



A HOSPITAL BASED STUDY OF OCULAR MORBIDITIES IN TERTIARY CANCER CENTRE

Ophthalmology

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ABSTRACT

Introduction :- Ocular and Adnexal tumours are important causes of morbidity in India and Globally. Malignancies of the eye & adnexa are rare & account for only 0.2-0.8% of all human malignancies. However, there is wide variation in the characteristics of these malignancies among varying population groups. This study is an attempt to characterize these tumor in the Indian population. The purpose of this study was to know the percentage of ocular cancer at outpatient department of tertiary cancer centre & to know the commonest ocular cancer.

Materials And Methods:- This is a retrospective study conducted at Department of ophthalmology of tertiary cancer centre, done over a period from Aug 2015 to Aug 2018. All the patients who had attended ophthalmology OPD at tertiary cancer centre, were included in the study. We had done monthly survey & all these patients were divided into five categories as general ophthalmology, systemic oncology, follow up, ocular oncology & operative patients. The results were analyzed to know the percentage of ocular cancers & to know the commonest ocular cancer presenting to outpatient department of tertiary cancer centre.

Results:- Total no. of patients included in study were 4990. Out of 4990 (100%) patients the no. of ocular oncology patients were 546 (10.94%), systemic oncology patients were 853 (17.09%), General ophthalmology patients were 2784 (55.79%), follow up were 509 (10.20%) & operative patients (298) (5.97%). Out of 546 (10.94% of total) patients of ocular oncology, lid tumors were 125(47.34%), Ocular surface squamous neoplasia(OSSN) were 40 (15.15%), retinoblastoma were 31(11.74%), malignant melanoma were 7 (2.65%) & others were 61(23.10%).

Conclusions :- In our study , ocular morbidities presented at tertiary cancer care referral Centre, ocular cancer patients accounts for 10.94 % of which Lid tumors are the common (of all ocular tumors), followed by OSSN and retinoblastoma.

KEYWORDS

Ocular cancer, lid tumors, ocular surface squamous neoplasia (OSSN), retinoblastoma

INTRODUCTION:-

Ocular and Adnexal tumors are important causes of morbidity in India and Globally^[1]. Malignancies of the eye & adnexa are rare & account for only 0.2-0.8% of all human malignancies.^[2] Eye is one of the least frequent site of malignancies in human body.^[3] However, these cases of tumor of eye & adnexa are the more serious eye diseases, leading possibly to blindness & death. Although specific ocular tumor related studies are reported in the literature, study of all ocular malignancies are very few. Several countries including western & Asian have published reports on the epidemiology of ophthalmic malignancy. This information is very useful to clinicians as they diagnose & manage their patients. However, there is wide variation in the characteristics of these malignancies among varying population groups. The classic example would be the melanomas, which are reported as the most common primary intra-ocular tumors in Caucasians but which are rare in other population.^[3] Although ocular melanoma was presumed to be rare in Asians, precise population based on data are sparse. In Singapore, where majority of residents are Chinese, Malay & Indian, the most common eye malignancy was Retinoblastoma followed by melanoma and squamous cell carcinoma.^[4] Other studies from the Asian showed that non-pigmented eyelid tumors, such as basal cell carcinoma (BCC), squamous cell carcinoma(SCC) & Sebaceous gland carcinoma (SGC) are much more than malignant melanoma^[5].

This study is an attempt to characterize these tumor in the Indian population. The purpose of this study was to know the percentage of ocular cancer at outpatient department of tertiary cancer centre & to know the commonest ocular cancer.

MATERIALS & METHODS:-

This is a retrospective study conducted at department of ophthalmology of tertiary cancer centre in Aurangabad, Maharashtra region, done over a period from Aug 2015 to Aug 2018.

Ethical clearance was obtained from Govt. medical college & cancer hospital, Aurangabad, Maharashtra & there was adherence to the tenets of the declaration of Helsinki, during the study.

All the patients who had attended ophthalmology OPD at tertiary cancer centre Aurangabad, were included in the study. We had done monthly survey & all these patients were divided into five categories as general ophthalmology, systemic oncology, follow up, ocular oncology & operative patients. The results were analyzed to know the

percentage of ocular cancers & to know the commonest ocular cancer presenting to outpatient department of tertiary cancer centre, Aurangabad.

Patients with c/o mass in & around eye, forward bulging of eye, ocular pain redness, limitation of ocular movements, blurring of vision which specifically points towards tumors of eye & adnexa had confirmed tumor on biopsy/ Histopathology reporting were categorized as ocular oncology patients.

Patients with general ocular complaints such as Diminution of vision due to refraction or senile cataract or pterygium, viral Keratitis or retinopathy, other complaints such as watering, redness with no signs & symptoms of ocular or systemic oncology were categorized as General ophthalmology patients.

Patients in systemic oncology includes patients with other systemic cancer & on chemotherapy & radiotherapy who presented with ophthalmic complaints. Commonest ophthalmic complaints were dry eyes, headache, ocular muscle palsy, inability to close the eye, diminution of vision due to cataract & refraction.

Patients who had undergone any operative procedure as part of treatment were included in operative category.

Follow up / post-operative category patients includes operated patients of ocular tumors, radiation induced cataract, & other minor surgeries & came for follow up.

RESULTS:-

Total no. of patients included in study were 4990. Out of 4990 (100%) patients 2883 (57.77%) were females & 2107 (42.22%) were males. Mean age of presentation is 40.89 years (range from 1-87 years). Out of 4990 (100%) patients the no. of ocular oncology patients were 546 (10.94%), systemic oncology patients were 853 (17.09%), General ophthalmology patients were 2784 (55.79%), follow up were 509 (10.20%) & operative patients (298) (5.97%) Out of 546 (10.94% of total) patients of ocular oncology, lid tumors were 125(47.34%), OSSN were 40 (15.15%), retinoblastoma were 31(11.74%), malignant melanoma were 7 (2.65%) & others were 61(23.10%).

Table 1: Monthly & categorywise distribution of total patients (n=4990)

Month/category	GO	PO	OO	SO	Operative	Total
15-Aug	75	3	3	10	6	97
15-Sep	203	4	6	12	33	258
15-Oct	193	25	8	9	13	248
15-Nov	157	10	4	14	10	195
15-Dec	156	7	10	15	11	199
16-Jan	107	10	11	12	15	155
16-Feb	124	11	6	14	7	162
16-Mar	78	11	6	15	11	121
16-Apr	98	7	7	15	1	128
16-May	111	6	9	11	3	140
16-Jun	88	4	10	21	9	132
16-Jul	49	6	7	11	15	88
16-Aug	52	26	13	14	12	117
16-Sep	62	15	27	22	2	128
16-Oct	47	10	26	30	5	118
16-Nov	49	10	12	22	1	94
16-Dec	78	10	16	40	6	150
17-Jan	68	20	19	40	7	154
17-Feb	70	16	17	22	3	128
17-Mar	83	17	12	27	5	144
17-Apr	64	20	23	24	9	140
17-May	47	8	19	29	3	106
17-Jun	53	37	23	28	17	158
17-Jul	50	4	20	34	14	122
17-Aug	45	26	24	38	6	139
17-Sep	41	14	15	33	7	110
17-Oct	49	18	18	23	5	113
17-Nov	60	13	11	55	7	146
17-Dec	49	9	11	40	4	113
18-Jan	66	22	20	26	5	139
18-Feb	40	20	15	35	6	116
18-Mar	40	23	7	29	5	104
18-Apr	35	15	6	7	8	71
18-May	44	14	21	54	3	136
18-Jun	46	14	25	11	10	106
18-Jul	63	8	27	2	6	106
18-Aug	44	16	32	9	8	109
Total	2784	509	546	853	298	4990

GO=General Ophthalmology, PO=Post-operative, OO=Ocular Oncology, SO=Systemic Oncology

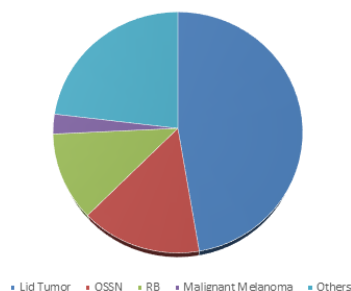
Table 2 : Categorywise distribution of total patients (n=4990)

Category	No.of pts	Percentage
General ophthalmology	2784	55.79%
Systemic oncology	853	17.09%
Follow up	509	10.20%
Ocular Oncology	546	10.94%
Operative	298	5.97%
Total	4990	100%

Table 3: Distribution of Ocular cancer (Ocular Oncology N=264)

Type of cancer	Percentage%
Lid tumor	47.34% (n=125)
OSSN	15.15% (n=40)
RB	11.74% (n=31)
Malignant Melanoma	2.65% (n=07)
others	23.10% (n=61)

Distribution of types of Ocular Cancer

**DISCUSSION:-**

In our study, 55.79% (n=2784) patients were of general ophthalmology. Commonest presentation were Diminution of vision due to refraction, senile cataract, pterygium, viral keratitis, and retinopathy.

17.09% (n=853) of patients were of systemic oncology presenting with ophthalmic complaints. Commonest ophthalmic complaints were dry eyes, headache, ocular muscle palsy or secondary metastasis. Some of them presented for Diminution of vision due to cataract & refraction.

Patients who were in need of operative procedure constitutes 5.97% (n=298). Commonest procedure performed were excision with or without reconstruction, enucleation, tarsorrhaphy, cataract surgery. 10.20% (n=509) patients followed regularly after operative procedure. Only 10.94% (n=546) of patients presented with ocular oncology. Commonest ophthalmic cancer in our study were lid tumors, OSSN, Retinoblastoma. Malignant melanoma, lymphoma, Ewing's sarcoma, lipoma, Kaposi's sarcoma were other ophthalmic cancer.

In our study three most common eye malignancies are lid tumors (47.34%), OSSN (15.15%), & Retinoblastoma (11.74%), which differs from the report from Taiwan^[4] — retinoblastoma (35.3%), melanoma (17.9%) and lymphoma (13.8%) and reports from Singapore^[5] — 53.6% of retinoblastoma, 19.2% of melanoma & 11.2% of squamous cell carcinoma. This also differs from the data of cancer registry in New York State^[6] — 70.4% of melanoma, 9.8% of squamous cell carcinoma. Also Study reports from Eastern Nepal^[6], showed that the most common primary malignancy was retinoblastoma (45.2%), and followed by BCC (22.6%) & SCC (17.9%) [12] These relative frequencies for histologic types varied widely between different ethnic populations.

In our study, Lid tumor are the commonest tumor contributing to 47.34% (n=125) of patients. This differs from study conducted in Singapore^[5] & Tamilnadu^[7], Koreans^[8] where the most common primary malignancy was retinoblastoma. This is in contrast to study conducted in Tamilnadu^[7], where lid tumor was the second most common ocular tumor^[7] [29%]

The incidence of eyelid swellings appears to be increasing,^[8] Resection of Eyelid malignancies leads to complex reconstructive problems due to the functional & aesthetic importance of an eyelid hence large no. of such cases are referred to our tertiary cancer centre.

OSSN was the second most common tumor in our study contributing to 15.15% of patients (n=40)

The term ocular surface squamous Neoplasia (OSSN) refers to a spectrum of epithelial squamous malignancies ranging from dysplasia to invasive squamous cell carcinoma^[9]. OSSN has reported worldwide incidence of 0.02 – 3.5 cases per 100,000 people^[10]. The average age of presentation is usually the sixth and seventh decades of life.

This is comparable to study conducted in Eastern Nepal by Thakur et al^[6] as SCC contributes to 17.9% of cases.

This differs from study conducted by Misra et al in rural India^[2], in which squamous cell carcinoma was the most common malignancy overall contributing to 38.04% of cases.

Ultraviolet spectrum could be a factor for high incidence of this tumor as a large number of persons work in the open sun, especially farmers & workers are exposed to it.

Study reports of Philippines by Rolando D et al^[3], squamous cell carcinoma was most frequent cancer of the conjunctiva accounting for 40.4% of all malignant conjunctival tumors followed by its precursor conjunctival intra-epithelial Neoplasia (CIN) 26.3%. Indirect – accounted for 4.25% of cases

According to Singapore^[5] study reports conjunctiva is the second most common subsite (12.8%) after retina (55.6%) OSSN accounted for 50% of cases of conjunctival tumors. [OSSN accounted for 7.2% of a cases] (Indirect)

Study reports of Madras by sunderraj P^[7], accounted for 26% cases of OSSN.

Retinoblastoma is the third most common tumour in our study, contributing to 11.74% (n=31) of patients.

This is in contrast to study conducted in Tamilnadu^[7] where retinoblastoma was the most common tumor accounting for 32% of cases. Study reports in rural tertiary eye care Centre in India by Misra et al^[2] Retinoblastoma accounts for 25% of total cases. Study reports from Eastern Nepal^[6] – retinoblastoma was the most common tumor contributing to 45.2%.

In this study all patients are up to 5 yrs. of age. This is comparable with study conducted in Singapore.^[5] The mean age of diagnosis in this study was 2yrs-. This is comparable to Singapore study i.e. 23 months.^[5]

Retinoblastoma is classically a disease of infancy & young children. Clinically it is also the most significant because it affects young children & leads to blindness & death if untreated.

Malignant Melanoma – contributes to 2.65 % (n=7) of all cases. Although malignant melanoma of the eye & periocular region is very rare among Indian population, we came across 7 cases of total (2.65 %) during the study period. All cases are of intraocular origin & confirmed as choroid melanoma after histopathology examination.

This differs from study reports in Taiwan^[4] - melanomas 17.9%. Our study also differs from other study reports-Singapore^[5], 19.2% of melanoma, & data of cancer registry in New York State^[6] – 70.4% of melanoma. Reports of study in a Rural Indian tertiary Eye care center by Misra et al^[2] – malignant melanoma contributes to 7.6% of cases.

Ocular melanoma mostly affects white individuals or lightly pigmented individual & rarely occurs among Asians, black & Hispanic population^[4]. Melanomas are much more prevalent in Caucasian populations & are rare in more pigmented individuals.

As compared to western population, the frequency of melanoma as one of the most common eye malignancies was relatively lower in present study. It is interesting to consider why Asians may be more protected from ocular melanoma. While increased exposure to ultraviolet light has been found to be associated with an increase in cutaneous melanoma the evidence for uveal melanoma is still not clear. Nevertheless, the protection of increased pigmentation has been hypothesized to explain the less risk to ocular melanoma in darkly pigmented people when compared with white people.

In our study, in ophthalmic malignancy other cases contributes to 23.10 % (n=61) cases which includes cases of cysts, nevus, papilloma, dermoid, lymphoma and various other ocular and periocular lesions.

The presentation of ocular & periocular cancers is generally late due to casual attitude of patients, along with the lack of awareness, poverty & ignorance, especially in rural India. Lack of eye care services & improper management at primary & secondary levels make them to the risk of losing, not just their vision but also their life.

CONCLUSION:

In our study, ocular morbidities presented at tertiary cancer care referral Centre, ocular cancer patients accounts for 10.94 % of which Lid tumors are the common (of all ocular tumors), followed by OSSN and retinoblastoma.

According to American Cancer Society, Ophthalmic cancer is rare cancer. Incidence rate is 1 per 100000 population. 73% of ocular cancer are local. In our study, Magnitude of ophthalmic cancer is 10.94%. This is due to limited study population patients.

One key to positive outcome is to catch it early, i.e. early diagnosis and early treatment. According to our study, low incidence is due to lack of awareness, low socio-economic status, and lack of data to drive cancer policies.

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