



RESEARCH ARTICLE

Frequency of fractures and dislocations detected on conventional radiography in emergency Department of Mayo Hospital Lahore, Pakistan

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Road traffic accidents contribute impressively to the load of indisposing and loss of life and all through the earth in any case all together in developing countries. Bike related accidents are and have been genuine reason behind dreariness and loss of life in those of useful age and the developing world. X-ray can be used to identify a wide range of fractures such as compression fractures, Stress fractures & others etc. To find frequency of fractures and dislocations in road accidents detected on conventional radiography in Emergency department Mayo Hospital Lahore. Descriptive study was conducted at Emergency Radiology Department, Mayo Hospital Lahore, Pakistan. Data of patients with the age between 10 to 69 years was designated with convenient sampling. Data was analyzed by SSPS version 24.0. There were 1800 patients of road accidents and fall came to Emergency department in mayo hospital out of which 889 patients were referred to the Radiology department and fractures and dislocation were found in 225 patients during the 4 months of this study and According to the results of our study, Out of 225 patients were included in which 54.7% patients had FALL as reason of imaging and 45.3% patients had RTA as reason of imaging, 28.0% patients had transverse fracture, 14.7% patients had oblique fracture, .9% patients had Communited fracture, 2.2% patients had compound fracture, 41.8% patients had fracture, 32.0% patients had dislocation, 19.6% patients had mid shaft fracture, 4.0% patients had parietal bone fracture, 11.1% patients had proximal fracture, 4.0% patients had pubis fracture and 3.6% patients had scaphoid fracture. We found 41.8% fractures and 32.0% dislocations in RTA and that fractures and dislocations were present more in males and in young adults.

Keywords: X-Rays, Fracture, Radiography.

INTRODUCTION

Road traffic accidents contribute impressively to the load of indisposing and loss of life and all through the earth in any case all together in progressing countries (Pedroso et al. 2021). Bike related accidents are and have been a genuine factor behind dreariness and loss of life in those of useful age and the within the progressing world (Richter et al. 2011). Wounds & passing by road traffic accidents have been anticipated to amplify in the event that no preventive measures are made formally street activity wounds was the driving cause of changeless inadequacy and loss of life in those in useful age in created nations in any case directly the creating nations are youthful by an practically equivalent to dare since they preserve that was named as the "Epidemiology of transition" the large part of these out of accidents in these road traffic accidents in developing nations are people on bikes and motor cycle riders (Al-Ayyoub and Al-Zghool 2013).

Every year worldwide the lives of approximately 13 lakh individuals are gone due to the result of road accidents. Between 2 to 5 crore people suffer non-fatal injuries, with many incurring a disability as a result of their injury. 93% of worldly deaths on road accidents occur in low and middle income countries, even though these countries possess almost 60% of the world's vehicle (Anonymous (a) 2017).

Every year almost 6 lakh 45 thousand road accident fatalities happen in Asia and the Pacific. Almost 35 lakh deaths have been caused by accidents in previous five years. 59.9% of deaths and injuries that occur in Asia each year out of an estimated 1.18 million deaths and injuries globally (Anonymous (b), 2017). According to the latest WHO data published in 2020 road accident deaths in Pakistan reached approximately 29000 or 2% of Total deaths.

The lumbar vertebral column refers to the lower back rear side, where the spine bends internally towards the gut. The word lumbar is comes from the Latin word "lumbus", meant lion. Its role is both strength and flexibility-lifting, bending, and twisting underneath the bear edges, and interfaces with thoracic Vertebral Body at the best and expands descending to the sacral Vertebral Body (Amin et al. 2008). A lumbar spine X-ray appear whether you have got joint pain or fractured bones in back, but it can't show other issues with muscles, nerves and discs (Richter et al. 2011). It can be utilized to see damages from fall or accidents. It can offer assistance to your radiologist to know the cause of persistent back pain, or see the impacts of wounds, disease, or infection (Wei et al. 2006). sometimes recently the X-ray quiet will be inquired to expel the gold rings or any necklace such as jewelry from patient's body to develop and strengthen the quality of X-ray images (Kumar et al. 2020).

A fracture could be a broken bone. A bone may be totally broken or incompletely fractured in any number of ways (crosswise, lengthwise, in many pieces). Fractures are common and they happen when the physical force applied on the bone is more grounded than the bone itself. Fracture is imperative complication of day to day accidents. On the off chance that cleared out untreated they can lead to serious complications and life-long diseases (Berlin, 2013). The severity of the fractures usually depends on the force that caused the fracture of bone. In case the bone's breaking point has been surpassed as it were marginally and only slightly, at that point the bone may split in to two rather than break all the way through. In case the force is extraordinary, such as in a car crash or a gunshot, the bone may break into pieces (Bandyopadhyay et al. 2016).

Incomplete fractures, such as the greenstick, bow, and torus (or buckle) sorts, are common childhood fractures. More young children have soft bones that are more delicate than those of grown-ups and have generally more collagen. The weak bone twists and it's were in part fractures; hence, one side may buckle upon itself without disturbing the other side. Greenstick fractures occur when a bone, broken on one side, twists internally, but does not break, on the contralateral side. Bow fractures occur when the bone to be bended along its longitudinal plane as a result of longitudinal force (Varshosaz et al. 2010). Torus, or buckle, fractures are caused by impaction. A greenstick fracture occurs when there is adequate vitality to begin a fracture but deficient vitality to end it. The cortex

comes up short on the pressure side and the cortex on the compression side twists but remains intact. The degree of distortion is variable and then total lessening can as it were be accomplished by intentionally completing the break i.e. breaking the concave cortex, which is twisted but not shattered (Saeed et al. 2010).

The classic radiographic finding is a front wedge break. Magnetic resonance imaging or CT scan is valuable for recognizing suspected retropulsion. Fractures expanding to the vertebral column, and spinal cord regions are involved (Berlin, 2003). CT or Magnetic Resonance Imaging should also be considered in patients who don't show good treatment with care and in those with unique indications. Dual-energy x-ray absorptiometry ought to be performed before long after the conclusion of a bone fracture to assess for osteoporosis and decide infection seriousness on the off chance that a fracture is found, At the point the radiologist may need you to have a Computed Tomography scan to know the degree of the fracture (Bandyopadhyay et al. 2016).

An X-ray utilizes a radioactive beam to require pictures of bone. X-rays give principle data approximately the vertebral column and are utilized as an integral part to treat the fracture. We customarily get erect x-rays as weight has a significant part in distinguishing issues which could be missed on laying x-rays view. We too get uncommon twisting x-rays called "flexion-extension" and cease to memorize almost the solidness. Patients elder than 65 years, who have cancer, or who have had critical fracture may have X-rays performed. In case you are younger than 65 years and don't have any restorative issues or serious pain. X-rays can be utilized to distinguish a wide range of conditions of fractures such compression fractures, stress fractures or others etc (Saeed et al. 2010) Fractures and dislocations are a very common complains occurring in the males most commonly due to road traffic accidents seen in emergency department and to see them our first modality of choice is X-rays. With this study, we want to highlight the importance of radiography (X-Ray) in patients with fractures and dislocations and there extent which is not apparent on physical examination and as it is our first modality of choice to begin with but it should be recognized that how great x-rays are or can be utilized best with in Emergency situation.

MATERIAL AND METHOD

Patients and methods:

It is a descriptive study which is conducted at Mayo Hospital Lahore during the course of 4 months, 1800 patients came to Emergency department due to Road traffic accidents and fall from which 889 were referred for conventional radiography and 225 were found with fractures and dislocations that were included in the study. All patients gave informed consent, and formal approval for the study and research were obtained. All the patients

with all types of fractures and dislocations in emergency department from all age groups and both genders were included in this study. Patients with previous history of bone surgery were and patients coming with open fracture were excluded. X-rays were performed by a trained and experienced technologists or radiologist on Toshiba machine using 300 mAs and 125 Kvp. With model number TF-6TL-3.

RESULTS

Total numbers of 225 patients were included in which 8 (3.6%) patients had facial fracture, 2 (.9%) patients had hip fracture, 12 (5.3%) patients had left ankle fracture, 5 (2.2%) patients had left elbow fracture, 21 (9.3%) patients had left femur fracture, 8 (3.6%) patients had left hand fracture, 9 (4.0%) patients had left humerus fracture, 1 (.4%) patients had left knee fracture, 2 (.9%) patients had left radius fracture, 7 (3.1%) patients had left shoulder fracture, 10 (4.4%) patients had left tibia fracture, 9 (4.0%) patients had left ulna fracture, 17 (7.6%) patients had lumbar spine fracture, 7 (3.1%) patients had pelvis fracture, 15 (6.7%) patients had right ankle fracture, 2 (.9%) patients had right elbow fracture, 41 (18.2%) patients had right femur fracture, 10 (4.4%) patients had right humerus fracture, 1 (.4%) patients had right knee fracture, 7 (3.1%) patients had right radius fracture, 2 (.9%) patients had right shoulder fracture, 20 (8.9%) patients had right tibia fracture and 9 (4.0%) patients had skull fracture.

Total numbers of 225 patients were included in which 49 (21.8%) patients had distal fracture, 1 (.4%) patients had distal end fracture, 7 (3.1%) patients had elbow joint fracture, 19 (8.4%) patients had humerus head fracture, 2 (.9%) patients had knee joint fracture, 9 (4.0%) patients had LV3-LV4 fracture, 8 (3.6%) patients had LV3-LV5 fracture, 8 (3.6%) patients had maxilla-mandibular joint fracture, 12 (5.3%) patients had medial fracture, 15 (6.7%) patients had medial malleolous fracture, 44 (19.6%) patients had mid shaft fracture, 9 (4.0%) patients had parietal bone fracture, 25 (11.1%) patients had proximal fracture, 9 (4.0%) patients had pubis fracture and 8 (3.6%) patients had scaphoid fracture.

TABLES:

Table 1: This table shows that during 4 months of study 1800 patients arrived in emergency department with accidents and fall out of which 889 were referred for radiography and fractures and dislocations were found in 225 patients.

	Time period of 4 months
Total patients of fall and accidents	1800
Conventional radiography of patients	889
Fractures and dislocations found in	225

Table 2: It shows that due to fall there were 22.2% fractures and 16.4% dislocations and due to RTA there were 19.5% fractures and 15.5% dislocations.

Cause of fracture	Fractures	Dislocations
FALL	50 (22.2%)	35 (16.4%)
RTA	44 (19.5%)	37 (15.5%)

Table 3: This shows that out of 8 facial fractures, 4 (1.7%) were le fort 1, 3(1.3%) were le fort 2 and 1(0.4%) was le fort 3.

	Frequency	percent
Le fort 1	4	1.7
Le fort 2	3	1.3
Le fort 3	1	0.4

Table 4:This shows that out 9 skull fractures,4(1.7%) were linear fracture, 3(1.3%) were depressed fracture,2(0.8%) were diastatic fracture and 1(0.4%) was basilar fracture.

	Frequency	percent
Linear fracture	4	1.7
Depressed fracture	3	1.3
Diastatic fracture	2	0.8
Basilar fracture	1	0.4

Table 5 : Total number of 225 patients were included in which 54 patients were females from which 19 were due to Road traffic accident & 35 were because of fall and 171 were males from which 102 patients were due to Road traffic accident & 123 were because of fall

Gender * Reason of Imaging Cross tabulation					
		Reason of Imaging		Total	
		FALL	RTA		
Gender	F	Count	35	19	54
		% within Gender	64.8%	35.2%	100.0%
	M	Count	88	83	171
		% within Gender	51.5%	48.5%	100.0%
Total		Count	123	102	225
		% within Gender	54.7%	45.3%	100.0%

Table 6: Total number of 225 patients were included in which 54 patients were females from which 20 (37.0%) had fracture& 34 (63,0%) patients had not fracture and 171 patients were males from which 74 (43.3%) had fracture& 97 (56.7%) had not fracture.

Gender * FRACTURE Cross tabulation					
		FRACTURE		Total	
		NO	YES		
Gender	F	Count	34	20	54
		% within Gender	63.0%	37.0%	100.0%
	M	Count	97	74	171
		% within Gender	56.7%	43.3%	100.0%

Total	Count	131	94	225
	% within Gender	58.2%	41.8%	100.0%

Table 7: Total number of 225 patients were included in which 54 were females from which 16 (29.6%) had dislocation & 38(70.4%) had no dislocation and 171 were males from which 56(32.7%) had dislocation & 115(67.3%) had no dislocation.

Gender * DISLOCATION Cross tabulation					
			DISLOCATION		Total
			NO	YES	
Gender	F	Count	38	16	54
		% within Gender	70.4%	29.6%	100.0%
	M	Count	115	56	171
		% within Gender	67.3%	32.7%	100.0%
Total		Count	153	72	225
		% within Gender	68.0%	32.0%	100.0%



X-rays of left ankle shows the displacement of distal tibia and fibula. Fracture of tibial bone one of tibial head.

Images

Images:1 Dislocation of Elbow



Image no:- 2

DISCUSSION:

This study was planned to determine frequency of fractures and dislocations in road accidents detected on conventional radiography. Depending on diagnostic effects it was a descriptive research. Details were evaluated and analyzed demographically by SPSS genre 24.0. Completely encompassing patients were quizzed regarding variables such as age, gender, cause of fracture, site of fracture, type and extent of fracture. Data of 225 patients were included in this research comprising 54 (24%) females and 171 (76%) males with the age between 10 to 69 years old from Emergency Radiology Department, Mayo Hospital Lahore.

It resulted that 94 patients had fracture from which Males had 74 fractures as females had 20 fractures and the Reason behind that there are more fractures in male as compared to female is due to the fact that in our Pakistani society as it is male dominative area in every field and discipline there is more ratio of male drivers of motorcycle, car, trucks & buses etc. so the frequency of male fractures is more than that of female. Mental health issues in males also result in accident due to daily life anxieties (Anonymous (a), 2017).

It resulted in that 63 Patients had transverse fracture from which males had 47 transverse fractures and females had 16 transverse fractures. It also resulted in 33 oblique fractures from which males had 25 oblique fractures and females had 08 oblique fractures. There were 02 comminuted Fractures which were only present in males. There were 05 compound fractures from which males had 03 compound fractures & females had 02 compound fractures. All the types of fractures were common males due to multiple reasons as rash driving, distracted driving with the use of mobile phones while driving, mental health issues , careless driving of the youth, and underage motorcycle and car driving of the teen (Anonymous (a), 2017).

Drivers using mobile phones are almost 4 to 5 times more likely to be involved in a crash than drivers not using a mobile phone. Usage of mobile phone while driving slows reaction times (notably thinking reaction time, but also reaction to traffic signals), and makes it difficult to keep in the correct lane, and to keep the correct following distances. Hands-free phones are not much safer than hand-held phone sets, and texting and considerably increases the risk of crash (Anonymous (a), 2017).

It resulted that 72 patients had dislocations from which males had 56 dislocations and females had 16 dislocations and the reason behind it is that more males are frequently involved in accident during their daily lives as compared to females due to the prominent fact that males move a lot in the community because they have to make their livelihood and due to the society rules and structure that it is common to see male drivers so we also observe that male use the means of communication (Vehicles) more than that of women. Rash driving and Over speeding is also seen in male youth and is the main cause of road accidents due to which fractures are common in male, so they have more dislocations (Anonymous (a), 2017).

It also resulted that 123 patients were of FALL from which males were 88 patients & females were 35 patients & the reason behind it is due to the fact that more males move around about in the populace so there injuries are frequent as compared to females. People use unsafe vehicles which cause traffic accidents due to multiple reasons as tire burst, break fail, leakage of break oil and car or motorbike malfunction. The design of roads can have a considerable impact on their safety. Ideally, roads should be designed keeping in mind the safety of all road users. This would mean making sure that there are adequate facilities for pedestrians, cyclists, and motorcyclists. Measures such as footpaths, cycling lanes, safe crossing points, and other traffic calming measures can be critical to reducing the risk of injury among this road users (Anonymous (a), 2017).

Unsafe road with destroyed infrastructure also cause increase in the road accidents. The design of roads can considerably impact on their safety. Ideally roads should be designed keeping in mind the safety of all road users. Measures such as footpaths, cycling lanes, safe crossing points, and other traffic calming measures can become useful (Anonymous (a), 2017).

Due the fact of drink and driving also causes many road accidents and deaths in Pakistan and other countries although it is prohibited but some people do drink alcohol and drive on roads and cause casualties. Inadequate law and traffic rules regulation as are that If traffic laws on drink-driving, seat-belt wearing, speed limits, helmets, and child restraints are not enforced, they cannot bring about the expected reduction in road traffic fatalities and injuries related to specific behaviors. Thus, if traffic laws are not enforced or are perceived as not being enforced, it is likely they will not be complied with and therefore will have very

little chance of influencing behavior (Anonymous (a), 2017).

It also resulted that 102 patients were of road traffic accident (RTA) from which 83 male patients and 19 female patients the Reason behind is also the same almost that there are more RTA in male as compared to female is due to the fact that in our Pakistani society as it is male dominative area in every field and discipline there is more ratio of male drivers of motorcycle, car, trucks & buses etc. so the frequency of male RTA is more than that of female. As males drive a lot they use the electronic communication devices during driving and this result in Road traffic accidents (Anonymous (a), 2017).

The entire sum of patients was three hundred eighty with mean age of 28.68 ± 12.10 years. Lower appendage breaks were recorded in two hundred seventy three (71.9%) patients and top most extremity in 107(28.1%) subjects. Tibia fibula was the most present lower extremity fracture observed and noted in hundred and fifty seven (41.4%) patients. Whereas, radius was the commonly occurring fractured upper limb cartilage in forty and six(12.1%) subjects. Most (75.3%, $n=287$) of the breaks were closed and not obvious whereas open and visible fractures were noticed in ninety-four (24.8%) sufferers. Victims of bike accidents suffered variable bony wounds. Most of these fractures were closed. Tibia fibula was the most prominent bone fractured.¹⁴ In our study we also observed frequency of fracture and dislocations in emergency department of mayo hospital Lahore and in our study of 225 patients we observed 62(27.5%) of our fractures were of femur as it was the most common bone to be fractured in lower limb. 19 (8.4%) Humerus was found to be the most common bone to be fractured in upper limb whereas radius fractures were only 9(4.0%) in all the patients and it was not the most common bone to be fractured in upper limb. So, it was found that more male ratio of motorcycle riders and under age drivers were the patients of fractures.

Complete details were recorded and saved for further proceedings .Average age of the subjects with inflicted injuries was almost thirty-two years (0.91 ± 7.31). Total victims were 200 (83.33%) masculine gender and 40 (16.68%) feminine gender. From 240 victims, femora's fracture was seen in sixty-eight (28.32%), leg bone breaks hundred and thirty four (55.82%), details have been like 19 (7.93%) arm bone breaks, as well as radius-ulna fractures were diagnosed in 19 (7.92%). Most of the tragic accidents are avoidable by campaign for the general public mostly regulation of traffic rules, access of facilities for passengers, upgraded system for transportation observance. Preventive schemes and actions at the national level should be launched by policy manufacturers for stakeholders⁴⁵ In our study there were 171(76.0%) males and 54(24.0%) females and patients of all ages were included from 10 to 69 years of age and from 225 patients femur fracture were seen in 62 (27.5%) patients and lower extremity fractures were 129 (57.3%) and upper

extremity fractures were 61(27.1%) which shows that incidence of lower extremity fractures is more than that of upper extremity fractures.

As compared to the results of our study, total numbers of 225 patients were included in which 49 (21.8%) patients had distal fracture, 1 (.4%) patients had distal end fracture, 7 (3.1%) patients had elbow joint fracture, 19 (8.4%) patients had humerus head fracture, 2 (.9%) patients had knee joint fracture, 9 (4.0%) patients had LV3-LV4 fracture, 8 (3.6%) patients had LV3-LV5 fracture, 8 (3.6%) patients had maxillo-mandibular joint fracture, 12 (5.3%) patients had medial fracture, 15 (6.7%) patients had medial malleolus fracture, 44 (19.6%) patients had mid shaft fracture, 9 (4.0%) patients had parietal bone fracture, 25 (11.1%) patients had proximal fracture, 9 (4.0%) patients had pubis fracture and 8 (3.6%) patients had scaphoid fracture.

According to the results of our study, out 225 patients, 8 (3.6%) patients had facial fracture, 2 (.9%) patients had hip fracture, 12 (5.3%) patients had left ankle fracture, 5 (2.2%) patients had left elbow fracture, 21 (9.3%) patients had left femur fracture, 8 (3.6%) patients had left hand fracture, 9 (4.0%) patients had left humerus fracture, 1 (.4%) patients had left knee fracture, 2 (.9%) patients had left radius fracture, 7 (3.1%) patients had left shoulder fracture, 10 (4.4%) patients had left tibia fracture, 9 (4.0%) patients had left ulna fracture, 17 (7.6%) patients had lumbar spine fracture, 7 (3.1%) patients had pelvis fracture, 15 (6.7%) patients had right ankle fracture, 2 (.9%) patients had right elbow fracture, 41 (18.2%) patients had right femur fracture, 10 (4.4%) patients had right humerus fracture, 1 (.4%) patients had right knee fracture, 7 (3.1%) patients had right radius fracture, 2 (.9%) patients had right shoulder fracture, 20 (8.9%) patients had right tibia fracture and 9 (4.0%) patients had skull fracture.

Out 225 patients, 123 (54.7%) patients had FALL reason of imaging and 102 (45.3%) patients had RTA reason of imaging, 63 (28%) patients had transverse, 33 (14.7%) patients had oblique, 2 (0.9%) patients had comminuted, 5 (2.2%) patients had compound, 94 (41.8%) patients had transverse, 72 (32%) patients had dislocation.

CONCLUSION

We found 41.8% fractures and 32.0% dislocations in RTA and that fractures and dislocations were present more in males and in young adults.

CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

AUTHOR CONTRIBUTIONS

All authors read and approved the final version.

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