Rheumatoid arthritis is a risk factor for dry eye in south Indian population

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Abstract

Aim: The objective of this study was to screen the patients with rheumatoid arthritis for dry eye and to find out prevalence of dry eye disease in these patients. We also studied the association of rheumatoid arthritis with severity of dry eye disease.

Materials and Methods: This cross section study was carried out in SRM medical college ophthalmology department. Duration of this hospital based study was from november2013 to October 2014. Forty four patients with rheumatoid arthritis from rheumatology department were taken and forty four age and sex matched patients were taken from SRM ophthalmology department as control for study. Detailed history and eye examination was done. SPSS 16 and Mann-Whitney U test was used for statistical analysis.

Results: Overall prevalence of dry eye disease in rheumatoid arthritis patients was15/44(34.09%) in our rheumatoid arthritis patients, as compared to5/44(11.36%) control. In our study 17/44(38.63%) of rheumatoid arthritis patients had TBUT<10 seconds as compared to5/44(11.36%) patients without rheumatoid arthritis. Schirmers test was positive in 15/44(34.09%) rheumatoid arthritis patients as compared to 5/44(11.36%) non rheumatoid patients. A statistically significant p value (p value <0.05) was found. Severity of dry eye disease was found to be higher in rheumatoid arthritis patients as compared to non-rheumatoid arthritis patients.

Conclusion: There is a high prevalence of dry eye disease in rheumatoid arthritis patients in South India. Severity of dry eye disease is also more in rheumatoid arthritis patients as compared to normal population. There is a statistically significant difference of tear quantity and tear quality between two groups. We recommend early diagnosis and prompt treatment of dry eye disease in rheumatoid arthritis patients because greater percentage of patients had signs of dry eye disease as compared to symptoms of dry eye disease. Therefore it is very important to screen all rheumatoid arthritis patients for dry eye disease irrespective of duration and severity of rheumatoid arthritis.

Keywords: Rheumatoid arthritis, Dry eye disease, Tear break up time (TBUT), Schirmers test, Prevalence.

Introduction

An overall of 1% general population,[2-4] is affected by rheumatoid arthritis. Rheumatoid arthritis has been described as a symmetric deforming polyarthritis. It is diagnosed clinically and serologically. The criteria used for diagnosis of rheumatoid arthritis was taken from ARC revised criteria. Extra articular findings are commonly seen in rheumatoid arthritis patients.[4] They are rheumatoid nodules, pulmonary lesions, cardiac involvement vasculitis and also ocular manifestation.[4] Common ocular manifestation in rheumatoid arthritis patients are Keratoconjunctivitis sicca, scleritis[5,8] corneal melts.[1,5] Other ocular findings are episcleritis, peripheral ulcerative keratitis,[1,6,7,9] Brown syndrome[10] orbital myositis[11] and hydroxycholoroquine toxicity.[12-15] Rheumatoid arthritis has been regarded as an important risk factor for causing dry eye disease.[19,26,30,34] Dry eye has a harmful effect on the ocular surface[16].It causes grittiness, dryness, burning sensation, stickiness, watery eye, and even redness of eyes.[16-18]A number of studies has been done earlier in an attempt to find out the prevalence of dry eye[19-21].Various risk factors associated with dry eye are rheumatoid arthritis[19,26,27] drugs [19,20,22,28,29] pterygium,[24]and meibomian gland dysfunction.[31-32]

Materials and Methods

This cross sectional study was done in SRM medical college and hospital ophthalmology department. For this study, forty four rheumatoid arthritis diagnosed patients were taken from rheumatology department and forty four age and sex matched patients were taken from ophthalmology department. Patients suffering from thyroid eye disease, post LASIK patients, chronic blepharitis, meibomian gland dysfunction, proptosis, patients on medications known to cause dry eye were excluded from this study. Standard Questionnaires was used to diagnose dry eye.[35] Mann-Whitney U formula was used for analysis of data. The eye which had more severe dry eye was taken into consideration. We used Schirmers test, tear breakup time, as our diagnostic tests. The presence of dry eye was indicated by a Schirmers reading of less than 10 mm. Schirmers test indicates tear film quantity. In order to access tear film stability in our patients, we used tear break up time. Any reading of less than 10 second was taken as abnormal. Grading of severity of dry eye was done by taking into account symptoms and Schirmers test. Approval for this study was taken from ethical committee.

Results

In our study, rheumatoid arthritis patients has a mean age 49.95+/-1.37 Standard Error (SE). Non rheumatoid patients had mean age 49.61+/-1.62 SE. We had 5 males and 39 females in our rheumatoid arthritis study group. We used Mann-Whitney U test to analyze our results. Since our data was not normally distributed, t test was not used. As shown in table 1, on the basis of evaluation of symptoms of dry eye disease 22.72% of rheumatoid arthritis patients showed symptoms of dry eye disease whereas only 9.09% of non-rheumatoid group (age and sex matched) were

symptomatic. Table 2 shows 34.09% of rheumatoid arthritis patients having positive Schirmer test whereas non rheumatoid arthritis group had only 11.36% reduced tear quantity. Readings from table 3 shows that reduced TBUT was found in 38.36% of rheumatoid arthritis patients whereas it was 11.36% in non-rheumatoid arthritis patients. Therefore rheumatoid arthritis patients showed poor tear stability. There is a statistically significant difference between the mean TBUT of both the groups (p=0.000).Table4 shows greater percentage of rheumatoid arthritis patients having reduced tear quantity. We had ten moderate dry eye and one severe dry eye out of fifteen rheumatoid arthritis patients suffering from dry eye disease. Out of five non-rheumatoid arthritis patients suffering from dry eye disease, only one had moderate dry eye. Thereby we can make an inference that there are more chance of getting severe form of dry eye disease in rheumatoid arthritis patients as compared to non-rheumatoid arthritis patients

Discussion

We observed in our study that although a greater percentage of rheumatoid arthritis patients had no symptoms yet had poor tear quality (TBUT) and reduced tear quantity (Schirmers). In our study of forty four rheumatoid arthritis patients, 22.72 % patients had symptoms of dry eye disease while in control age and sex matched of forty four non rheumatoid patients, only 9.09% had dry eye disease symptoms (table-1). In Beavers Dam study by Moss et al, using patients symptoms, diagnosis of dry eye was made.[19]A statistically significant relation was seen between dry eye and a history of arthritis. We used Schirmers test to estimate tear quantity in our patients. A reading of less than 10 mm was taken as marker for the presence of dry eye. In our study out of forty four rheumatoid arthritis patients fifteen (34.09%) had reduced tear quantity. Whereas the non-rheumatoid arthritis group, 11.36% had reduced Schirmer value (table 2). Since our data was found to be not normally distributed, we used Man-Whitney U test for statistical analysis and found that there was statistically significant difference in tear quantity between the two groups P value (p value <0.05). In Punjabi et al study, more rheumatoid arthritis subject (27.3%) had dry eye than the control group (12.0%), so the result was statistically significant (p=0.003).[26] For the assessment of tear film stability, Tear film break up time (TBUT) was taken. A TBUT of less than 10 second was taken as abnormal, showing the presence of dry eye. Table 3 shows a greater number of rheumatoid arthritis patients(38.63%) had poor tear stability, that is TBUT less than 10, as compared to non-rheumatoid arthritis patients (11.36%). We used Mann-Whitney U test for statistical analysis of data. P value was statistically significant in our study. A similar observation was made in Punjabi et al study[26] where 22.6% rheumatoid arthritis subjects had TBUT less than 10 as compared to control group (9.52). Their result was also found to be statistically significant.

Table 1: Symptoms of dry eyes

Groups	Subject with symptomatic dry eye		Subjects without symptomatic dry eye	
Subjects	No	%	No	%
Rheumatoid arthritis	10	22.72%	34	77.27%
Non rheumatoid patients	4	9.09%	40	90.90%

Table 2: Schirmers test result

Groups	Subjects with redued schirmers value		Subjects with normal schirmers value		mean schirmers value (+ - SE in mm)
Subjects	No	%	No	%	
Rheumatoid arthritis	15	34.09%	29	65.90%	9.68+/-0.65 SE
Non rheumatoid arthritis	5	11.36%	39	88.63%	17.34+/-0.65SE

Table 3: tear break up time result (TBUT) in seconds

Groups	Subjects with reduced tbut		Subjects with normal tbut		Mean Tbut Value + -SE
Subjects	No	%	No	%	
Rheumatoid arthritis	17	38.26%	27	61.36%	9.89+/-0.58 S.E
Non rheumatoid patients	5	11.36	39	88.65%	13.45+/- 0.47S.E

Table 4: Severity of dry eyes

Group	Mild	Moderate	Severe
Rheumatoid arthritis	04	10	01
Non rheumatoid patients	04	01	0

Table 5: Grading of severity of dry eye disease

Severity	Symptoms	Irritant or emotional tears	Schirmers test
Mild	Mild	Present	5-10
Moderate	Moderate	Absent	1-5
Severe	Severe	Absent	<1

Conclusion

From this study we conclude that there is a high prevalence of dry eye disease in rheumatoid arthritis patients in south Indian population. A greater percentage of rheumatoid arthritis patients had a more severe form of dry eye disease than normal population. There is a statistically significant difference of tear quantity and tear quality between two groups. We recommend early diagnosis and prompt treatment of dry eye disease in rheumatoid arthritis patients because greater percentage of patients had signs of dry eye disease as compared to symptoms of dry eye disease. Therefore it is very important to screen all rheumatoid arthritis patients for dry eye disease irrespective of duration and severity of rheumatoid arthritis.

Conflict of Interest: None.

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