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EYE INJURY WRESTLERS: A CASE SERIES STUDY

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ABSTRACT

This study was accomplished to determine ocular damages of wrestlers. 70 amateur and professional wrestlers were randomly selected to study ocular problems in Farabi hospital. This article tries to highlight importance of periodic checkups and medical assistance in general aspects of wrestler current and future health. Filing testimonials, recommended examinations including ophthalmoscope, slit lamp, retinoscopy, and orbscan were carried out. However, Stress habits including lip licking, nail biting, and general stress habits were evaluated. Gathered data were analyzed with 16 SPSS software. Results: Mean age value was 22.91 ± 4.91 with nearly 4 days practice per week. 28% of cases had eye trauma background. Orbscan factors were not normal in 18% for thinness, 13% for radius, 6% for zone3, 6% for zone5, and 7% for posterior elevation indexes. 2 cases of professional sportsmen diagnosed as keratoconus. Glasses were prescribed for 7% cases. Nearly half of cases bear moderate to severe stress with bad sleeping positioning. Wrestling is a well-known, historical activity which is the main sport of some countries like Iran, Russia, Turkey, and etc. Since eyes are not protected in this sport, prevention of any trauma is unavoidable. Any ocular problem can cause profound impacts in life. Early prognosis of any risk provides enough time and proper care to maintain or improve situation. According to results more care and periodic diagnostic checkups must be applied to sportsmen on highly dangerous sports.

Keywords: Wrestling, Eye Injury, Orbscan, Keratoconus

INTRODUCTION

Studies on causes and prevention methods of sport injuries including head, backbone, eye, knee, abdominal and other traumas, have been taken profound efforts of researchers and specialists (MacEwen and McLatchie, 2010). Such studies are conducted to reduce therapeutic costs, increase efficacy of sportsman and enhance public health factors. Considering risk factors, preventing injuries, and decreasing possible dangers are highly considered by researchers (Rodriguez and Lavina, 2003). Wrestling is a historic, renowned, Olympic, and noteworthy sport whole through world which is classified as dangerous with high risks of head, neck, eye, and backbone traumas (Leivo *et al.*, 2007). Such sportsmen are highly exposed to situations including strenuous muscular effort, valsalva maneuver, inverted body position (Chapman-Davies and Lazarevic, 2002) and eye rubbing which can lead to large IOP elevations with an associated increase in force loaded on cornea and sclera (Liu *et al.*, 2011). Ocular system has the highest impact on positioning, reflexes, predictive and calculative powers of wrestlers. Ocular traumas are merely unregarded in this sport. Keratoconus disease, which is a progressive centric and paracentric thinness of cornea stroma (Krachmer *et al.*, 1984), is the main risk factor in wrestlers. Impact, harsh rub, stress, glaucoma, and high pressure along with other background disease such as diabetes, psychological and congenital heart problems are of main causes of this disease (McMonnies, 2008). On the other hand, prolonged application of unprofessional contact lenses may extend acuteness of the disease. Also, according to a study of 212 cases of KCN where 7.5% of patients had stress backgrounds; stress, psychological problems, and smoking may impact pathogenesis of the disease (Krachmer *et al.*). Decreased eyesight, degenerative myopia, astigmatism, and cornea scar are signs and symptoms of KCN. Any activity which puts pressure on eye enhances severity of disease (Koenig, 2008). This disease initiates from early youthful days and has prevalence of 1 in 2000 cases which is the main cause of cornea

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transplantations in U.S.A (Pediatrics, 2004). KCN affects social and personal life quality of patients drastically. Specific diagnostic methods like Orbscan along with general tests such as retinoscopy and snellen chart are needed to recognize initiation of this disease and evaluation of optical ability. There are no reports and analysis about cornea indexes in sportsmen and usually articles have tried to introduce risk factors and preventions. This study tries to report cornea topographic indexes of a random collection of Iranian wrestlers and comprehend possible relations between existing progressive or chronic injuries and such indexes. Also, stress tests have been accomplished to determine exact impact of psychological stresses on pathogenesis of different diseases. Nearly all studies in Iran are about musculoskeletal aspects of sportsmen’s problems, but this study supposed to be the first specialized case series study to mention and highlight possible ocular problems.

MATERIALS AND METHODS

The protocol of study has been approved in Tehran University of Medical Sciences University. 70 member of wrestler federation after providing informed consent were studied irrespective of their ages. Complete questioners were field out about sport resume, previous diseases and traumas, ocular problems, and demographic info. Complete diagnostics were carried out in Farabi specialized eye hospital, Tehran University of Medical Sciences, Tehran, Iran. Snellen chart, corneal pachymetry, retinoscopy, ophthalmoscopy, and slit lamp tests were utilized to evaluate different aspects of eyesight health. On the other hand, stress factors such as Onychophagia (nail biting), smoking, and lip licking habits were studied on cases.

Results: Mean age of wrestlers was 22.91 ± 4.91 and mean of BMI was 22.02 ± 0.94 . mean of activity duration was 4 days practice per week. 23 (33%), 25 (36%), 17 (24%), and 5 (7%) of cases were juvenile, youth, adult, and veteran, respectively. 23.5% of amateurs and 57.1% of professionals had eye trauma during sport. 28% of cases had eye trauma background. Only 1 case had lasik eye surgery. 60% of cases had natural eyesight and 3 were utilizing glasses. 21.4% of cases reported previous ocular problems. 41% of sportsmen had eye trauma background during matches. Corneal pachymetry was carried out with Orbscan technique which represented two cases of ectasia cornea among professionals.

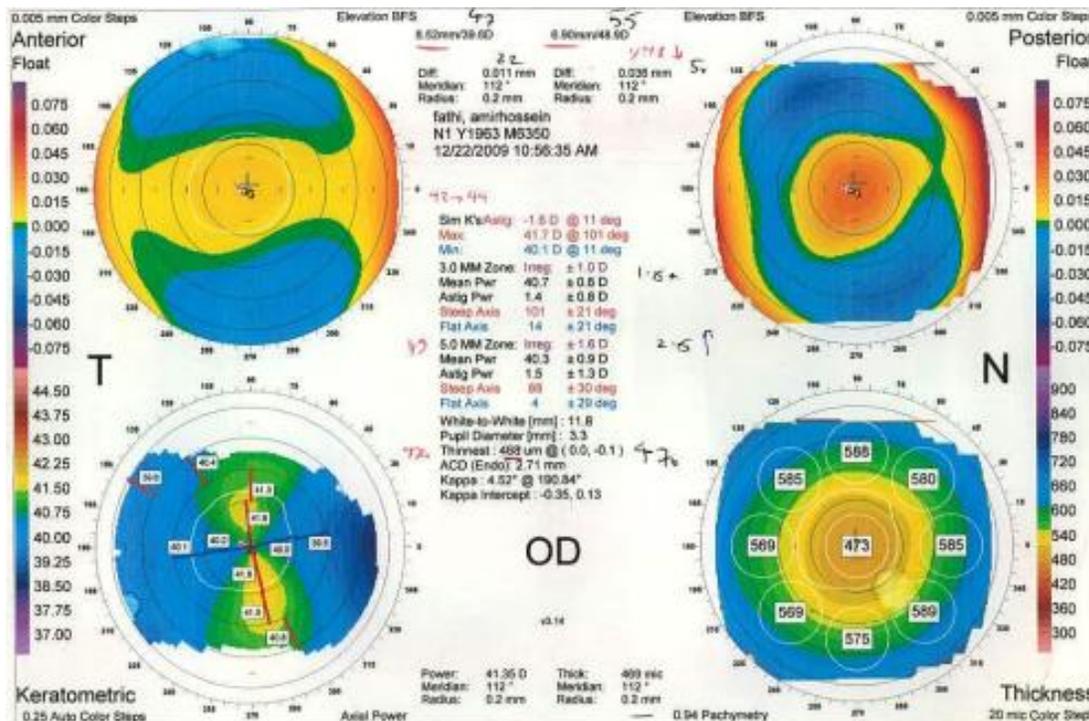


Figure 1: Demonstrates eye scan of both mentioned cases

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Provided maps presented an inferior steeping in right eye and data were completely compatible with keratoconus in left eye. Results of anterior and posterior elevation maps along with corneal pachymetries clearly demonstrated keratoconus in case 1 .

According to refractive and eyesight studies 7 glasses were prescribed. Table 1 demonstrates stress habits of cases. It is evident that nearly half of cases have stresses which can increase risks.

Table 1: Estimated stress factors in cases

	No.	N (%)
Nail biting	70	6(8.6%)
Lip licking	70	31(44.3%)
Eye rubbing	70	11(15.7%)

Table 2 shows corneal topographical indexes of wrestlers which comprehends corneal problems of cases in detail. Orbscan factors are not normal in 18% of cases for thinness, 13% for radius, 6% for zone3, 6% for zone5, and 7% for posterior elevation indexes. Table 4 demonstrates Orbscan indexes of all cases.

Table 2: Orbscan indexes of cases

Orbscan data	Mean ± SD	Min	Max
Anterior elevation	44.4±1.99	39.20	48.38
Posterior elevation	51.35±1.72	47.90	56.44
Zone 3	1.4±0.27	0.6	1.8
Zone 5	2.4±0.29	0.7	3.5
thinness	546±32	413	645
Redius	1.1±0.38	1.6	0.7

Discussion and Conclusion

Ocular power is the main gate of human being to comprehend outer world and create a unique character. There are three levels of eye trauma including blunt, penetrating, and radiation. Uncontrolled impact of any blunt object smaller than eye globe can cause blunt trauma. Penetrating trauma rarely happens but also might be caused with large projectiles. Any unprotected exposure of eye with high energy radiations including Ultra Violet, Laser, and etc can generate radiation trauma. Preventing possible ocular injuries provides enough chance of progressive professional sport life. Often all kinds of trauma can lead into different diseases with acute resolvable or chronic progressive symptoms. KCN is a probable result of continuous eye and head trauma (Johnson and Mian, 2007). It is known as a progressive thinness of cornea and results in decreased refractive power and eye acuity, can be stimulated and flourished with hard sudden or small continuous trauma. Origin of this disease is merely unknown. It is supposed that harsh eye rub which increases IOP, prepares a proper base for initiation of inflammatory reactions. Therapeutic procedures of KCN are extremely expensive which forces applications more diagnostic techniques in order to prevent or sooner recognition of disease.

Some follow up studies have been accomplished on visual powers and indexes of ocular trauma patients which indicates such traumas as a significant initiator of visual losses (MacEwen *et al.*, 2010) carried out a study about injuries in different sport fields which football, rugby, hockey, and other racquet sports possessed first rank. Nowadays, 25-40% of ocular traumas are related with sports. During 60th decade sport related ocular trauma was 4%, while it increased up to 42% until 1980 (Filipe and Rocha-Sousa, 2003). Lim *et al.*, reported the highest sport related ocular trauma in Singapore related with golf (Leivo *et al.*, 2007) studied 265 ocular trauma cases during 6 months in Finland. 17% of cases related with sport specifically football. reported a 13.7% portion of eye trauma as sport related among a random 533 cases study which 71.1% of injured cases caused by ball games ((Drolsum *et al.*, 1999). All previous studies specify impacts and traumas during racquet and ball games as an amplifier of risk factors such as IOP which easily can enhance prevalence of KCN especially in familial conditions (McMonnies, 2010).

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In this study 70 wrestler cases were analyzed with modern ophthalmology standards for any possible alterations and diseases of ocular system. Despite the fact that mean age of studied cases is 23 years old, 28% of cases reported sports related eye trauma background which seems to be a significant high risk for future prospects. Cornea, retina, and stroma were examined and 2 cases diagnosed as KCN which just wrestling, impacts, harsh eye rubs, stress, and body positioning mentioned as cause of the disease (ZareMehrjardi M2014). Many professional basketball players wear goggles when they play to protect themselves from such an injury .

This reminds a high priority of sportsmen health conditions to federations and team physicians, specifically highly dangerous sports, and indicates importance of continuous checkups of any possible impacts. Serious supervision of coaches and observers about federation safety and control regulations like wearing no contact lenses, protective eye glasses or head guards along with cooperation and assistance of ophthalmologist or optometrist consultants provides a harmonic condition for sportsmen to obey rules without any possible injury and future problems.

ACKNOWLEDGMENT

Here by, authors sincerely acknowledge optometrist and monitoring teams of Farabi Special Eye Hospital for their devotions and time dedications.

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