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A STUDY ON PREVALENCE AND CORRELATES OF DRY EYE IN CONNECTIVETISSUE DISORDERS

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ABSTRACT

Objective:

To determine the prevalence of dry eye disease (DED) and its severity in patients with RA, SLE, and PrimarySjogren's syndrome in a tertiary care in Departmentof Opthalmology Govt General Hospital,Suryapet,Telangana,India.

Methods:

From July 2019 to May 2022, prospective cross-sectional research of 90 individuals with RA, SLE, andSjogren'ssyndromewillbeconducted.Schirmer's test,Tearbreakup time,andocularsurfacestainingwasusedtoassesspatientsforDED.

Results:

TheprevalenceofDEDwas51.11%forRA,31.11%forSLE,and17.77%forPrimarySjogren'ssyndrome.Nocasesofdryeyewerefoundin11.11%(10cases),38.88%(35)patientshadmilddryeye,22.22%(20)patientshad moderatedryeye,17.77%(16) patients hadseveredry eye,and 10%(9)patientshad veryseveredry eye.

Conclusions:

DEDhasahighoverallfrequencyinconnectivetissueillnesses.

Keywords:dryeyedisease,primarySjogren'ssyndrome,tearbreakuptime,ocularsurfacestaining.

Introduction:

Keratoconjunctivitis sicca or Dry eye, is a multifactorial disease of the tears and ocular surface that results insymptomsofdiscomfort,visualdisturbance,andtearfilminstabilitywithpotentialdamagetotheocularsurface.Dry eye can be caused by a number of different factors.Inflammation of the ocular surface and an increase inthe osmolality of the tear film are also symptoms that accompany this condition[1].Patients suffering fromconnectivetissuedisordersaremorelikelytohavedryeye,howevertheailment isoftenmisdiagnosed.Thereisaprevalenceofdryeyerangingfrom14.5percentto56 percent2 insystemicautoimmuneillnesses suchasSjogren's syndrome (SS), rheumatoid arthritis (RA), and systemic lupus erythematosus (SLE)[2]. Complaintsofdryeyesareoneofthemostcommonsymptomsofsystemicdisease,butpatientsveryoftenchoosetoignorethem since other systemic manifestations are more bothersome. And as a result, they find themselves in theoutpatient ophthalmology department with severe manifestations of dry eye or complications that have led tovisual morbidity or irreparable damage to the ocular surface in late stages. If the condition is not properlyinvestigated,itispossiblethatdryeyeistheearliestmanifestationofanunderlyingsystemicdiseasethatwillnot bedetectedforaconsiderableamountoftimeandthetreatment focusesat minimisingoralleviatingsignsand symptoms of dry eye, such as ocular irritation, redness, or mucous discharge; therefore maintaining ordelivering an improved visual function if it is not related to any other systemic condition[3].In this way, itcontributes to theprevention of injury to the ocular surface. In cases when there is significant dry eye as wellasother

complaintsthatpointtowardsasystemiclink,furtherevaluationmaybepossible.Recentdevelopmentsin ourunderstandingof the factorsthat contribute to dryeye disease open the doortopossibilities for enhancing diagnosis and disease management, as well as the search for new treatments thatare more effective in managing this condition, which is both widespread and progressive. It is possible thatthe diagnosis and treatment of underlying systemic immunological diseases will reduce morbidity and incertaininstances mayevensaveapatient'slife. Asaresult,thegoalofthestudywastoassessthepatientswithrheumatoid arthritis,systemic lupuserythematosus, and primary Sjogren's syndrome forthe prevalence,manifestations, and grade of dry eye disease. This was done so that we could gain a better understanding ofthe trend and the necessity of ophthalmic examination in such patients. In order to increase the patient'scomfort and to prevent orminimize additional structural damage to the ocularsurface, it is important torecognizedryeyeillnessesasearlyaspossible[4,5].

ObjectivesoftheStudy:

1. Todeterminetheprevalenceofdryeyediseaseinpatientswithconnectivetissuedisordersviz.

   Rheumatoidarthritis,SystemiclupuserythematosusandPrimarySjogren’ssyndrome.

2. Toassesstheseverityofdryeyeineachofabovementionedconnectivetissuedisorders.

InclusionCriteria:

- DiagnosedandconfirmedcasesofRheumatoidarthritis,Systemiclupuserythematous,andPrimarySjogren’ssyndrome.
- Agegroup between20 to 65 years.

ExclusionCriteria:

- History of previous ocular surgeries (including cataract surgery) / ocularinjuries
- Smokinghistory
- Radiationexposure
- Age<20and>65years
- Contactlensusers.
- EpiscleritisandScleritis.

MaterialsandMethods:

The present prospective cross-sectional study was done at outpatient Department of Ophthalmology GovtGeneral Hospital, Suryapet, Telangana, India with following inclusion and exclusion criteria on 90 patientsdiagnosed with Rheumatoid arthritis, systemic lupus erythematosus and primary Sjogren's syndrome andpatients diagnosed and confirmed cases of RA, SLE and primary Sjogren's over period of one year from July2019 to May 2022 in Govt Medical College/General Hospital, Department of Ophthalmology, Suryapet,Telangana, India. In this study, Schirmer's test Types I and II, tear meniscus height, tear BUT (TBUT),fluorescein stain, and rose Bengal stain were used to diagnose and grade dry eyes. Its severity is classified intomild, moderate, severe, and very severe (level 1 to 4) according to DEWS dry eye grading system. Milddry-eyesarediagnosedbythepresenceof mildirritation,drynesswithvariableSchirmer's, andTBUTwithoutanyother abnormalities. Moderate-dry-eyes are diagnosed by Schirmer's ≤10, TBUT ≤10 with a variable amountofcornealandconjunctivalstainingandvisualsymptoms.Severe-dry-eyesdiagnosedbySchirmer'sandTBUTof

Results:

Table1:DiagnosisandSex

			Sex		Total
			Male	Female	
Diagnosis	Rheumatoid Arthritis	Count	18	28	46
		%	20%	31.11%	51.11%
	Systemic LupusErythematosis	Count	9	19	28
		%	10%	21.11%	31.11%
	PrimarySjogrens	Count	4	12	16
		%	4.44%	13.33%	17.77%
	TOTAL		31	59	90
	%		34.44%	65.55%	100%

Theabovetabledescribesthatinstudypopulationfemales weremorepredominant(65.55%)than males(34.44%) ineachof diagnosisgroupandtheincidence ofRAwas31.11% (28cases).

Table2:**Agegroupanddiagnosis**

			Agerange					Total
			20-29	30-39	40-49	50-59	>60	
Diagnosis	RheumatoidArthritis	Count	4	18	12	6	6	46
		%	4.44%	20%	13.33%	6.66%	2.22%	51.11%
	Systemic LupusErythema tosis	Count	2	12	7	6	1	28
		%	2.22%	13.33%	7.77%	6.66%	1.11%	31.11%
	PrimarySjogrens	Count	2	9	2	2	1	16
		%	2.22%	10%	2.22%	2.22%	1.11%	17.77%
	Total		8	39	21	14	8	90
	%		8.88%	43.33%	23.33%	15.55%	8.88%	100%

Theabovetableshowsthedistributionofdifferentagegroupsineachofthediagnosis.Thepresentstudyrev e a l e dt h a talltypesofdiagnosiswere predominantlyintheage rangeof30-39yrwith43.33%(39cases)oftheseR Apr evalencewasabout20%(18)patients.

Table3:DEDSeveritygradingvs.Gender

Dryeye diseaseseverity		Sex		Total
		Male	Female	
Nodryeye	Count	2	8	10
	%	2.22%	8.88%	11.11%
Mildeyedry	Count	11	24	35
	%	12.22%	26.66%	38.88%
Moderateeyedry	Count	9	11	20
	%	10%	12.22%	22.22%
Severedryeye	Count	6	10	16
	%	6.66%	11.11%	17.77%
Veryseveredryeye	Count	3	6	9
	%	3.33	6.66	10%
Total		31	59	90
		34.44%	63.34%	100.0%

From the above table DED was more common in females given the known epidemiology of connectivetissue disorders being more common in females. There was a significant correlation between genderdistributionandseverityof dryeye disease.

Table4:DEDseveritygradingvs. Agegroup

Dryeyediseaseseverity		Agegroup					Total
		20-29	30-39	40-49	50-59	>60	
Nodryeye	Count	2	3	2	2	1	10
	%	2.22%	3.33%	2.22	2.22	1.11	11.11%
Mildeyedry	Count	3	14	8	6	4	35
	%	3.33%	15.55%	8.88	6.66	4.44	38.88%
Moderateeyedry	Count	1	9	6	3	1	20
	%	1.11%	10%	6.66	3.33	1.11	22.22%
Severedryeye	Count	1	9	3	2	1	16
	%	1.11%	10%	3.33	2.22	1.11	17.77%
Veryseveredryeye	Count	1	4	2	1	1	9
	%	1.11%	4.44	2.22	1.11	1.11	10%
Total		8	39	21	14	8	90
Total%		8.88%	43.33%	23.33	15.55	8.88	100.0%

There was significant correlation between presence of DED or severity grading ofit in 30-39 agegroup given the varied occurrence of RA, SLE and primary Sjogrens in that particular age groups.Present study describes 43.33% of dry eye disease being prevalentinmentioned connective tissuedisordersandagegroup.

Discussion:

Accordingtothefindingsofthisresearch,theoverallprevalenceofdryeyeinpeoplewithRA,SLE,andPrimary Sjogren's disease was determined to be 51.11%, 31.11%, 17.77% respectively. The severityofeach condition was also graded, in addition to its prevalence, which was documented in each of thediseases. Out of total 90 individuals 11.11% (10) were found no dry eye, 38.88% (35) patients had milddryeye,22.22%(20)patientshadmoderatedryeye,17.77%(16)patientshadseveredryeye,and10% (9) patients had very severe dry eye. There was a prevalence of dry eye in systemic autoimmunedisorders such as rheumatoid arthritis (RA), systemic lupus erythematosus, and Sjogren's syndrome(SS) that ranged from 40% to 82%, according to the study by yogeshwari et al., which is comparableto the current study, which states that it is 51.8 percent[6]. In a different study conducted by Khudair Al-Bedri et al[7], ocular signs of rheumatoid arthritis wereinvestigated in 103 patients from Iran. Kerato-conjunctivitis sicca was shown to be the most prevalentocular finding, with a prevalence rate of 28percent to 39 percent. This might be explained by the fact that their study had a bigger sample size, aswell as by the fact that the patients came from a variety of ethnic backgrounds and environmentalcircumstances. In their investigation of ocular symptoms in SLE, Sukhum, Silpaarcha, Joan J Lee, andStephen Foster discovered that one third of patients had keratoconjuctivitis sicca[8]. This finding furthersupports another study done by R. R. Sivaraj et al. stating the similar prevalence. It's possible that thesmaller sample size contributed to our finding of a somewhat higher prevalence of 42 percent, whichwe found in our research[9]. A study conducted by Stuart S. Kassan et al. on clinical manifestations andearlydiagnosisofPrimarySjogren'ssyndromealsoshowedaprevalenceof67.5percentintheirstudy[10] 8. This establishes dry eye as the common and highly prevalent disease in primary SS, which lendsfurther support to the findings of this current study showing a prevalence of 66 percent of dry eye inprimarySjogren'sdisease.Thedatafromthis studyalso madeit possibletoclassifydry eyeseverityby using a severitygrading method developed by the Dry Eye International Workshop in 2007. Thisscheme covered both subjective symptoms and objective findings (clinical evaluation and diagnostictests), Even in mild to moderate cases, dry eye can have a significant influence on a person's ability toparticipate in day-to-day activities, and this is something that we want to underline here. Therefore,showingtheimportanceofmakingthisdiagnosis inpatientssufferingfromconnectivetissuedisordersso that a therapeutic approach can be devised, which mayimprove the circumstances of the ocularsurface,ultimatelyleadingtoareductioninmorbiditycausedbydryeye disease[11,12].

Conclusion:

In conclusion our study revealed the predominance of DED in females at 30-39 age group which is acommonundiagnosedailmentingeneral,andespeciallyinconnectivetissuedisorderssuchasrheumatoid arthritis, systemic lupus erythematosus, and primary Sjogren's syndrome. Patients oftendisregardthesignsofdryeye,whichcanincludeirritation,aburningfeeling,grittiness,andotherocularsymptoms.Thisisbecauseothersystemicmanifestationsaremoreunpleasantforpatients.Andforthisreason, patients visit an ophthalmologist when they experience considerable discomfort or recurringrednessoftheeyes.Thisoccurstypicallyinthelaterphasesofthecondition,whenocularsurfacedamagewouldhavealreadyhappened, makingthepatientvisuallymorbid.Becauseofthis,conductingresearchon the prevalence of dry eye illness and determining the degree to which it is present in each of thesedisorders will assist us in alerting rheumatologists and physicians to the need for an early referral. IfDED is diagnosed at an early stageand treatment is begun at that time, it will help maintain the ocularsurface, which in turn will providequality of life to patients by making their daily activities lesshinderingdue toreducedocculardiscomfort.Additionally,itwilleventuallyincrease workplaceproductivity and provide emotional support, both of which have been reported to be hampered due todryeyediseases.

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