



Original Article

Proportion of dry eye in patients of rheumatoid arthritis

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Purpose: To assess the proportion of patients having impaired tears production in a sample of patients suffering from rheumatoid arthritis.

Study Design: Descriptive cross-sectional study.

Materials and Methods: Data was collected by self-designed proforma after taking consent from patient. Visual acuity of all diagnosed rheumatoid arthritis patients was assessed on Snellen visual acuity chart at 6m. The Schirmer test was performed.

Results: The Schirmer test was performed to assess dry eye in patients of rheumatoid arthritis. The results showed that total 73 patients were assessed out of 73, 20(27.39%) were males and 53(72.60%) were females. out of 63 patients 15 (23.8%) people having age 20 to 30 years and 27% have age 30 to 38 years old and remaining 31(49.2%) have age 38 to 55 yrs. Study shows 15(20.54%) patients have mild (9-14mm) Schirmer test value, 18(24.65%) patients have moderate (4-8mm) Schirmer test value and 40(54.79%) patients have severe (<4mm) Schirmer test values. In this study (Friedman test, p-value 0.000) shows significant result which is less than 0.05, it describes the direct relationship of age with Schirmer test.

Conclusion: It is concluded that there is risk of dry eye in rheumatoid arthritis patients.

Keywords: Dry eye in rheumatoid arthritis, dry eye syndrome, ocular surface changes in rheumatoid arthritis patients.



Introduction

Dry eye is a disorder in which eye does not produce tear appropriately and a person does not have sufficient quality of tears to lubricate the front surface of eye and has insufficient capability for tear secretion from the tear film.¹ Symptoms of dry eye are visual disturbance, discomfort, itching, tear film instability and inflammation of ocular surface.² Dry eye syndrome is a common form of ocular surface diseases in which eye does not produce tear properly and excessive evaporation of tears occur from ocular surface so it is the deficiency of anyone of seven ocular surface parameters. In addition, it is accompanied by increased osmolarity of the tear film and inflammation of the ocular surface.³

Rheumatoid arthritis RA is an autoimmune disorder in which the human body immune system, which generally works to defend the body, takes up a destructive behavior similar to that against antigens such as viruses and bacteria. The immune system erroneously recognizes substances produced by joint lining as foreign and the resultant immune reaction causes injury to different structures of the joints of human body.⁴

The part of joint known as synovium produces a fluid (synovial fluid), which performs the function of lubrication of joints and due to this lubrication, the joints move efficiently. The swelling occurs as a result of autoimmune injury and this inflammation, occurring from the synovium, spreads to all the parts of the joint, which causes inflammation and pain in joints and all tissues around the joints.⁵

If swelling in joints is ignored, it can cause the destruction of cartilage tissue of the joints. the cartilage tissues are elastic tissues that cover the ends of the joints in bones and also provide strength to the bones.⁶ When the cartilage start damaging the joint, the space within the joint cavity gets reduced. The joints become loose, disfigured, painful with restriction of movement.⁷ The joint damage in rheumatoid arthritis is irreversible. Rheumatoid arthritis (RA) usually disturbs the joints of all parts of the body i.e., joints of elbows, knees, ankle hands, feet and wrists. The affected joints are frequently symmetrically distributed i.e. if single hand or knee of one side is affected, then usually the corresponding joint of the other side is also affected.⁸ Rheumatoid arthritis is a multi-systemic disorder. It can affect all body parts particularly the respiratory system and cardiovascular systems.⁹

About 1.6 million population of United States have disorder of rheumatoid arthritis. On gender basis it is three times more common in women as compared to men. In women rheumatoid arthritis usually presents between the ages of 35 and 65. In men, rheumatoid arthritis occurs in later decades. In the congenital variety of rheumatoid arthritis also effect.¹⁰

Keratoconjunctivitis Sicca is the greatest chronic disorder of dry eye and communal ocular appearance of rheumatoid arthritis RA and has a described incidence of 14% to 26%.¹¹ The signs of dry eye disorder are typically protuberant throughout the later portion of the diurnal owing to vaporization of tear film. The function of the lacrimal glands can be measured with the less invasive phenol red thread testing and Schirmer testing.¹² Schirmer testing takes fewer period and will sufficiently evaluate tear making.¹³ The rheumatoid arthritis are the most common cause of dry eye disorder. Dry eye disorder are disposed to the contamination, and if not cured unadorned dry eye disorder basis destruction to the cornea. In rheumatoid arthritis patients mostly Sjogren syndrome which is autoimmune disease.¹⁴

In a recent study total 286 patients of rheumatoid arthritis were included in the research. The 47% of patients having rheumatoid arthritis have dry eye disorder. Tear breakup time in majority patients less than 10 seconds and in Schirmer test 4.43 ± 4.53 . It is concluded that in all patients of rheumatoid arthritis have dry eye disorder.¹⁵

Material and Methods

It was an institutional based study conducted on 73 patients having diagnosed history of rheumatoid arthritis were included in this study. This study explained the proportion of dry eye in rheumatoid arthritis patients. Patients who don't want to get permission to perform these tests willingly were excluded in this study. Data was collected by a self-designed proforma. All the data was entered and analyzed using Statistical Software SPSS Version 22.00. It was cross sectional study. Friedman test was applied to find out the significant results.

Results

The study was carried out to assess proportion of dry eye in patients of rheumatoid arthritis patients. Data was collected from 73 (20 male and 53 female students) who were diagnosed with Dry eye in rheumatoid arthritis patients. Data was collected using a proforma.

Table No. 1

GENDER

		Frequency	Percent
Valid	Female	53	72.60
	Male	20	27.39
	Total	73	100.0

Table 1 shows 73 patients were involved in study. Out of 73 patients 20(27.39%) were males and 53(72.60%) were females.

Table No. 2**AGE DISTRIBUTION**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 35 - 42	15	20.5	20.5	20.5
43 - 53	22	30.3	30.3	50.8
54 - 60	36	49.3	49.3	100.0
Total	73	100.0	100.0	

Table 2 shows that out of 63 patients 15 (23.8%) people having age 20 to 30 years and 27% have age 30 to 38 years old and remaining 31(49.2%) have age 38 to 55 yrs.

Table No. 3**TEAR BREAKUP TIME IN RIGHT EYE**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Normal	15	20.5	14.3	20.5
Moderate	18	24.6	24.6	50.8
Severe	40	54.7	54.7	100.0
Total	73	100.0	100.0	

Table 3 shows that out of 73 patients in right eye the 15(20.5) have normal tear breakup time in right eye and 18(24.6%) have moderate tear breakup time and remaining 40(54.7) have severe tear breakup time.

Table No.4**TEAR BREAKUP TIME IN LEFT EYE**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Normal	15	20.5	14.3	14.3
Moderate	18	24.6	24.6	45.1
Severe	40	54.7	54.7	100.0
Total	73	100.0	100.0	

Table shows that out of 73 patients in left eye the 15(20.5) have normal tear breakup time in right eye and 18(24.6%) have moderate tear breakup time and remaining 40(54.7) have severe tear breakup time.

Friedman test results shows that there is statistically significant increase in dry eye with the increase in age with $p < 0.001$.

Discussion

The study shows changes in the dry eye and ocular surface related to the tear film using the Schirmer test in patients with rheumatoid arthritis. Therefore, the components of the tear film are abbreviated in patients with patients with rheumatoid arthritis. To evaluate the ocular surface and the systemic factors related to rheumatoid arthritis that show tear film values related to age and sex.¹⁶ Dry eye is more common in elderly patients as patients age and the ocular surface

becomes more dry. Corneal changes are also related to rheumatoid arthritis, suggesting that the patients may have abnormalities in the cornea. Some studies showed reflexes of tear film secretions that did not change.¹⁷

Total 73 patients were evaluated. Out of 73, 20 (27.39%) were men and 53 (72.60%) were women. The study showed that 15 (20.54%) patients have mild Schirmer test values (9-14 mm), 18 (24.65%) patients have moderate Schirmer test values (4-9 mm) and 40 (54.79%) patients had severe Schirmer test (<4 mm) values. Of 63 patients, 15 (23.8%) were between 20 and 30 years, and 27% were between 30 and 38 years old and the remaining 31 (49.2%) were between 38 and 55 years old.

About 1.6 million people in the United States have an Rheumatoid arthritis disorder. Based on gender, three times more in women than in men. In women, rheumatoid arthritis usually begins later in the eons of 35 and 65 years. In men, rheumatoid arthritis occurs in the last decades. The congenital history of rheumatoid arthritis also affects progeny.¹⁸

Recent study showed that the dry eye is an ever more widespread disorder of the human tear film in rheumatoid arthritis patients and most commonly effect women as compared to men it is 30% more in women especially post-menopausal women, older adults in general, and contact-lens wearers. A vicious cycle of tear-film changes, inflammation of ocular surface, pain, and damage to epithelial-cells apparently originates from chronically salty tears due to rheumatoid arthritis.^{19,20}

Conclusion

Schirmer test was performed on rheumatoid arthritis patients. It is concluded that effect of Schirmer test with age increases older patients have high percentage of dry eye as compared to younger ones. So it can be concluded that rheumatoid arthritis patients encounters severe dry eye diseases. The Schirmer test was performed to assess dry eye in patients of rheumatoid arthrites.

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