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STUDY OF SKULL FRACTURES AND THEIR COMPLICATION IN QASSIM REGION USINGCOMPUTED TOMOGRAPHY

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ABSTRACT

Background:Head injury is the frequent cause of morbidity and mortality and fre-quently encountered in emergency department. Radiological examination of the skull is an indispensable part in the management of patients suffering from head trauma.with computerized tomography (CT) scan as the gold standard in the diagnosis of patients with cranial and facial fractures.

The purpose of this study is to show types of skull fractures and their complication in Qassim region, using x-ray and CT scan.

Materials and Methods: A total of 80 patients with head injury were analyzed Using CT, 58 (72%) were males and 22 (28%) females. The age of the patients ranged from 1-95 (mean ±31years) in Buraydah central hospital and King Saud hospital, who are complaining from skull fractures and they have clinical evidence. were performed between 12january2017- and 15 august2017——, Data recorded included cause of injury, age and gender distribution,

Results: Most common site of skull fracture was parietal 32.5% (left parietal bone 19%, right parietal bone 13.5%), followed by Frontal in 16.2%, same in the temporal region 16.2%(right temporal bone 13.5%, left temporal bone 2.7%), , were in occipital region (8.1%) , the mandible bone (5.4%) , orbital 5.4% (right orbital 2.7%, left orbital 2.7%) , and the others bones supraorbital, maxillary, and multifacial is 2.7%, and 8.1%normal cases, they cases seen by both modalities.

And our study show the most effected age group 21-40 (46%), the 2nd most effected 1-20 (34%), the 3rd one are 61-80 (10%),the 4th most effected are 41-60 (7%), and the last most effected are 81-100 (3%). The patients who have done x-ray only 25 patients 31.25% , the patients who have done CT scan only 11 patients 13.75%, The patients who have done both modalities 44 patients 55%.

Conclusion: The study of skull fractures is important as the skull protect the brain, even it's the most exposed part of the body to injury , for that we choice for our graduation project to make this study in Qassim region which have a significance feedback to healthcare.

Key words: Computed tomography–Fracture–X-ray skull

1 INTRODUCTION

Head injury is a morbid condition resulting from structural changes in scalp, skull and/or contents of the skull, produced by the mechanical forces [1] . It is frequently encountered in road side accidents, assault, fall from height, sports injury, etc. [2] . Head injury creates substantial demand on health services as it is frequent cause of mortality and disability in young individuals. Nearly one quarter to one third of accidental deaths and two third of trauma related deaths are consequent to head injury [3] . Radiological examination of the skull is an indispensable part in the management of patients suffering from head trauma [4] . Presence of fracture skull on X-ray is indicative of more serious intracranial injury that is why skull radiographs are routinely performed [5] . The preliminary evaluation of head injury patients with skull films (X-rays) has been superseded by CT examination of the skull and brain. CT has now become the primary modality for evaluating patients with head trauma [6] .Traumatic brain injury (TBI) is a non-degenerative, non-congenital insult to the brain from

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an external mechanical force,possibly leading to permanent ortemporary impairments of cognitive,physical, and psychosocial functions withan associated diminished or altered stateof consciousness [7] .Although both the developed anddeveloping nations of the world havesuffered from varying degrees of roadaccidents [8] .Many of the devastating effects of traumaare often from head injury and it is thecause of up to half of deaths arising fromtrauma [9] .Early diagnosis of head trauma byneuroimaging is therefore important todetermine the presence and extent of theinjury and aid in surgical management ofthe patients. Detection offractures of the cranial vault by plainradiography of the skull is now appreciatedto be less useful in assessing theprobability of intracranial hemorrhagesthan had been previously suggested [10] .The purpose of this study is to show types of skull fractures and their complication in Qassim region, using x-ray and CT scan.

2 MATERIALS AND METHODS:

This is a retrospective study based on extraction of common radiographs and CT images that performed for the patients during January 1- July 1, 2016 in Burydah Centralhospital in Burydah city and King Saud hospital in Onizah city' Picture Archiving Communication Systems (PACS) at Qassim state, after the approval of the local ethical committee of the institutions for the study method and signing the informal consent. The x-ray systems were digital radiography (GE, healthcare, model Al01CII, 2011-German), applied kVp 75±2, mAs 20±3 for theskull ,PA andlateral projections were obtainedandGeneral Electric 64 Slicemulitaslice multi-detectors rowCT scanner covers 4mm ofpatient anatomy per rotation,gathering64 slices axial slices are obtained , collimation0.6mm , speed 5.4 , pitch factor 0.9 slice thickness 4-5mm All the cases has been reviewed and reported by two consultant radiologists, Data was analyzed by Excel software.

3 RESULTS

Thestudyincludes80patientswithdifferentageandsex,they wereinvestigatedindifferentcomputedtomography departmentsinBurydah Central Hospital and King Saud Hospital,Inperiodfrom(12 january2017 to and 15 august 2017)

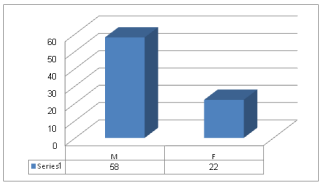

Figure 1. shows the state of GenderDistribution

4 DISCUSSION

The goal of our study is to show types of skull fractures and their complication in Qassim region, to name and de-

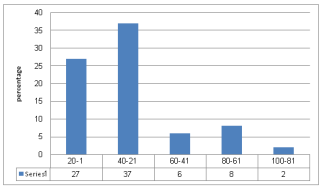

Figure 2. shows frequency% of patient age group

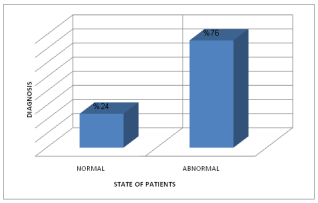

Figure 3. shows the state of patients referred to skull fracture

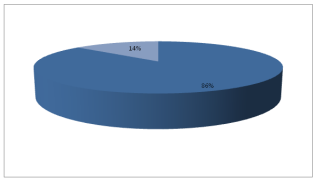

Figure 4. shows the cases done by x-ray

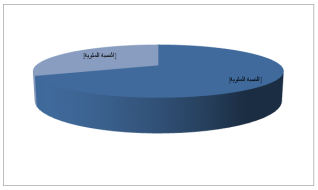

Figure 5. Shows the cases performed by CT scan

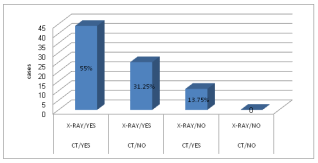

Figure 6. Shows the cases diagnosed by the two modality

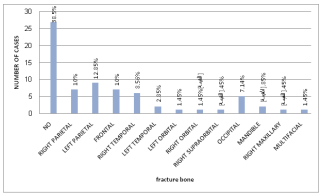

Figure 7. shows percentage % of skull fracture performed by x-ray modality

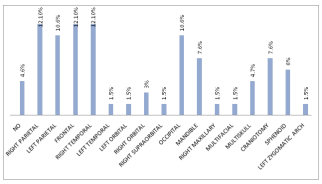

Figure 8. shows the percentage % of skull fracture in CT scan modality

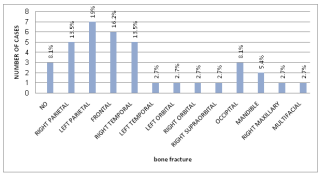

Figure 9. shows the percentage % of skull fracture in the both modalities

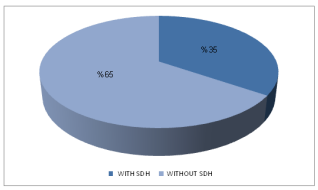

Figure 10. shows the percentage % of subdural Hematomain cases

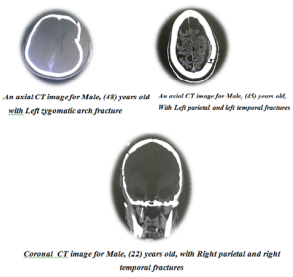

Figure 11. shows the different areas of fractures

scribe the type of skull fractures, to determine the most type of skull fractures in Qassim region, and to define and distinguish skull fractures between the two modality x-ray and CT scan. We perform x-ray and CT scan as total of 80 patients were included in this study out of which 58 (72%) were males and 22 (28%) was females Fig (1). The age of the patients ranged from 1-95 (mean ±31years) in Burydah central hospital and King Saud hospital, who are complaining from skull fractures and they have clinical evidence. Among 80 patients who 25 patients 31.25% investigated only by using x-ray Fig (4).,11 patients 13.75%, using CT scan only Fig (5). and 44 patients 55% both modalities Fig (6).. This study revealed that the most effected age group 21-40 (46%), the 2nd most effected 1-20 (34%), the 3rd one are 61-80 (10%),the 4th most effected are 41-60 (7%), and the last most effected are 81-100 (3%). Fig (2). Most common site of skull fractures was parietal 32.5% (left parietal bone 19%, right parietal bone 13.5%), followed by Frontal in 16.2%, same in the temporal bone 16.2% right temporal bone 13.5%, left temporal bone 2.7%), were in occipital bone (8.1%) , the mandible bone (5.4%) , orbital 5.4% (right orbital 2.7%, left orbital 2.7%) , and the others bones supraorbital, maxillary, and multifacial is 2.7%, and 8.1% normal cases, they cases seen by both modalities. Fig (9) and Fig (11).,35 % of subdural Hematoma Fig (10) The results of this study agree with findings of the study done in Pakistan by Muhammad, et al journalAyub Medical College.2017 Apr.-Jun. [11] which conculded83 patients of which 57(68.7%) were males and 26 (31.3) were females the age range from1-50 (mean 15.71) most common site of fracture was parietal 32(38.6) followed by frontal in 24 (28.9),21(25.3%)in temporal,5(6.0%) in occipital and only 1 (1.2%) in posterior fossa Conclusion It concluded that the study of skull fractures is important as the skull protect the brain, even it's the most exposed part of the body to injury,the plain skull radiograph is of little value in the initial assessment of skull fractures, for that we choice for our project to make this study in Qassim region which have a significance feedback to healthcare,more specified researches, with a larger population & community.

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