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RESEARCH ARTICLE

CLINICAL PROFILE AND MANAGEMENT OF DRY EYE DISEASE IN A TERTIARY HEALTH CARE CENTRE IN WESTERN ODISHA.

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Abstract

Aims:- The aim of this study is to find out the clinical profile and management of all patients presenting with dry eye disease attending the Ophthalmology Department in a tertiary health care centre in western Odisha. **Materials And Methods:-** A subset of 60 patients (120 eyes) of dry eye symptoms attending the Ophthalmology Department of VSS Medical College, Burla, Sambalpur over a period of two years were included. **Results:-** Out of 60 patients Female:Male ratio is 1.3:1. Ocular pain and fatigue are the most common symptoms (53.33%). There were decreased in blink rate 78.33% cases, tear film break up time 76.66% cases, tear meniscus height 86.66% cases and Schirmer's test 81.66% cases, Rose Bengal staining was positive in 73.33% cases. Keratoconjunctivitis Sicca (KCS) affecting 20% of patients, vitamin A deficiency accounts for 28.3%, Stevens Johnsons Syndrome (SJS) 11.66%. Allergic conjunctivitis, Blepharitis and computer users 13.33% each, aging 3.33%, hormonal imbalance 5% and dry eyes associated with systemic disease account for 5% only. 48 cases (80%) responded well to 6 weeks medical therapy with significant improvement of their symptoms and signs. Out of 12 cases (20%) not responded to medical therapy, 10 cases (16.6%) underwent different surgical procedures of which 4 cases (6.66%) underwent punctal occlusion, 3 cases (5% underwent amniotic membrane graft (AMG), 2 cases (3.33%) underwent separation of symblepharon with placement of symblepharon shell and 1 case underwent tarsorrhaphy. After 6 weeks of surgical therapy 8 case showed improvement in their symptoms and signs. Only 2 cases of SJS showed poor response. **Conclusion:-** Dry eye syndrome are of multifactorial in its aetiology affecting all age groups. Kerato conjunctivitis sicca commonly affect elderly of more than 40 years of age. The dry eye disease should be diagnosed early and managed with lot of care and skill.

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Introduction:-

Dry eye disease is one of the most frequently encountered ocular morbidity making it a growing public health problem. For many decades Dry eye disease was thought to be limited to dryness of the eye due to reduction of the aqueous phase of the tear film. In 1995 National Eye Institute/industry workshop (NEI) defined Dry eye disease is a disorder of the tear film due to decreased tear production or increased tear evaporation, which causes damage to the inter-palpebral ocular surface and is associated with symptoms of ocular discomfort and/or visual symptoms.¹ This definition was modified by Dry Eye Workshop (DEWS) in 2007 as “Dry eye is a multifactorial disease of tear film and ocular surface that results in symptoms of discomfort, visual disturbance and tear film instability with potential damage to ocular surface. It is accompanied by increased osmolarity of the tear film and inflammation of the ocular surface”.² Many ocular surface diseases produce symptoms that are similar to those associated with dry eye, including foreign body sensation, mild itching, irritation and soreness. Supporting clinical observations and tests are used to confirm the diagnosis. Specific systems to classify dry eye severity have been developed by DEWS committees in 2007.² However, these are not used widely in clinical practice. Dry eye disease is generally classified according to a combination of symptoms and signs as mild, moderate and severe with an emphasis on symptoms over signs.³ It is also loosely classified according to aqueous tear deficiency (ATD) and evaporative tear deficiency (ETD) and both of these conditions may be present in patients with the disease. The effect of aging and treatment of dry eye involve the challenges and frustrations associated with the management of a chronic disease. In this case, the goals are the reducing signs & symptoms of dry eye, maintaining & improving visual function and reducing or preventing structural damage.⁴ It should be emphasized to patient that there generally no cure for their affliction but proper attention and an adequate treatment regimen, it is likely that good vision can be preserved through out life and considerable degree of comfort will be afforded.

The aim of this study is to find out the clinical profile and management of all patients presenting with dry eye syndrome attending the Ophthalmology Department in a tertiary health care centre in western Odisha over a period of two years.

Materials and Methods:-

A prospective clinical study was conducted between October 2012 to September 2014 in Ophthalmology Department of VSS Medical College, Burla, Sambalpur . A standard clinical proforma was filled in all cases, which included salient feature in history, visual acuity using Snellens visual acuity chart, clinical findings (tear film break up time, tear meniscus height), different available investigations (schirmer test, fluorescence stain, 1% rose Bengal stain etc) and laboratory investigations. Final etiological diagnosis was established based on history, clinical features, laboratory investigations and systemic evaluation by other medical specialities. Specific treatment recommendations were made according to severity and etiological factors of the dry eye disease.

Result:-

A total of 26890 patients attended in the department of ophthalmology, out of which 60 patients (120 eyes) of dry eye symptoms were included. So the incidence of dry eye is 0.22%. Out of 60 patients 26 (43.33%) were male and 34 (56.66%) were female i.e, M:F ratio is 1:1.3. The age ranged from 8 to 82 years with a mean of 49.2 years. Majority of female (18 cases; 30%) were in the age group of above 40 years and 9 cases (15%) of male were below 10 years age.

Out of 60 cases, 17 cases (28.3%) were due to vit A deficiency followed by 12 cases (20%) were due to kerato conjunctivitis sicca. Allergic conjunctivitis & blepharitis and computer users were 8 cases each (13.33%). Steven Johnson syndrome was diagnosed in 7 cases (11.66%). Hormonal imbalance and with systemic diseases were found in 3 cases (5%) each. Only 2 cases (3.33%) were due to aging. 25 cases (41.6%) were of age group > 40 yrs and of these 11 cases were KCS, 5 cases were of aging and hormonal imbalances and 3 cases were associated with systemic diseases. 14 (23.3%) cases were in 0-10 age group, of these 11 cases were of vit A deficiency and 3 cases were of SJS with history of pre medication, 6 cases were computer users belongs to age group 21 – 40 yrs with history of 3 -5 yrs occupational experience.

Table I:- Symptomatic presentation

Aetiological factor	KCS	Vit A def	SJS	All. conj & Blepharitis	Computer user	Aging and Hormonal	Asso with systemic causes	No. of patients	Percentage
Dry sensation	6	4	7	2	4	5	2	30	50.00
Itching	8	0	0	6	2	4	0	20	33.33
Gritty sensation	10	8	0	6	2	3	2	31	51.66
Redness	6	0	7	6	3	2	2	26	43.33
Burning sensation	6	0	0	6	3	2	2	19	31.66
Ocular pain/fatigue	12	4	7	0	2	5	2	32	53.33
Discharge / crust on lash	04	0	7	4	0	2	0	17	28.33
Stickiness in morning	08	2	7	4	2	4	0	27	45
Blurred vision	10	8	7	0	0	4	0	29	48.33
Bleeding from eye	0	0	7	0	0	0	0	07	11.66
Erythematous Rash	0	0	7	0	0	0	0	07	11.66

Most of the dry eyes patients presented with multiple symptoms. 53.33% presented with mild ocular pain or fatigue, 51.66% present with gritty or sandy sensation followed by 50% with dry eye sensation in eye and blurred vision in 48.33% cases and stickiness in the morning in 45% of cases.

Table – II:- Patients profile before management

Aetiological factors	Blink rate		TBUT		TMH		Schirmer's value		Rose Bengal staining		BCVA	
	<15/min	>15/min	<10/sec	>10/sec	<0.6 mm	>0.6 mm	<15 mm	>15 mm	-	+	<6/18	>6/18
KCS	10	2	9	3	10	2	9	3	3	9	8	4
Vit A deficiency	9	8	15	2	15	2	15	2	3	14	8	9
SJS	7	0	7	0	7	0	7	0	0	7	6	1
All conj/ blepharitis	6	2	4	4	6	2	8	0	4	4	2	6
Computer users	8	0	6	2	6	2	5	3	3	5	3	5
Aging/ horm.	4	1	4	1	4	1	4	1	2	3	4	1
Ass. Systemic disease	3	0	1	2	3	0	3	0	1	2	2	1
No of patients	47	13	46	14	51	9	49	11	16	44	33	27
Percentage	78.33	21.66	76.66	23.33	86.66	13.33	81.66	18.33	26.66	73.33	55	45

Of 60 cases 13 cases had normal blink rate >15/min., of which 8 cases were due to vit A deficiency and 2 cases each of KCS & allergic conjunctivitis/ blepharitis. Blink rate was <15/min in 47 cases (78.33%) of which 5 cases had blink rate ≤ 5/min., 14 cases had blink rate 6 to 10/min and 28 cases had blink rate 11-15/min. "TBUT" was within normal value in 14 cases (23.33%) and <10 sec in 46 cases (76.66%) of which 9 cases (15%) had 0-5 sec and 37 cases (66.66%) had 6-10 sec. TMH was < 0.6 mm in 51 cases (86.66%). Out of which 6 cases had 0.1-0.2 mm, 15 cases had 0.3-0.4mm and 26 cases had 0.5 – 0.6mm. TMH was normal in 9 cases (13.33%). Schirmer test value was <15 mm in 49 cases (81.66%), of which 10 cases (16.66%) had 0-5mm & 17 cases (28.33%) 6-10 mm and 24 cases (40%) had 11 – 15 mm. 9 cases (15%) had normal Schirmer test value >15 mm. Rose Bengal staining (RBS) positive in 44 cases (73.33%) and negative in 16 cases (26.66%). BCVA was <6/18 in 33 cases (55%) and >6/18 in 27 cases (45%).

Table – III:- Medical management

Aetiological factor		KCS	Vit A def.	SJS	All. Conj & Blepharitis	Comp. user	Aging and Hormonal	Asso with systemic cause	No. of patients	Percentage
LOCAL	Tear substitute	12	17	7	8	8	5	3	60	100
	Vit A	0	17	7	0	0	2	0	26	43.33
	Lubricating gel	0	0	7	0	0	0	0	7	11.66
	Antibiotic	6	8	7	8	0	0	0	29	48.33
	Steroid	0	0	7	8	0	0	0	15	25
	Soft BCL	0	0	3	0	0	0	0	3	5
	Daily dressing	0	0	7	0	0	0	2	9	15
SYSTEMI	Vit A	0	17	7	0	0	0	2	26	43.33
	HRT	0	0	0	0	0	4	0	4	6.66
	Antibiotic	0	0	7	4	0	0	0	11	18.33
	Steroid	0	0	7	0	0	0	0	7	11.66
	Total of Asso. disease	0	0	0	0	0	0	3	3	5
GENER	Inter per med	0	0	7	0	0	0	0	7	11.66
	Avoidance of pre factors	0	0	0	4	4	0	0	8	13.33
	Nutrition supplement	10	17	7	0	0	5	2	41	68.33
	Main hygiene	12	15	7	8	3	5	3	53	88.33

All the 60 cases were managed medically. Artificial tear was given to all patients. Vit A drop was given to 26 cases, of which 17 were vit A deficiency, 7 were SJS and 2 were due to hormonal imbalance. Lubricating gel was given to all 7 cases of SJS. Topical steroid was given to all SJS and allergic conjunctivitis/ blepharitis. Antibiotic drop was given to 29 cases. Soft bandage contact lens was given to 3 cases of SJS. All the 7 cases of SJS were admitted in the hospital for daily dressing. As systemic therapy, vit A was given to all patients of vit A deficiency, 7 cases of SJS and 2 cases of rheumatoid arthritis. Systemic antibiotic was given to 7 cases of SJS and 4 cases of allergic conjunctivitis and blepharitis. Hormonal replacement therapy (HRT) was given to 4 women of hormonal imbalance in consultation with gynaecologist. 1 case of Rheumatoid arthritis was advised to continue the systemic therapy apart from our medical therapy. Another case of leprosy diagnosed 1 year back on MDT was having exposure keratitis in both eyes due to lid lag. All the patients were followed up for 6 wks at a regular interval of 1 wk. After 6 wks clinical signs were evaluated. Of 47 cases who had blink rate of <15/min before management 36 cases improved their blink rate to >15/min. TBUT improved to normal value in 37 cases and TMH improved to normal value in 40 cases. Schirmer test value improved to normal value in 35 cases. Rose Bengal staining become negative in 33 cases. BCVA become more than 6/18 in 20 cases. Non preserved topical methyl prednisolone produces rapid and dramatic improvement in ocular irritation symptoms and the KCS that develops in aqueous tear deficiency occurring in Sjogren syndrome. Out of 60 patients who were in medical therapy for 6 weeks 48 cases improved dramatically with significant improvement of symptoms and signs. 12cases who did not respond to medical therapy were KCS 3 cases, vit A deficiency 2 cases, SJS 5 cases, Leprosy 1 case and 1 case of female >50 years with hormonal imbalance.

Of 12 cases who did not respond to 6 wks of medical therapy 10 cases subjected to various surgical procedures. As 2 cases were associated with retinitis pigmentosa they were advised for regular follow up. Of 10 cases 4 cases underwent punctal occlusion, of which 3 were KCS and 1 was of aging. Of 5 cases of SJS 3 underwent AMG and 2 underwent release of symblepharon with placement of symblepharon shell. 1 case underwent tarsorrhaphy. After surgical procedure, all patients were followed up for 6 wks at regular interval of 1 wk. Of 10 cases blink rate was improved to normal value 15/min in 7 cases. Blink rate was less than 15/min in 3 cases, of which 2 cases were of SJS, 1 cases was leprosy with exposure keratitis. TBUT improved to normal value >10 sec in 8 cases. TBUT was <10 sec in 2 cases of SJS. TMH improved to normal value i.e. >0.6 mm in all cases except 2 cases of SJS. However schirmer test value had remained <15 mm in 4 cases of SJS and 1 cases of KCS. Rose Bengal staining was positive in 2 cases of SJS and BCVA improved to 6/18 in 6 cases.

Discussion:-

In this study series incidence of dry eye is 0.22%. Khurana AK et al 1991 found the incidence rate of 0.46% of dry eye in their hospital based epidemiological study.⁵ The low incidence of dry eye in our study could be due to unawareness of general people. The percentage of dry eye syndrome over 40 years of age was 41.6%. The cause could be due to decrease lacrimal gland response with aging and hormonal imbalance among post menopausal women. Bhavsar AS et al, 2011⁶ and Sharma A & Hindman HB⁷ were reported that older age and female sex were well known risk for dry eye disease.

In this study series there were 12 cases of KCS of these, 3 cases (25%) male and 9 cases (75%) were female. There were 5 cases of dry eye syndrome due to Aging and hormonal imbalance, of which 2 cases (40%) were male 3 cases (60%) were female. There was no significant difference in sex incidence of dry eyes. Dry eyes may be slightly more common in women. KCS or primary sjogren syndrome is believed to affect 1 to 2% of population and 90% of those affected are women (Anthony. S. Enog et al, 2001)⁸. Most of the dry eyes patients presented with multiple symptoms. 53.33% presented with mild ocular pain/fatigue, 51.66% present with gritty or sandy sensation followed by 50% with dry eye sensation in eye and blurred vision in 48.33% cases and stickiness in the morning in 45% of cases. Study on the symptoms and life style associated with dry eyes (Shimmure S. et al 1999)⁹ revealed that 70 – 80% of dry eye patients present with ocular fatigue and 50% of patients with dry sensation and 55% with blurred vision which nearly consistent with our observations.

All the 60 cases were managed medically. The artificial tears significantly improve indices measuring the regularity and visual quality of the cornea in dry eye patients. (Pflugfelder CS. et al 1999)¹⁰. This phenomenon was also observed by Huang FC et al¹¹ who also reported that the use of artificial tears significantly improved the spatial contrast sensitivity performance in eyes. Topical vit A causes the reversal of squamous metaplasia as evidence by impression cytology (T Sen et al, 1995)¹². Topical steroid was given to all SJS and pts with allergic conjunctivitis and blepharitis. Non preserved topical methyl prednisolone produces rapid and dramatic improvement in ocular irritation symptoms and the KCS that develops in aqueous tear deficiency occurring in Sjogren syndrome. Corticosteroid decreases both production and release of inflammatory cytokine responsible for pathogenesis of severe dry eyes syndrome (Marsh P & Pflugfelder SC)¹³. Beside medical therapy general advices was given to all patients about the nutritional supplementation, avoidance of pre disposing factor, interruption of pre-medication if any and maintenance of hygiene. All parameters like blink rate, TBUT, TMH, Schirmer test value, Rose Bengal stain and BCVA showed significant improvement.

Of 12 cases who did not respond to 6 wks of medical therapy 4 cases underwent punctal occlusion showed improvement. Balaram M. et al in 2001¹⁴ suggested that punctal occlusion can be an effective step in the management of moderate to severe dry eye. i.e unresponsive to topical lubricant. Punctual occlusion alone can improve symptoms of 86% of dry eye within 6 month. Gilbard and associates¹⁵ retrospectively reviewed data on 29 eyes of 17 patients with period of follow up ranging from 1-42 wks after punctual occlusion and noted a decreased in a osmolarity of tear film in all eye and decreased Rose Bengal staining in 15 eyes. 5 cases of SJS 3 underwent AMG and 2 underwent release of symblepharon with placement of symbleharon shell. (Tsubota et al)¹⁶ reported that amniotic membrane was useful to surgical reconstruction of the ocular surface in advance ocular cicatricial pemphigoid and SJS. Shimazaki et al¹⁷ found that amniotic membrane promotes conjunctival epithelialization, prevent Keratinization and suppress fibrosis. 1 case underwent tarsorrhaphy. Tarsorrhaphy reduced exposed surface of eye thereby decreasing evaporation (Lemp M et al).¹¹

Conclusion:-

Dry eye syndrome are of multifactorial in its aetiology affecting all age groups. The dry eye syndromes should be diagnosed early and managed with lot of care and skill. This entity requires patience and prolonged management by the ophthalmologist and the patient has to struggle through out his life to retain the regained vision. The patients also requires a close follow up and clear instructions.

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