0.004) Depressed fractures in the parietal and frontal areas, as well as linear breakage in the parietal and temporal areas, have been identified at greater rates (p0.002).*

Conclusion: *Finally, we evaluated broken bones and/or intracranial nodules caused by traffic accidents and discovered that unhappy fractures are extra common amongst men, because although linear fissures are much extra in females and young males. The head structure of men is larger and better than that of females in addition males. We may conclude that the existence of skull fractures reduces occurrence of cerebral lesions through reducing intraocular pressure.*

Keywords: *Skull Fractures, Intracranial Abnormalities, Head Injury, Road, Accidents.*

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INTRODUCTION:

Traffic accidents, attacks, falling or leaping from great heights, house accidents, industrial accidents or sport collisions, birth trauma, dread attacks, in addition conflicts are most common causes of blunt head injuries. In regards of disease and mortality, they are the most catastrophic traumas [1]. Blunt traumatic diseases of the scalp, and also extra thoughtful lesions such as skull fractures and brain lesions, can result in the development of the trauma [2]. A strong sufficient blow to the head results in longitudinal fractures. Quick, less intense hits lead to the occurrence fractures in the pattern of asterisks, and if they affect a small region, they culminate in depressed cracks. The incidence, degree of deflection, and extensiveness of fracture are nonetheless determined by the amount of strike power and the proportion of strike strength to range of strike, and similarly to material characteristics of skeleton at point of contact, such as scalp width, hair thickness, and independent skull width and elasticity [3]. Skull fracture can remain linear, diastatic, miserable, or shattered in shape and can be confined to the dome or foundation of the skull. They can also take the shape of open or closed cracks. Vertical bone structures termed Rothko's columns exist in specific sections of the skull, including such supraorbital ridge at the front and, temporal apexes on the sides, too occipital curvature in rear, and they strengthen the strength of the cranium. The petrous section of the skull base, the vast wing of the sphenoid, the frontal bony protrusions, and the glabellae are all well maintained. Side sections of the parietotemporal, temporal, and occipital bones, on the other hand, are comparatively weaker areas wherein linear fractures are more prone to form [4]. Linear fractures can result in a cerebrocorticoid contusion or an intracranial hemorrhage. Brain fracture have been found in 82 percent of patients that died as a result of a head injury, and also the likelihood of cerebral hemorrhage is greater in cases having head injuries than in cases without skull fractures. Even though a considerable impact power is necessary to cause the skull fracture, there may be no brain injury in a skull fracture instance. Therefore, in a case of severe brain injury, no skull fracture may be observed. Because of the increased potential of harm to the surrounding Dural sinuses including brain, depressed fractures are now more dangerous. After a brain injury, intracranial abnormalities such as cerebral contusions and lacerations, diffused axonal damage, concussions, including brain edema can emerge and can remain contained to the epidural, subdural, subarachnoid, & intracerebral areas. The association among head wounds subsequent head injury also intracranial lesions remained examined in this study, as well as the variables involved in the etiopathogenesis of this connection [5].

METHODOLOGY:

The records of 540 remaining individuals who suffered brain injuries in traffic accidents during May 2020 and April 2021 have been investigated retroactively in just this research. Despite the fact that the instances that include pedestrians, auto, bus, trunk, motorcycle, but instead bicycle drivers in addition passengers, researchers managed to avoid categorization on this particular topic since this majority of cases (n=354) did not had categorization in its accident reports, that remained made reference to forensic healthcare system either through courts of law. Instances having broken bones with brain lesions, patients having broken bones but not any brain lesion, and patients having brain lesion but no skull injuries have been chosen based on the cranial X-ray and brain CT results. They have been thoroughly assessed based on the age, gender, also location of lesions. The existence of slightly link among skull fractures also brain Tumor was explored. For the data methods, the Chi square test was used.

RESULTS:

Through May 2020 and April 2021, 540 outbreaks were registered to assembly of forensic medicine through courts of law as containing broken bones including brain lesions, skull fractures through really not any brain lesions, or brain lesions having no skull fractures, based on their radiological results. In all of the cases, the victim sustained a head injury in a car collision. 156 (32.5%) of the 540 patients had just linear fracture, 71 (14.9%) had depressed bones, 93 (19.5%) had linear fissures plus cerebral lesions, 51 (12.9%) had depressed fissures plus intracranial lesions, and 139 (28.7%) had only cerebral lesions. The rate of intracranial lesion were 35.1 percent (143/365) in patients having skull fracture, whereas the rate of skull fracture were 51.4 percent (143/285) in cases having intracranial lesion (p0.002) (Table-1). Whenever we look at the gender breakdown of patients, we find that 76.5 percent (n=382) have been male and 25.7 percent (n=126) have been female. The male-female ratio was 4.2/2. The following are the case rates: Males: 28.4% for just linear fractures, 16.2% for just depressed fractures, 19.4% for linear broken bones plus cerebral lesion, 13.2% for depressed fractures and intracranial lesion, 29.2% for alone intracranial lesion. In the female group, 38.9% had just linear fractures, 10.9 percent had only depressed fractures, 17.9% had linear fractures and intracranial lesion, 6.8 percent had depressed fissures and intracranial lesion, and 27.1 percent had pure

intracranial lesion. Male to female ratios for complete linear fractures were 3.5/1, 6.3/1 for complete miserable fractures, and 4.6/1 for complete cerebral lesions. Linear fractures were more common in women, but depression fractures remained far more common in males (2: 10.69, df: 4, p: 0.047). (Table-1). The average age remained 27.4 years. 46.4 percent (n=224) of all cases were between the ages of 0 and 21, and 48.1 percent (n=239) remained amongst ages of 21 and 51. 9.9 percent of incidents included people aged 49 and up. The majority of cases with solely linear fractures occurred between the ages of 0 and 21. The rate of patients with solely lined fractures declined by age, both in the total populace in addition amongst age sets. The proportion of miserable fracture significantly greater in the 0–31-year age category. (p = 0.004, df = 4, 2: 17.29) (Table-1). Only 157 of the patients had a linear fracture. There have been 46 (31.7 percent) in the frontal, 29 (19.5%) in the temporal, 26 (17.4%) in the frontal, and 23 (15.6%) in the temporal bone. In the remaining instances (n=36), the fractures included more least 1 bone. The following are the fracture locations in 92 instances with linear fracture with cerebral lesion: Fractures appeared associated to 23 (25.8 percent) front, 23 (24.8 percent) temporal, 17 (21.7 percent) temporal, and 12 (13.1 percent) occipital bone, while in 21 (21.7 percent) instances, fractures was associated to extra than one bone (Table-2).

Table 1:

Localization	Intracranial (-)	Intracranial (+)	Overall
Parietal	18	22	44
Frontal	23	46	69
Occipital	12	29	41
Temporal	24	24	48
Parietotemporal	8	16	24
Frontoparietal	7	11	18
Frontotemporal	3	1	4
Sphenoid	3	2	5
Parietooccipital	7	1	8
Temporooccipital	2	4	6
TOTAL	102	162	272

Table 2:

Localization	Intracranial (-)	Intracranial (+)	Overall
Parietal	13	31	44
Frontal	17	20	37
Occipital	4	8	12
Temporal	4	4	8
Parietotemporal	4	6	10
Frontoparietal	2	2	4
Frontotemporal	9	2	11
Sphenoid	3	3	6
Parietooccipital	2	3	5
TOTAL	59	79	138

DISCUSSION:

Inside this research, we looked at 540 cases whereby someone had suffered a brain injury in a car crash. The courts of laws assigned the cases to the council of forensic medicine for a medical certificate to be produced between May 2020 and April 2021. Skull fractures and/or brain abnormalities were investigated during their radiological tests [6]. There were 156 (31.5%) only linear fractures, 71 (14.9%) depressed fracture, 93 (19.5%) longitudinal fractures + cerebral lesions, 51 (10.9%) depressed fissures with intracranial lesions, and 139 (28.7%) just intracranial lesions. As the consequence, among 248 linear fractures and 119 depressed fractures, 93 (36.8

percent) and 51 (42.6 percent) have been associated with cerebral abnormalities, correspondingly. Several studies were carried out outside of Pakistan. The male to female ratio in the classic literature ranges among 2/1 and 2.9/1 [7]. In some studies, such as those conducted in Pakistan, the man to woman ratio is greater because men are extra involved in regular living. The guys wounded in this research as either a pedestrian or a motorist might justify the greater male ratio. For entire linear fractures and even whole depressed fracture, the male to female ratios is 3.5/1 and 6.3/1, accordingly. Given that all cases studied chosen at random and then were subjected to identical traffic-related injuries, the greater percentage of linear fractures in women might remain clarified through female skull being weaker also much extra pliable, allowing for the more equally spaced thrust force. Conversely, a larger proportion of depression fractures in men may be attributed through male skull being thicker and stronger, collecting force of influence [8]. The average age remained 27.4. 45.3 percent (n=225) among all cases fell into the age category 0-20, while 18.7 percent (n=99) come into the age group 20-31. The fact that linear fractures are more common in children will only be understood by the elasticity of their skull bones. The proportionate growth in cerebral lesions increasing age is unmistakable. This scenario might be attributed to the fact that atherosclerotic alterations in cerebral arteries are the danger aspect for intracranial lesions. In rapid reduction, linear fractures remained found to the frontal, temporal, also temporal bones [9]. In increasing sequence, miserable fractures remain situated to the frontal, parietal, and temporal bones. There was no statistically significant relationship between both the cerebral lesion in addition also location of lined or depression fractures [10].

CONCLUSION:

Finally, we investigated skull fractures too cerebral grazes caused by accidents besides discovered that miserable fracture are more prevalent in men, although longitudinal fractures remain very familiar in females and young boys. The brain architecture of men is bigger and stronger than that of females and younger men. As a consequence, strike energy is unable to be distributed and recovered at the point of impact.

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