STUDY OF SKULL FRACTURES AND THEIR COMPLICATION IN QASSIM REGION USING COMPUTED TOMOGRAPHY

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ABSTRACT
Background: Head injury is the frequent cause of morbidity and mortality and frequently encountered in emergency department. Radiological examination of 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 ±31 years) in Buraydah central hospital and King Saud hospital, who are complaining from skull fractures and they have clinical evidence. Were performed between 12 January 2017- and 15 August 2017—, 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 affected age group 21-40 (46%), the 2nd most affected 1-20 (34%), the 3rd one are 61-80 (10%), the 4th most affected are 41-60 (7%), and the last most affected 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 choose 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 or temporary impairments of cognitive, physical, and psychosocial functions with associated diminished or altered state of consciousness [7]. Although both the developed and developing nations of the world have suffered from varying degrees of road accidents [8]. Many of the devastating effects of trauma are often from head injury and it is because of up to half of deaths arising from trauma [9]. Early diagnosis of head trauma by neuroimaging is therefore important to determine the presence and extent of the injury and aid in surgical management of the patients. Detection of fractures of the cranial vault by plain radiography of the skull is now appreciated to be less useful in assessing the probability of intracranial hemorrhage than 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 Central hospital 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 A01CII, 2011-German), applied kVp 75±2, mAs 20±3 for the skull, PA and lateral projections were obtained and General Electric 64 Slicemultislice multi-detectors rowCT scanner covers 4mm of patient anatomy per rotation, gathering 64 slices axial slices are obtained, collimation 0.6mm, speed 5.4, pitch factor 0.9 slice thickness 4-5mm. All the cases have been reviewed and reported by two consultant radiologists. Data was analyzed by Excel software.

3 RESULTS
The study includes 80 patients with different age and sex, they were investigated in different computed tomography departments in Burydah Central Hospital and King Saud Hospital. In period from (12 January 2017 to and 15 August 2017)

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 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 Hematoma in cases

Figure 11. shows the different areas of fractures

describe 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%) were females Fig (1). The age of the patients ranged from 1-95 (mean ±31years) in Buryadh 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 affected age group 21-40 (46%), the 2nd most affected 1-20 (34%) , the 3rd one are 61-80 (10%),the 4th most affected are 41-60 (7%), and the last most affected 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 concuded 83 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 parietal32(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.

REFERENCES