Accuracy of Ultrasonography Findings in Cases of Ocular Trauma

Thesis

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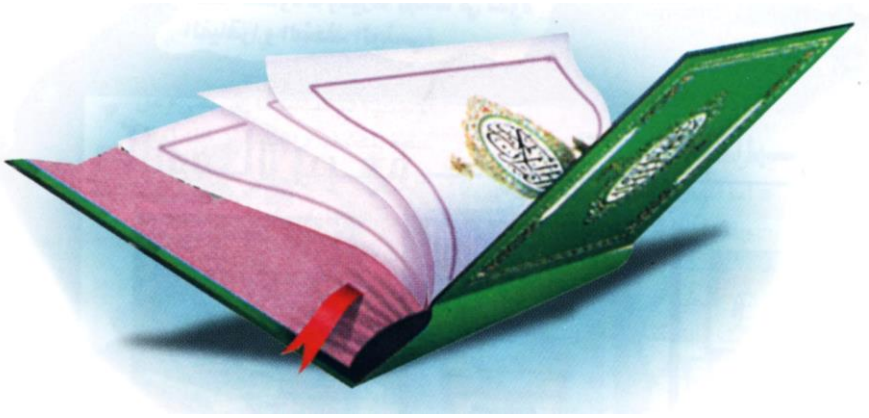
بسم الله الرحمن الرحيم

وَقُلِ اعْمَلُوا فَسَيَرَى اللَّهُ
عَمَلَكُمْ وَرَسُولُهُ وَالْمُؤْمِنُونَ



صدق الله العظيم

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Sarah Rizk Ali Mostafa

Contents

List of Abbreviations

Abb.	Full term
BCVA	*Best corrected visual acuity*
BETTS	*Birmingham Eye Trauma Terminology System*
CT scan	*Computed tomography*
FB	*Foreign body*
IOFB	*Intraocular foreign body*
IOP	*Intraocular pressure*
IQR	*Inter-quartile range*
MRI	*Magnetic resonance imaging*
OTS	*Ocular Trauma Score*
PTE	*Post-traumatic endophthalmitis*
PVD	*Posterior vitreous detachment*
RD	*Retinal detachment*
ROC	*Receiver operating characteristic curve*
SPSS	*Statistical Package for Social Science*
TON	*Traumatic optic neuropathy*
US	*Ultrasonography / Ultrasound*

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INTRODUCTION

The superficial location of the eye and its cystic composition make ultrasound ideal for imaging the eye. Ultrasonography (US) is a simple, non ionizing, cost effective, real time imaging modality providing detailed cross sectional anatomy of the entire globe ***(Bedi et al., 2006).***

Traumatic eye injuries involved about 3% of cases visited in emergency departments of developing countries ***(Kubal., 2008).*** It is estimated that trauma causes blindness and visual impairment in many referees of ophthalmic emergency ***(McClenaghan et al., 2011).*** Such injuries can readily be investigated by ultrasound (US), which is of particular value when the light conducting media are opacified by hemorrhage or other injury ***(Parchand et al., 2014).***

Most of these injuries are hard to diagnose in initial emergency department assessment. On the other hand, more frequent examinations to detect injuries may be hazardous for the patient ***(Silverman., 2009).***

US can be safely performed in outdoor patient without any use of anaesthetics or sedative therapy. It is non-hazardous, atraumatic and valuable in the evaluation of orbito-ocular lesions, especially in the presence of opaque media and also of great help in the assessment of the orbit and outside the globe in case of ocular trauma ***(Ethlers and Puodziuviene., 2005).***

Ocular trauma is defined as a lesion originated by concussion or open mechanisms over the ocular globe and its surrounding structures, which produces tissue damage in varying degree, temporarily or permanently compromising visual function ***(Erikitola et al., 2013).***

Physical aggression, sports, industrial and agricultural work activities, construction and traffic accidents are among the main causes of traumatic eye injuries ***(Shukla et al., 2017).***

Global data suggest that each year around 1.6 million people become blind due to ocular trauma, while an additional 2.3 and 19 million suffer from bilateral low vision and unilateral blindness/low vision respectively ***(Négrel and Thylefors., 1998)*** so early diagnosis and intervention is of utmost importance in preventing blindness in such cases.

US B-scan (brightness modulation) gives exceptionally detailed bidimensional images of the ocular structures ***(Vrablik et al., 2015).***

In the emergency department, US proves to be more cost effective and a better screening tool for patients presenting with ocular trauma, specifically in low income countries and there is an excellent agreement between ultrasound findings and clinical diagnosis beyond chance is also in concurrence with other studies reported from different parts of the world ***(Rabinowitz et al., 2004).***

Various studies have reported the diagnostic accuracy of US in the detection of different forms of ocular trauma in different populations. ***Vrablik and Associates., 2015*** reported the sensitivity and specificity of US in retinal detachment to be ranging between 97%-100% and 83%-100% respectively.

Furthermore, for lens dislocation, ***Haghighi et al., 2014*** reported the sensitivity and specificity of US were 84.6% and 98.3%, respectively**.**

AIM OF THE WORK

To evaluate the accuracy of B-scan ultrasonography in various types of ocular trauma by comparing the findings with the clinical examination and surgical findings if possible.