

Recurrence of Eyelid Malignancy with Frozen Section Guided Surgery and Surgery without Frozen Section Guidance in a Tertiary Level Hospital

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A cross sectional type of descriptive study was conducted in the department of Oculoplasty, National Institute of Ophthalmology and Hospital, Sher-E-Bangla Nagar, Dhaka for a period of two years from 1st January 2010 to 31st December 2011. In this study a total of 90 patients were evaluated and encountered three types of eyelid malignancies - Basal cell carcinoma (BCC), sebaceous gland carcinoma (SGC) and squamous cell carcinoma (SCC). A total of 45 patients underwent frozen section guided surgery selected as case and 45 cases underwent excision surgery without frozen section guidance with 4 mm normal healthy tissue. BCC were found 40 cases (44.4%), SCC were in 28 cases (31.1%) and SGC were in 22 cases (24.5%) of 90 eyelid malignancies. The mean age were 62.4, 63.4 and 58.9 of BCC, SCC and SGC respectively. Male patient were 60% and female were 40%. Right eye was affected in 55.6% patients, and 44.4% patient had affected left eye. Lower eyelid was more affected by BCC (67.5%) and SCC (60.7%), upper eye lid was more involved in SGC (50.0%). Pigmented lesion was to be higher in the 70% patient of BCC. BCC was clinically diagnosed in 72.7% patient. The recurrence rate of eyelid malignancies following one year of frozen section guided surgery were in 02.5% of BCC and 3.6% of SCC and following excision surgery were in 10% of BCC, 10.7% of SCC and 9.1% of SGC. The recurrence rate of eyelid malignancies were less in frozen section guided surgical excision.

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Key words: Basal cell carcinoma (BCC), Squamous cell carcinoma (SCC), Sebaceous gland carcinoma (SGC), and Frozen section biopsy (FSB)

Introduction

Eyelid malignancies are relatively common lesion of eye. Most lesions, benign or malignant arise from superficial layer of skin. The malignant lesion most frequently affecting eyelids are basal cell carcinoma, squamous cell carcinoma, sebaceous gland carcinoma and melanoma. Only 15% to 20% periocular lesions are actually malignant. The most common is basal cell carcinoma. One study in Bangladesh basal cell carcinoma was 45%, sebaceous gland carcinoma is 30%, squamous cell carcinoma is 25%.¹

Basal cell carcinoma occur most frequently on lower eyelid and medial canthous. In one study, tumour distribution is as follows; lower lid 59%, medial canthous 27%, upper eyelid 12%, lateral canthous 8%. In another study distribution as follows; lower lid 66%, medial canthous 13%, upper eyelid 16%, lateral canthous 3%. The most dangerous basal cell carcinoma in medial canthous because can extend into orbit and sinus. It is locally malignant, do not metastasize. Complete excision is treatment of choice and margin control is required. Basal cell carcinoma

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requires frozen section examination of surgical margins or Mohs microscopic surgical technique for adequate excision. A total of 200 cases of basal cell carcinoma treating with frozen section technique overall recurrence is 1% with mean follow up of 3.9 years.² In another study, 106 patients with basal cell carcinoma excised with frozen section control, there were no recurrence reported after a mean follow up of 2.9 year.³ To assess recurrence of basal cell carcinoma of eyelid after resection with or without intraoperative frozen section control, 165 patient a 5 year follow up there was no recurrence in frozen section control group and 3 recurrence without frozen section control group.⁴ In most cases reconstruction need to be done shortly after the tumour has been removed.⁵

Squamous cell carcinoma is more aggressive in nature and second most common malignancy of eyelid. It may arise spontaneously or from solar injury and actinic keratosis and they may potentiate by immunodeficiency. It can metastasize through route like direct extension, blood born metastasize or through lymphatic transmission .It occur in elderly individual with a fair complexion and with history of chronic sun exposure and skin damage. Sebaceous gland carcinoma is highly malignant tumour arise from meibomian gland of tarsal plate, from gland of Zeis, in the skin of eyelid and sebaceous glands of caruncle. It is 1% of eyelid malignancy. Unlike basal cell carcinoma and Squamous cell carcinoma occur most frequently in elderly with predilection for female.⁶ Tumour most commonly occur in upper eyelid as there is meibomian gland is more numerous. It is usually misdiagnosed as chalazion.

Methods

This cross sectional type of descriptive study was conducted in the department of

oculoplasty, National Institute of Ophthalmology and Hospital, Sher-E-Bangla Nagar, Dhaka for a period of two years from 1st January 2010 to 31st December 2011. Patients with eyelid mass/growth or ulcer irrespective of age and sex attending in the oculoplastic clinic of National Institute of Ophthalmology & Hospital. A total of 90 patients with eye lid malignancy were included in this study

Results

Basal cell carcinoma was found to be most common type of malignancy (44.4%) in 90 cases studied (Table I). Highest number of the patients was in age group of 61-70 years (Table II). Comparison of mean age of different types of cancer is shown in the table III. The difference of mean age is not significant. Frequency of SCC and BCC is more in male than in female. But female were more affected by SGC (Table IV).

Table I: Distribution of patients by the types of malignancies

Type	Number of patients	%
Basal cell carcinoma	40	44.4
Squamous cell carcinoma	28	31.1
Sebaceous cell carcinoma	22	24.5
Total	90	100.00

Table II: Distribution of patients by the types of malignancies

Age (year)	BCC (n=40)		SCC (n=28)		SGC (n=22)	
	n	%	n	%	n	%
≤40	1	2.5	2	9.1	2	9.1
41-50	5	12.5	4	14.3	2	9.1
51-60	7	17.5	4	14.3	5	22.7
61-70	14	35.0	10	35.7	7	31.8
71-80	8	20.0	5	17.9	3	13.6
81-90	5	12.5	3	10.7	1	4.5

Table III: Comparison of age groups with the Mean age \pm SD

	BCC (n=40)		SCC (n=28)		SGC (n=22)		P value
	Mean	\pm SD	Mean	\pm SD	Mean	\pm SD	
Age in years	62.44	\pm 12.41	63.36	\pm 16.65	58.85	\pm 11.77	0.014

Table IV: Gender distribution of eyelid malignancies

Gender	BCC (n=40)		SCC (n=28)		SGC (n=22)		P value
	n	%	n	%	n	%	
M	24	60	18	64.3	8	36.4	0.107
F	16	40	10	35.7	14	63.6	

Patients with occupation of household duties were more affected by all three types of eye lid malignancies (table V). BCC and SCC were more affected in lower lid. But SGC were more common in upper eye lid (Table VI). BCC were more among pigmented lesions (Table VII). Characteristics of eye lid malignancies, margin architecture and surgical procedure applied are shown in the table VIII, IX and X, respectively.

Table V: Distribution of occupational status of the study patient

Occupation	BCC (n=40)		SCC (n=28)		SGC (n=22)		P value
	n	%	n	%	n	%	
Household duties	20	50.0	09	32.1	10	45.5	0.973
Service holder	08	20.0	08	28.6	4	18.2	
Farmer	04	10.0	05	17.9	2	9.1	
Businessman	04	10.0	03	10.7	4	18.2	
Day labour	04	10.0	03	10.7	2	9.1	

Table VI: Location of the eyelid malignancy

Location	BCC (n=40)		SCC (n=28)		SCG (n=22)		P value
	n	%	n	%	n	%	
Upper eyelid	8	20.0	6	21.4	11	50.0	0.014
Lower eyelid	27	67.5	17	60.7	5	22.7	
Upper plus lower eye lid	5	12.5	5	17.9	6	27.3	

Table VII: Distribution of the colour of the lesion

Colour of the lesion	BCC (n=40)		SCC (n=28)		SGC (n=22)		P value
	n	%	n	%	n	%	
Pigmented	28	70.0	05	17.9	07	31.8	0.001
Non pigmented	12	30.0	23	82.1	15	68.2	

Table VIII: Characteristics of lesion of the eyelid malignancies

Types of lesion	BCC (n=40)		SCC (n=28)		SGC (n=22)		P value
	n	%	n	%	n	%	
N	16	40.0	05	17.9	11	50.0	0.0
N	16	40.0	08	28.6	0	0.0	
S	08	20.0	06	21.4	06	27.3	
U	0	0.0	09	32.1	05	22.7	

Table IX: Distribution of lid margin architecture

lid margin architecture	BCC		SCC		SCG		P value
	n	%	n	%	n	%	
Intact	12	30.0	08	28.6	06	27.3	0.973
Distorted	28	70.0	20	71.4	16	72.7	

Table X: Distribution of surgical procedure

Surgical procedure	Number of patient	Percentage
Excision surgery	45	50.0
Frozen section guided surgery	45	50.0

Comparison of clinical diagnosis and confirmed diagnosis is shown in the table XI. Rate of recurrence is shown in table XIIIa and recurrence rate following one year of surgery is shown in the table XIIIb.

Table XI: Comparison of clinical and confirmatory diagnosis of eyelid malignancies

Clinical diagnosis	Confirmed diagnosis					
	BCC (n=40)		SCC (n=28)		SCG (n=22)	
	n	%	n	%	n	%
BCC	36	90.0	03	10.7	04	18.2
SCC	0	0.0	22	78.6	02	09.1
SGC	3	7.5	03	10.7	16	72.7
Melanoma	1	2.5	0	0.0	0	00.0

Table XIIIa: Recurrence rate following one year of surgery

Types of surgery performed	BCC		SCC		SGC	
	No	%	No	%	No	%
Frozen section guided surgery	01	02.5	01	3.6	00	00.0
Excision surgery	04	10.0	03	10.8	02	9.1

Table XIIIb: Recurrence rate following one year of surgery

	Group 1		Group 2		P value
	n	%	n	%	
Recurrence Yes	2	4.4	9	20.0	0.024
Recurrence No	43	95.6	36	80.0	

The recurrence rate following one year of surgery frozen section guided surgery (group 1) were in 4.4% and the recurrence rate of eyelid malignancy following 1 year of excision surgery (group 2) were in 20.0%. The difference was statistically significant (p value =0.024) between two groups in chi square test.

Discussion

This study evaluated the recurrence rate of eyelid malignancy after frozen section guided surgery and surgery without frozen section

guided among the eyelid malignancy and was conducted in oculoplasty clinic of National Institute of Ophthalmology and Hospital, Dhaka, from January 2010 to December 2011.

Among the ninety (90) patient 40 (44.4%) accounts for basal cell carcinoma, 28(31.1%) accounts for squamous cell carcinoma and 22 (24.5%) accounts for sebaceous gland carcinoma. The global distribution of eyelid malignancies varies from western hemisphere to Asian area. Basal cell carcinoma accounts for 90-95 % of all eyelid malignancies. Squamous cell carcinoma and sebaceous gland carcinoma make up for less than 10%. However in china the incidence seems to be close to 50%.⁵ In a report from Korea, basal cell carcinoma as 36.8%, squamous cell carcinoma as 10.5% and sebaceous gland carcinoma was reported as 42.2%.⁷ sebaceous gland carcinoma accounts for fewer than 1% of all eyelid malignancies and 1.5% to 5% of eyelid neoplasms in the united states.⁸

The result provides evidence in favour of a higher proportion of SCC (25-40%) and SGC (20-40%) in Asian population and lower proportion (30-50%) of BCC in Asia rather than western countries. In countries like the USA and Australia, the rate of SGC is reported to be 1.5% and 3.8 % respectively.

The age of the patients in this study ranged from 33 years to 90 years. The age range of BCC, SCC, SGC was 37 to 90 years, 33 to 90 years, 34 to 80 years respectively. It was found that 47 (52.22%) patient were in the range of 51 to 70 years. In this age group, BCC was 21 cases (52.5%), SGC was 12 cases (54.5%) and SCC was 14 cases (50%) of total case. Among the cases of basal cell carcinoma, 6 (15%) patient was in ≤ 40 to 50 years of age group, 13(32.5%) patient was in 71 to 90 years of age group and 21(52.5%) was in 51 to 70 years of age. In the cases of Squamous cell carcinoma, 14 (50%) patient

was in 51 -70 years of age. In the cases of Squamous cell carcinoma, 14 (50%) patients was in 51 -70 years age range, 6 (21.40%) cases was in ≤ 40 to 50 years and 08 (28.4%) cases was in 71 to 90 years of age range. In the cases of sebaceous gland carcinoma, 04 (18.2%) was in ≤ 40 to 50 years of age group, 12 cases (54.55%) in 51 -70 years of age group and 04 cases (27.2%) was in 71 to 90 years of age group. There was no patient with eyelid malignancy below 33 years of age. The malignant tumours of the eyelid were most frequently present in fifth to ninth decades of life. In this study, the mean age of eyelid malignancy was 62.05 years. The mean age were 62.44, 63.36, 58.85 in basal cell carcinoma, squamous cell carcinoma and sebaceous gland carcinoma.

This study evaluated the gender distribution of study subject. Male patient were evaluated which was 50 (55.6%) and female were 40 patient (44.4%). Among the cases of basal cell carcinoma, male were 24 (60%) and female were 16 (40.0%). Among the cases of squamous cell carcinoma, male were 18 (64.3%) and female were 10 (35.7%). In the cases of sebaceous gland carcinoma, male were 8 (36.4%) and female were 14 (63.6%).

Female patient were more predictable for SGC. Male patients were more presented with BCC and SCC. There was no statistically significant sex difference between the patients of different types of lid malignancy. Another study done by Kadir SM (2008) mentioned that male and female patients were equally affected in his study.⁹

This study reflected the distribution of occupational status among the study patient. Out of 90 patients, highest 39 (43.3%) cases had household duties as occupation, 20 (22.2%) patients were service holder, 11 (12.2%) patients were farmer, 11 (12.2%) patients were businessman and 09 (10.0%)

patients were involved in day labour. In 40 cases of BCC, 50% were household duties, 20% were service holder, 10% were equally in farmer, day labour and businessman as occupation. In 28 cases of SCC, 32.1% were household duties, 28.6% were service holder, 17.9% were farmer, day labour and businessman were equally in 10.7% cases. The exact cause of eyelid malignancy in household occupation is not yet known. Kadir SM (2008) study shows the more affected occupation of lid malignancy were household duties.⁹

In our study, there is mild predilection for the side of the eyelid involvement. Out of 90 patients, right eyelid was affected in 50 (55.6%) patient, and 40 (44.4%) patient was affected left eyelid. Right eyelid was involved in 23 (57.5%) patients of BCC, in 12 (42.9%) cases of SCC and 15 (68.2%) cases of SGC. Left eyelid was affected in 17 (42.5%) patients of BCC, in 16 (57.1%) patient of SCC and in 7 (31.8%) patient of SGC. In Jahagirder et al (2007) study, the tumour distribution was as follows: right side 53.85 % and left side 46.85%. Right side was more involved in BCC 58.33% and SGC 70.0%. In left side 100% involved in SCC cases.

Upper eyelid was in 25 (27.8%) patients, lower eyelid was involved in 49 (54.4 %) cases and only 16 (17.8%) patients were affected with both upper and lower eyelid. Lower eyelid was more affected by basal cell carcinoma, upper eyelid was more affected by sebaceous gland carcinoma.

This study observed that 26 (28.9%) patient were found with intact lid margin architecture and most of the patient (64 patient) distorted their lid margin architecture. Among the patients of BCC, most of the patients (28, 70%) distorted their lid margin architecture and lid margin architecture was intact in (12, 30%) patients. In the case of SCC, lid margin architecture was intact in 8 (28.6%) cases and lid

margin architecture was lost in 20 (71.4%) cases. In the case of SGC, lid margin architecture was lost in 16(72.7%) cases.

In this study, malignant tumours of the eyelid were clinically diagnosed. All tumours were biopsied and the histopathological results were compared with the clinical diagnosis. In most cases the clinical diagnoses were correct. The diagnoses were confirmed after meticulous histopathological examination with correlation of clinical finding. Among 43 clinically diagnosed patients of basal cell carcinoma, 36 patients were BCC, 4 patients were SGC, and 3 patients were SCC. In the 24 clinically diagnosed patients of SCC, 2 patients were SGC, 22 patients were SCC. In the 22 clinically diagnosed patients of SGC, 03 patients were BCC, 16 patients were SGC, and 3 patients were SCC. Basal cell carcinoma was clinically diagnosed in 90% patients, squamous cell carcinoma was clinically diagnosed in 78.6% patients and sebaceous gland carcinoma was clinically diagnosed in 72.7% patients.

We evaluated the recurrence rate after surgical management of eyelid malignancies. The recurrence rate was more in surgery without frozen section guided. Frozen section control surgery limits the recurrence rate to very low. In this study, recurrences occur in 2 cases (4.4%) after one year of frozen section control surgery and 9 cases (20%) following one year of excision surgery.

Conclusion

Basal cell carcinoma, squamous cell carcinoma and sebaceous gland carcinoma are common malignancies of the eyelid. Surgery is the treatment of choice which can be done either by simple excision or frozen section guided excision. In simple excision recurrence rate is high where as in frozen section guided surgery it is significantly reduced or absent and also easy postoperative reconstruction with maximum preservation of normal eyelid tissue. Therefore, the choice of surgical excision is frozen section guided because recurrence rate is very low or absent if surgery is done meticulously. It is universally accepted procedure although facilities of frozen section biopsy not available in every hospital in our country accept few. Though it is mandatory in

every case of eyelid malignancies to prevent life threatening recurrence and distant metastasis. We should establish frozen section centre in every medical college of our country at affordable cost and thereby saving precious lives.

References

1. Haider G, Ali SM, Shahabuddin M et al. (2003). Management of lid malignancy An Evaluative study, Tran,S Opthal. Soc of Bangladesh, Dhaka , Vol 30 , no.1, pp. 4-46.
2. Levin F, Khalil M, McCormick SA et al (2009). Arch ophthalmoi, Aug 127 (8), 1111-15
3. Holbach LM, Juneman A, Muhammad S (1998). Surgical management of periocular basal cell carcinoma using frozen section control and immediate plastic reconstruction – indications and method in 106 patient . Klin Monb Augenheiked , Nov ; 203 (5); 278-83.
4. Conway RM, Themel S, Holbach LM (2004). Surgery for primary basal cell carcinoma including the eye lid margins with intra-operative frozen section control: Comparative interventional study with a minimum follow up of 5 years. Br J Opthal. 88: 236- 238.
5. Older JJ (ed). (2003). Eyelid Tumours – Clinical Diagnosis and Surgical Treatment, Second edition, Manson publishing , Spain , pp. 14-35.
6. Jack J Kanski (2007). Clinical Ophthalmogy; Sixth edition, Butter Worth – Ilenemann Elsevieer, Ediinburg, pp. 109-117.
7. Jeong S; Yang KJ and Park YG (1999), Extensive destruction of the eyeball by invasion of basal cell carcinoma of the eyelid, Jpn . J. Ophthalmol, Vol 43, no. 4, pp. 300-302.
8. Roger GM (2000). Sebaceous carcinoma of the eyelids, Ophthalmology, pp. 112-124.
9. Kadir SM 92008). Eyelid malignancies: A Clinicopathological Study, MS (Ophthalmology) Thesis, Dhaka university, pp. 3-36.
10. Jahagirder SS, Tusher P, Satish M, ET AL. (2007). A Clinicopathological Study of eyelid malignancies from central India, I J O, vol . 55 pp. 109-113.