Ocular Surface Squamous Cell Papilloma Seen in a Tertiary Institution; In South-South, Nigeria

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ABSTRACT

Ocular surface squamous cell papilloma can mimic a malignant lesion clinically, hence the need for prompt and accurate histopathological diagnosis. Ocular surface squamous cell papilloma with dysplastic histologic features that may give rise to its malignant counterpart has been documented. In spite of this, we observe that there is a dearth of research in Nigeria that is focused exclusively on ocular surface squamous cell papilloma. This study aimed to determine the frequency of ocular surface squamous cell papilloma (OSSP) amongst ocular surface squamous cell tumours (OSSTs) at the University of Benin Teaching Hospital over an eighteen-year period. This was a retrospective study of all cases of OSSP histologically diagnosed over an 18-year period at the Department of Anatomic Pathology, University of Benin Teaching Hospital. The results showed that the OSSP accounted for 27.3% of OSSTs. The median duration of diagnosis OSPP was 29 years with an interquartile range (IQR) of 16 to 42 years while the peak age of diagnosis of OSSP was in the 3rd decade. The sexual predilection was in favour of males. Ocular squamous cell papilloma accounted for about one-third of OSSTs with males being more affected.

Keywords: Ocular Surface Squamous Cell Papilloma, Ocular Surface Squamous Cell Tumours, Ocular Surface Squamous Cell Neoplasia, University of Benin Teaching Hospital

INTRODUCTION

Pathologies encompassing trauma, degenerative, inflammatory, and neoplastic (which includes but not limited to ocular surface squamous tumours) disorders can impact any of the orbito-ocular system's several components, this can ultimately lead to blindness of the affected individuals[1]. Visual impairment has significant financial costs associated with them, in addition to lowering lives quality.[2] Ocular surface squamous tumours can progressively increase in size if left untreated with the potential of causing blindness when the tumour invades the anterior chamber and other portions of the ocular globe.[3, 4]

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The tumours arising from the ocular surface epithelium comprise the benign squamous cell papillomas to the ocular surface squamous neoplasia which in-turn consist of dysplastic epithelial lesions, conjunctival intraepithelial lesions and squamous cell carcinomas.[4-6] Ocular surface squamous cell papillomas are relatively common tumours of the ocular surface squamous epithelium. Although benign, and characteristically presents as papillomatous lesion clinically, they have a tendency for recurrence even after complete excision.[5, 7] Less frequently they contain dysplastic foci and papillary carcinoma can arise from ocular surface epithelium with secondary papillomatous change.[5] These somewhat overlapping benign and malignant clinical presentation and or dysplastic histologic features have brought this tumour to fore, hence the need for accurate histopathological diagnosis. This should pose a concern for the ophthalmologist and pathologist more-so that the treatment and or follow-up modalities for benign lesions vary in

comparison to the malignant counterpart. Despite this, we notice the scarcity of research work devoted solely to ocular surface squamous cell papilloma in Nigeria. Previous studies on ocular lesions in our environment in particular and Nigeria in general were on either malignant lesions or a spectrum of orbito-ocular lesions.[1, 8-17] This pattern is similar to studies done in in Ghana, Sudan, Congo, Nepal and Indian.[18-24] The aim of this study was therefore to determine the frequency of ocular surface squamous cell papilloma (OSSP) amongst ocular surface squamous tumours (OSSTs) or ocular surface squamous cell neoplasia (OSSN) at the University of Benin Teaching Hospital over an eighteen-year period. This will provide the baseline data for OSSP in OSSTs in this environment.

MATERIALS AND METHODS

This was a retrospective study of all ocular surface squamous cell papilloma diagnosed histologically between January 2005 and December 2022 in the Department of AnatomicA Pathology, University of Benin Teaching Hospital. All other secondary and primary healthcare facilities in the Edo and Delta sub-region, as well as those outside of it, particularly in the states that make up its catchment area—Ondo, Kogi, and Anambra—refer patients to this hospital.[25]

Information for this study was obtained from the surgical pathology registers, histology request cards, duplicate copies of histology reports, haematoxylin and eosin-stained slides and stored paraffin embedded tissue blocks stored in the departmental archives. The surgical pathology register, histology request form and duplicate copies of the histology report were useful in providing information on the age, sex, nature of specimen, hospital number, histology laboratory number, clinical presentation and clinical diagnosis of each case. Histology slides were retrieved, reviewed under the light microscope and the diagnosis recorded against the corresponding patient's name on a data spread sheet. The data obtained from this study was analyzed using the statistical package for social sciences version 20 (IBM Corp; New York). Ethical approval was obtained from the Ethics and Research Committee of the University of Benin Teaching Hospital.

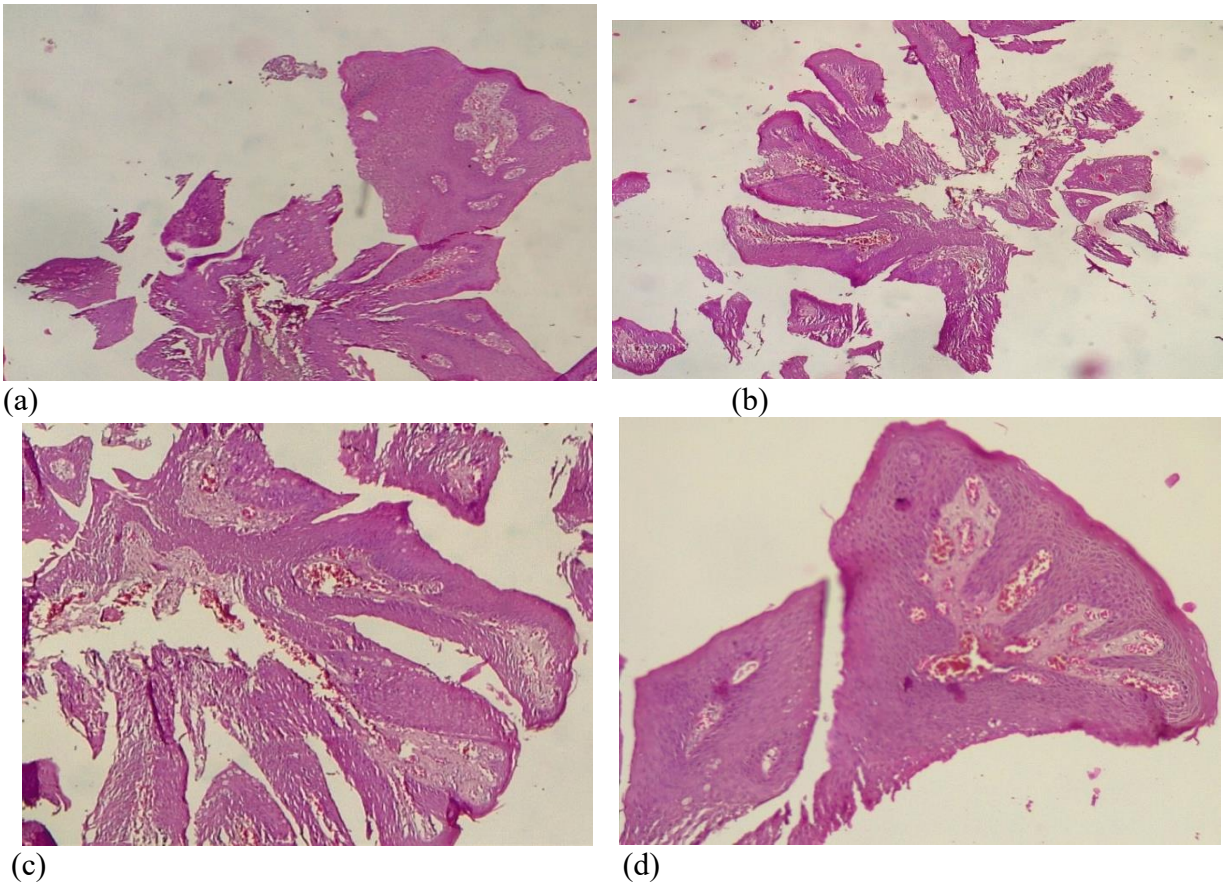
RESULTS

During the 18-year study period, a total of 255 orbito-ocular lesions were diagnosed for various lesions. Off these, 77 cases were OSSTs while 21 cases were OSSPs. The latter lesion accounts for 8.2% and 27.3% of orbito-ocular lesions and ocular surface squamous cell tumours respectively during the period under review. Twelve (57.1%) cases occurred in males while 9 (42.9%) cases occurred in females giving a male to female ratio of 1.3:1. Two of the males had no documented age. Table 1 shows the age and sex distribution of squamous cell papilloma. The median duration of diagnosis of OSSP was 29 years with an interquartile range (IQR) of 16 to 42 years. The peak age of diagnosis of OSSP was in the 3rd decade. Figure 1a-d shows photomicrographs of squamous cell papilloma at different magnifications. The lesion (Figure 1a-d) at the microscopic level is seen at different magnifications to consist of papillae of different sizes that are lined by bland stratified squamous non-keratinizing epithelial cells. These epithelial cells are seen surrounding fibrovascular cores.

Table 1; The age and sex distribution of ocular surface squamous cell papilloma

	*Sex		
*Age group	Male(%)	Female(%)	Total(%)
0-9	0(0)	3(15.8)	3(15.8)
20-29	3(15.8)	3(15.8)	6(31.6)
30-39	1(5.3)	2(10.5)	3(15.8)
40-49	2(10.5)	1(5.3)	3(15.8)
50-59	2(10.5)	0(0)	2(10.5)
60-69	2(10.5)	0(0)	2(10.5)
TOTAL	10(52.6)	9(47.4)	19(100.0)

*Age group: for the specified age group and corresponding sex
*Sex: for the specified sex with corresponding age group



(a) (b) (c) (d)

Figure 1 showing ocular surface squamous cell papilloma consisting of fibrovascular core surrounded by squamous epithelial cells. Haematoxylin and Eosin stain. (a) and (b) x 40 magnification, (c) x 100 magnification and (d) x 400 magnification.

DISCUSSION

Ocular problems are a significant contributor to morbidity and death in Sub-Saharan Africa, as well as a major health concern.[6] The University of Benin Teaching Hospital acts as a referral facility for all other secondary and primary health care facilities in the Edo and Delta sub-regions, as well as places within its catchment area. Although the data generated from ocular surface specimens received in the Department of Anatomical Pathology may be regarded as a representative indicator of the patterns of surface squamous neoplastic lesions in this part of the country.[6]

Many diseases impact the eye, OSSP being one of them.[26] This lesion is typically seen as a pedunculated mass clinically. It may be mixed-up clinically with ocular squamous cell carcinoma. It is seen at the microscopic level as benign fronds of benign epithelium enclosing cases of fibrovascular tissue.[26, 27]

In this study, OSSP accounted for 27.3% of OSSTs. This is comparatively similar to the findings of most previous studies done in Nigeria, and it falls within the values of the reference range (21.2%% to 44%) from these previous studies.[1, 8, 9, 11, 16] In contrast to the finding of this study, Silas *et al* from Jos, Nigeria and Ackuaku-Dogbe from Ghana reported much lower percentages (9%-10.1%) of OSSP in OSSTs.[24, 28] Silas *et al* carried out a 10 year retrospective study on the pattern of ocular surface lesions seen in Jos while this study spanned a period of 18 years.[28] The difference in the durations of these studies may have accounted for the much lower percentage of ocular squamous cell papilloma in the study by Silas et al, in comparison with this study. The lower percentage of OSSP in Ackuaku-Dogbe's research work was attributed to the policy of taking biopsies of any suspicious ocular surface lesion.[24] This led to a spike in the premalignant and malignant ocular surface squamous cell neoplasia on the one hand, and on the other hand there was a reduction in the percentage of OSSP in the pool of ocular surface squamous cell neoplasia.[24]

In this study, a male gender predilection was observed. This is in contrast to the findings of Silas *et al* (Jos) and Oghre *et al* (Benin City).[28, 29] This gender predilection may be attributed to the durations of these studies.[28, 29] In addition, it may be a change of the gender trend of this lesion since the study by Oghre *et al* was carried out in the late 90's and early 2000 over a 4-year and 10months duration in the same locality as this study.[29] This change in trend over a long duration may just reflect the true role of the male gender in the development of OSSTs. This is so because male gender amongst other risks factors which include but not limited to; exposure to ultraviolet light, advancing age, smoking and infection with human papilloma virus (a member of the papillomaviridae family of viruses).[30] The low risk serotype of the human papilloma virus infects the ocular surface and has been found in the tumour especially in young individuals.[1, 4, 5, 9, 26] The DNA hybridization studies have demonstrated this virus (HPV) in ocular papillomas.[27]

A limitation of this study is the paucity of data from similar studies for comparison. It is our expectation that this study will in no small measure open the doors for future research to be carried out on OSSPs bearing in mind that it can recur after excision and thus mimic a malignant lesion clinically on the one hand, and on the other hand it has the potentials of becoming dysplastic, and may progress to carcinoma.

In conclusion, OSSPs constituted approximately one-third of the ocular surface squamous cell tumours and males were more affected than the females. There is the possibility that some of these tumours may recur thereby mimicking a malignant lesion in its clinical presentation while others may show microscopic features that ranges from dysplastic epithelial changes to squamous cell carcinoma. Thus, it is imperative that an

individual with OSSP should be closely followed up after possibilities of recurrence with or without dysplastic and or malignant changes.

REFERENCE

1. Charles N, James E. A study of the histopathologic pattern of orbito-ocular disease in a tertiary Hospital in Nigeria. Sahel Medical Journal. [Original Article]. April 1, 2014; 17: 60-4.
2. Resnikoff S, Pascolini D, Etya'ale D, Kocur I, Pararajasegaram R, Pokharel GP, Pokharel GP, *et al*. Global data on visual impairment in the year 2002. Bull World Health Organ 2004; 82:844-51.
3. Aghogho Akpe B, Ernest Omoti A, Temitope Iyasele E. Histopathology of ocular tumor specimens in Benin City, Nigeria. Journal of ophthalmic & vision research 2009; 4: 232-7.
4. Rosai, J. Rosai and Ackerman's Surgical Pathology. Elsevier, New York, USA. 2004
5. Goldblum, JR, Lambs, LW, McKenney, JK, Myers, JL. Rosai and Ackerman's Surgical Pathology. Elsevier, New York, USA. 2018 .
6. Kayoma DH, Imasogie DE. Histopathological pattern of Orbito-Ocular Lesions, a retrospective hospital-based study spanning 15 years. African Health Science. 2021; 22(3): 211-21.
7. Rosai J. Rosai and Ackermann's Surgical Pathology, 10th ed, London: Elsevier; 2011.
8. Umar A, Ochochia O, Iliyasu Y. A pathologic review of ophthalmic tumors in Kano, Northern Nigeria. Niger J Basic Clin Sci 2012; 9: 23-6.
9. Onwubuya IM, Owoyele TM, Olaofe OO, Ezike KN. Morphological Spectrum of Orbitoocular Diseases in a Tertiary Health Centre in Keffi, North Central Nigeria. Advances in Medicine. 2015.: Article ID 619414. Available at https://doi.org/10.1155/2015/. Last viewed on 25th December, 2020.
10. Mohammed A, Ahmed SA, Ahmedu NE, Maisamari JS. Orbito-Ocular Malignant Tumours in Zaria, Nigeria: A 10-Year Review. Annals of African Medicine. 2006; 5: 129-31.
11. Chuka-Okosa CM, Uche NJ, Kizor-Akaraiwe NN. Orbito-ocular neoplasms in Enugu, South-Eastern, Nigeria. West Afr J Med. 2008; 27(3): 144-7.
12. Chinda D, Samalia M, Abah E, Garba F, Rafindadi A, Adamu A. A clinico-pathological study of orbito-ocular tumors at Ahmadu Bello University Teaching Hospital, Shika-Zaria, Nigeria: A 5-year review. Clinical Cancer Investigation Journal. 2012 July 1, 2012; 1: 145-7.
13. Bekibele C, Oluwasola A. A clinicopathological study of orbito-ocular diseases in Ibadan between 1991-1999. African journal of medicine and medical sciences. 2003; 32: 197-202.
14. Anunobi CC, Akinsola FB, Abdulkareem FB, Aribaba OT, Nnoli MA, Banjo AA. Orbito-ocular lesions in Lagos. Niger Postgrad Med J. 2008 15 :146-51.
15. Aligbe JU, Igbokwe UO, Akang EE. Histopathology of orbito-ocular diseases seen at University of Benin Teaching Hospital, Benin City Niger Postgrad Med J 2003; 10(1): 37-41.
16. Aghogho Akpe B, Ernest Omoti A, Temitope Iyasele E. Histopathology of ocular tumor specimens in benin city, Nigeria. Journal of ophthalmic & vision research. 2009; 4(4): 232-7.

17. Fasina O. Ocular surface squamous neoplasia in Ibadan, Nigeria Asian J Oncol. 2015: 01-5.
18. Poso M, Mwanza JC, Kayembe DL. Malignant tumours of the eye and adnexa in Congo-Kinshasa J Fr Ophthalmol. 2000; 23: 327-32.
19. Malik MO, El Sheikh EH. Tumours of the eye and adnexa in the Sudan. Cancer. 1979; 44: 293-303.
20. Kafle SU, Singh M, Kafle PA, Bal Kumar KC, Yadav SK, Anadi Khatri KC. Clinico-histopathological analysis of orbitoocular lesions: a hospital-based study. JPAHS. 2019; 6: 39-44.
21. Gupta Y, Gahine R, Hussain N, Memon MJ. Clinico-Pathological Spectrum of Ophthalmic Lesions: An Experience in Tertiary Care Hospital of Central India. J Clin Diagn Res. 2017; 11: 9-13.
22. Chauhan SC, Shah SJ, Patel AB, Rathod HK, Surve SD, Nasit JG. A histopathological study of ophthalmic lesions at a teaching hospital. National J Medical Research. 2012; 2: 133-6.
23. Bastola P, Koirala S, Pokhrel G, Ghimire P, Adhikari RK. A clinico-histopathological study of orbital and ocular lesions; a multicenter study. Journal of Chitwan Medical College. 2013; 3: 40-4.
24. Ackuaku-Dogbe E. Histoplathological Features of Tumours in the Orbit and Adnexia seen in Korle-Bu Teaching Hospital. WAJM. 2012; 31: 58-62.
25. General information; About UBTH. University of Benin Teaching Hospital; 2021 [cited 2021Oct6]. Available from: https://Ubth.org/general-information/.
26. Mills SE, Carter D, Greenon JK, Reuter VE, Stoler MH, (2010). Sternberg's Diagnostic Surgical Pathology. Lippincott Williams and Wilkins, Philadelphia, USA.
27. Silverberg SG, DeLellis RA, Frable Wj, LiVolsi VA, Wick Mr,. Silverberg's Principles and Practice of Surgical Pathology and Cytopathology. Elsevier, Philadelphia, USA. 2006
28. Silas O, Ajetunmobi O, Enwereuzo C. A descriptive study of patterns of conjunctival lesions in Jos, Nigeria: A 10-year retrospective study. Ann Trop Pathol 2017; 8:39-41.
29. Oghre E, Ekure EU. A Retrospective Study of Ocular Neoplasm in Benin City, Nigeria. Global Journal of Medical Sciences. 2003; 2: 115-9.
30. Vempuluru VS, Pattnaik M, Ghose N, Kaliki S. Bilateral ocular surface squamous neoplasia: A study of 25 patients and review of literature. European Journal of Ophthalmology. 2024; 32: 620–7.