AFRICAN JOURNAL OF MEDICINE and medical sciences

Volume 32, No 2 June 2003

EDITOR
B. O. OSOTIMEHIN

ASSISTANT EDITOR
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ISSN 1116—4077

Afr. J. Med. med. Sci (2003) 32, 197-202

A clinicopathological study of orbito-ocular diseases in Ibadan between 1991-1999

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Summary

To describe the pattern of ocular diseases seen during the study period. Retrospective review of surgical pathology and cytology records from January 1991 to December 1999. Reference was also made to case notes where necessary. A total of 225 orbital and ocular surgical pathology specimens were reviewed. One hundred and twenty-five (56.8%) were from males and 100 from females (ratio: 1.3:1). Over 50% of the specimens were obtained from children and young adults less than 20 years of age. There were 168 tumours, with malignancies accounting for 73.8% of all tumours. Other pathological lesions included, inflammatory conditions, benign tumours, and degenerative conditions, which represent 21.8%, 19.6%, and 2.2% of all lesions respectively. Retinoblastoma accounted for 57.3% of all malignancies, the age range was 3 months to 12 years, mean 2.65 years. The modal age was 2 years. Squamous cell carcinoma of the conjunctiva, accounting for 12.1% of all malignancies was the commonest malignancy seen in the adult age group. Malignant melanoma was rare and no case of Kaposi's sarcoma was seen. Commonest non-neoplastic lesions resulting in enucleation of the eye were panophthalmitis and endophthalmitis. Human immunodeficiency virus screening was only done in 3 of 8 patients with squamous cell carcinoma and was positive in 2 of them. Malignancies of the eye and orbit continue to make up majority of orbit and ocular pathologies requiring enucleation in children and young adults. Despite an observed increase in the frequency, insufficient information precludes evaluation of a link between HIV and squamous cell carcinoma as well as other obito-ocular lesions such as Kaposi sarcoma.

Keywords: *Retinoblastoma, rhabdomyosarcoma, squamous cell carcinoma.*

Résumé

L'objectif: Décrire le modèle de maladies oculaires vu pendant la période de l'étude. Les méthodes: La révision rétrospective de la pathologie chirurgicale et cytologie de janvier 1991 jus qu' à décembre 1999. La référence a aussi été faite pour emballer des notes où nécessaire. Les résultats: Un total de 225 spécimens de la pathologie chirurgicaux orbitaux et oculaires a été examiné. Cent et vingt cinq (56.8%) était de mâles et 100 de femmes (proportion: 1.3:1). Sur 50% des spécimens a été obtenu d'enfants moins que 20ans. Il y avait 168 tumeurs, avec des malignités qui expliquent 73.8% de toutes les tumeurs. Les autres lésions pathologiques ont inclus, des conditions provocatrices, des tumeurs bénignes, et des conditions dégénératives qui représentent 21.8%, 19.6%, et 2.2% de toutes les lésions respectivement. Retinoblastoma a expliqué 57.3% de toutes les malignités, la tranche d'âge était 3 mois à 12 années, signifiant 2.65 années. L'âge modal était 2 années. Squamous carcinome cellulaire du conjunctiva, explique que 12.1% de toutes les malignités, étaient les plus communs dans la tranche d'âge adulte. Le melanoma méchant était rare et aucun cas du sarcome de Kaposi a été vu. Les les lésions non-neoplastique qui résultent en enucleation de l'oeil étaient panophthalmitis et endophthalmitis. Une examination de virus immuno-deficient humain a été fait dans 3 de 8 malades avec squamous carcinome cellulaire seulement et était positif dans 2 d'eux. La conclusion: Les malignités de l'oeil et la gravité continue à créer une majorité d'orbite et de pathologies oculaires qui exigent l'enucleation dans les enfants et les jeunes adultes. En dépit d'une augmentation observée dans la fréquence, l'information insuffisante empêche l' évaluation d'un lien entre le SIDA et la carcinome squamous cellulaire aussi bien qu'autres lésions obito-oculaires tel que sarcome Kaposi.

Introduction

The eyes, which are the sensory organs of vision in their normal healthy state are also a 'thing of beauty' to behold as they provide an aesthetic effect in the face. Thus pathological lesions of the eyes and orbit can result in both loss of visual function as well as much facial disfigurement and much suffering for affected persons. Orbital and ocular tumours have been found to be a common cause of ophthalmic morbidity amongst Africans [1,2,3]. Two previous reports from southern Nigeria [1,4] showed that more than half of all ocular tumours occurred in young persons less than 20 years of age and were mostly due to retinoblastoma. A report from Northern

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Nigeria[5] on childhood malignancies of the eye and orbit also found retinoblastoma, Burkitts lymphoma, rhabdomyosarcoma and chloroma as the predominant ocular malignancies.

These studies were however all done in the pre and early part of the Acquired immunodeficiency syndrome (AIDS) pandemic. Recently, there have been increasing claims of an increasing frequency of AIDS related orbito-ocular tumours such as squamous cell carcinoma of the conjunctiva and Kaposi's sarcoma of the eyelids, conjunctiva and orbit [6,7,8]. In Uganda [9], a six-fold increase in the number of patients with conjunctiva squamous cell carcinoma was reported to have occurred between 1988 and 1992 as a result of the AIDS pandemic.

The last review on eye and orbital tumours in the study centre was done about a decade ago. A clinico-pathological review of the eye and orbital lesions at this point in time is therefore necessary to assess to what extent the pattern of orbital and ocular pathologies have altered since the last reviews.

Materials and methods

228 ocular and orbital pathological lesions were reviewed retrospectively from surgical pathology (222) and cytology records (6) of the department of pathology from January,1991 to December, 1999. Three cases from the surgical pathology group were excluded from the final analysis on account of incomplete information. Information obtained from the records included, patient age, sex, specimen source and histopathological diagnosis. The clinico-pathological features were subsequently analyzed and where necessary reference was made to the case notes for more details such as the HIV status of the patient. However only 8 out of 15 case notes belonging to patients with squamous cell carcinoma could be retrieved.

Results

A total of 225 orbital and ocular surgical pathological specimen records were reviewed. One hundred and twenty five (56.8%) were from male patients while the remaining 100 were from females (ratio: 1.3:1). The age range was from 17 days to 82 years, and mean 30.1years. Majority (62.3%) of the samples were from children and young adults less than 20 years of age.

The sources of surgical pathology specimens include; intra ocular 100 (44%), orbit 47 (20.9%), conjunctiva 51(22.7%), eyelid 21 (9.3%) and lacrimal gland 5 (2.2%). None neoplastic diseases were in the minority of the lesions reviewed. They accounted for 57(25.3%) of all lesions. Important none neoplasm of note include,

Table 1: Distribution of pathological lesions of the eye and conjunctiva

Site/type	No	percent of all orbito-ocular lesions
Intra-ocular	**100**	**44.4**
Malignant		
Retinoblastoma	71	31.1
Inflammatory		
Panophthalmitis	14	6.1
Chronic keratitis	7	3.1
Endophthalmitis	5	2.2
Others	3	1.3
Conjunctiva	**52**	**22.7**
Malignant		
Squamous cell cacinoma	15	6.7
Malignant Melanoma	1	0.4
Benign	20	
Dermoid cyst	4	1.8
Papilloma	5	2.2
Compd neavus	4	2.2
Capillary hemangioma	2	0.9
Ductal cyst	1	0.4
Epithelial Cyst	1	0.4
Epidermoid cyst	2	0.9
Solar Keratosis	1	0.4
Inflammations		
Pyogenic granuloma	5	2.2
Inflammatory Polyp	3	1.3
Granulomatous Inflammation	3	1.3
Follicular conjunctivitis	1	0.4
Degenerations		
Pterygium	4	1.8
Total	152	67.1

Others: vitreous hemorrhage, Retina detachment, Staphyloma: 1 each.

panophthalmitis (6.1%), endophthalmitis(2.2%), conjunctiva pyogenic granuloma (2.2%) and orbital pseudotumour(2.2%).Details of the distribution of the various pathological specimens is as shown in tables 1-3. There were 168 tumours overall. Malignancies made up 73.8% of all tumours and 55.1% of all pathological lesions of the eye and orbit reviewed. The commonest malignancy was retinoblastoma, representing 57.3% of all malignancies with only 20(28.2%) having extra-scleral or orbital extension. There was a slight male preponderance, and the modal age of occurrence was 2 years, age range from 3 months to 12 years, mean 2.65 years. It was followed

Table 2: Distribution of pathological lesions of the orbit

Site	No	percent of all orbit-ocular lesions
Orbit	**47**	**20.9**
Malignant		
Rhabdomyosarcoma	19	8.4
Burkitts	3	1.3
Non Hodgkins lymphoma	3	1.3
Haemangiopericytoma	1	0.4
Neuroblastoma	1	0.4
Immature teratoma	1	0.4
Benign		
Cavenous hamangioma	4	1.8
Glioma	4	0.9
Meningioma	2	0.9
Neurofibroma	1	0.4
Osteochondroma	1	0.4
Dermoid cyst	1	0.4
Fibrous dysplasia	1	0.4
Inflammatory		
Orbital pseudotumour	5	2.2
Lacrimal gland	**5**	**2.2**
Malignant		
Adenoid cystic carcinoma	3	1.3
Malignant mixed tumour	1	0.4
Benign		
Pleomorphic adenoma	1	0.4
Total	52	23.6

Table 3: Distribution of 21 pathological lesions of the eyelid

Pathology	No	percent of all orbito-ocular lesions
Malignant		
Basal cell carcinoma	2	0.9
Embryonal rhabdomyosarcoma	2	0.9
Sebaceous gland carcinoma	1	0.9
Benign		
Neurofibroma	5	2.2
Syringocystadenoma	1	0.4
Papilloma	1	0.4
Dermatofibroma	1	0.4
Eccrine acrospiroma	1	0.4
Inflammations		
Pyogenic granuloma	2	0.9
Chronic inflammation	3	1.3
Moluscum contagiosum	1	0.4
Degeneration		
Non-specific	1	0.4
Total	21	9.3

Table 4: Malignant tumours of the eye and orbit in Ibadan

Type of malignancy	mean age (yrs)	No	percent
Retinoblastoma	2.7	71	57.3
Rhabdomysarcoma	5.9	21	16.9
Squamous cell carcinoma	49.2	15	12.1
Adenoid cystic	54.3	3	2.4
Burkitts lymohoma	8	3	2.4
Non Hodgkins lymphoma	62.7	3	2.4
Basal cell carcinoma	46	2	1.6
Haemangiopericytoma	46	1	0.8
Epidermoid carcinoma	65	1	0.8
Malignant mixed tumour	6	1	0.8
Neuroblastoma	0.9	1	0.8
Malignant melanoma	60	1	0.8
Sebaceous gland carcinoma	70	1	0.8
Immature teratoma	0.05	1	0.8
Total		124	100

by rhabdomyosarcoma 16.9% (all but one were embryonal rhabdomyosarcoma with a mean age at presentation of 6 years. The remaining one was a pleomorphic rhabdomyosarcoma and it occurred in a 40 year old female), squamous cell carcinoma of the conjunctiva12.1% of malignant tumours and 8.9% of all noeplasms (with a mean age at presentation of 49.2 years), and malignant lacrimal gland tumour 1.8% (4 of the 5 lacrimal gland tumours seen during the period under review were malignant, 3 of them being adenoid cystic carcinoma with a mean age of occurrence of 54.3 years. A case of malignant mixed tumour was seen while only one benign tumour, a pleomorphic adenoma was seen). Orbital lymphoma only made up 4.8% of all eye and orbital malignancies in this series with half of these due to Burkitt's lymphoma. The least common neoplasms were haemagio-pericytoma, neuroblastoma, malignant melanoma and invasive sebaceous carcinoma, (0.8% each). No case of Kaposi's sarcoma was seen. Important benign tumours include, neurofibroma (2.2%), papilloma (2.2%), naevus (2.2%) cavenous haemangioma and dermoid (1.8% each). Other details are as shown in Table 4. Figure 1 compares the distribution of the malignant tumours in children and adults while Table 5 compares relative frequency distribution of tumours in different series.

It was only in 3 out of the 8 retrieved cases notes was HIV screening ordered. Two were positive in a 25 and a 35 year old male respectively. The last one in a 25 year old female was negative.

Table 5: Comparison of frequencies of orbito-ocular tumours from different studies

Tumour	USA	Uganda	Nigeria			
	Baltimore 375 cases	312 cases	Olurin(195)	Ibadan A &A(187)	B&O(168)	Kaduna Ab.(237)
Retinoblastoma	5	21	33.2	55.6	42.3	26.6
Rhabdomyo sarcoma	0	3	1.04	9.1	12.5	2.5
Squamous cell carcinoma	2	16	6.2	6.4	8.9	13.5
Lymphoma	0.23	19	21.3	9.1	3.6	7.0
Basal cell carcinoma	9	0	0	1.6	1.2	0
Lacrimal gland carcinomas	3	6	3.6	-	2.4	1.3
Melanoma	11	0	1	2.7	0	1

A & A = Ajaiyeoba & Akang, (1992) B & O = Bekibele & Oluwasola, (2001) Ab=Abiose(1985)

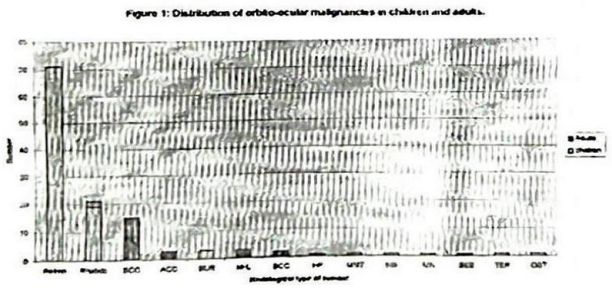

Fig. 1: Distribution of orbito-ocular malignancies in children and adults.

Discussion

This review has shown that orbital and ocular pathological lesions remain important causes of ocular and orbital morbidity that may result in the removal (enucleation) of the eye in Ibadan. Majority of the cases (62.3%) were present in young people less than 20 years of age. This is comparable to the finding by Olurin and Williams [1], who found more than two third of tumours in young people less than 20 years of age. There was however a slight male preponderance (ratio1.3:1) in this review as was also reported by Ajaiyeoba et al. [4]. This was mainly due to the large number of male children with retinoblastoma. The earlier study by Olurin however observed a slight female preponderance.

Retinoblastoma is the only intra-ocular malignancy found in this series. It is also the commonest malignancy of the eye and orbit, accounting for 57.3% of all malignancies with a peak age of 2 years. It was also the commonest ocular malignancy reported by previous authors [1,4,10,11]. However, there appears to have been an increase in the relative frequency since Olurin [1] in 1972. The relative frequency increased from 33.25% of all orbito ocular tumours to 55.6% by 1992 [4] (an interval of two decades), and by the third decade was found to be 42.3%. These hospital-based data may however not be fully representative of the actual pattern in the population, and as such a population-based study is required before absolute conclusions can be made about any change in the prevalence of the disease. The need for a population based study on retinoblastoma is particularly important when one considers recent advances in the management of the disease with more patients surviving to childbearing age [12] Also, with increased industrialization, increased radioactivity from industrial/toxic waste discharge into the environment [13] has probably resulted in an increase in the abnormal gene in the population. We also observed an increase in ratio of males relative to females and a reduction in the mean and peak ages at presentation. Male preponderance has however also been reported by other workers [5,10].

Other pathological conditions which can be mistaken for retinoblastoma and be a cause of enucleation in children include, panophthalmitis and endophthalmitis. No case of malignant melanoma of the choroid was found in the period under review.

The commonest orbital tumour in this study is rhabdomyosarcoma, a malignancy representing 16.9% of

all orbito-ocular malignancies. No case of orbital rhabdomyosarcoma was seen in childhood by Olurin [1]. Ukponmwan [14] and Abiose [5] also noted rarity of this tumour in the Mid-western and northern parts of Nigeria respectively. Rhabdomyosarcoma is however the commonest primary orbital tumour of chidhood in the industrialized world [15]. The last study from this centre [4] however noted that this tumour is a common orbital tumour in childhood. This probably suggests a change in trend in the study centre for reasons not immediately obvious but higher industrial/radio-activity around Lagos/ Ibadan axis compared to Benin and Kaduna may have a role to play. Orbital lymphoma only made up 4.8% of all eye and orbital malignancies in this series with half of these due to Burkitt's lymphoma. Burkitt's lymphoma cases were also few in the previous study by Ajaiyeoba [4], unlike the earlier studies by Olurin [1] and later by Abiose [5] where it accounted for the largest orbital malignancy. This could suggest that the incidence of Burkitts lymphoma of the orbit and eye is on the decline.

Four of the Five lacrimal gland tumours seen during the period under review were malignant, 3 of them being adenoid cystic carcinoma and the last case was of malignant mixed tumour. This is in sharp contrast to the findings of Olurin and Williams [1] in which a preponderance of benign mixed tumour was observed. This finding is not at variance with the standard teaching that 50% of lacrimal gland masses are epithelial and half of these are malignant [16]. However the number of cases involved in this series are too few for conclusive correlations to be made.

The eyelid pathologies were varied in type but limited in number. Basal cell carcinoma, was present in 2 of the 5 eyelid malignancies seen. The commonest benign eyelid tumour was neurofibroma. These findings are similar to a previous report [4] from this environment, but differ from that of Olurin[1], which did not find any case of basal cell carcinoma. No case of Kaposi's sarcoma of the eyelid was seen in this study.

The commonest neoplasm in the conjunctiva was squamous cell carcinoma, accounting for 12.1% of orbital and ocular malignant tumours and 8.9% of all neoplasms. The relative frequency of this tumour did not change much between the period of Olurin [1] and Ajaiyeoba's [4] studies, but increased by 39% (from 6.4% to 8.9%) a decade after Ajaiyeoba's. The reason for the increase is not known since only 8 of the 15 case notes belonging to persons with conjunctival squamous cell carcinoma could be retrieved in our series and of these only 2 tested positive to HIV, one was negative and in the remaining 5 cases, HIV screening was not ordered. The magnitude of increase in the frequency of conjuctival squamous cell carcinoma since Olurin and Ajaiyeoba's studies is not in consonance with the reported rate of increase in cases of HIV/AIDS in Nigeria since the beginning of the AIDS scourge. The incidence of conjunctival squamous cell carcinoma in Kampala, Uganda was said to have been steady at around 6 per million per year from 1970 until 1988 when it increased six-fold to 35 per million per year by 1992 [9]. In a study involving 48 conjunctival squamous cell carcinoma patients in a Mulango Uganda hospital, 75% were sero-positive for HIV virus relative to 19% sero-positive among 48 matched controls. Squamous cell carcinoma was rare in Caucasian populations in an earlier report [17]. Even with the AIDS scourge there is scarcity of reports of this tumour from Europe and America. Thus a combination of excessive exposure to sunlight, effect of papilloma virus and HIV infection may explain the increasing incidence in parts of Africa relative to Europe [7].

It is observed that HIV screening is not routinely done for eye tumours in the study centre. In view of the increasing reports of HIV infection amongst patients with conjuctival squamous cell carcinoma, it is advised that HIV screening be done routinely in all cases of eye and orbital tumours in future.

No case of Kaposi's sarcoma of the conjunctiva was seen. Only one case of malignant melanoma of the conjunctiva was seen in this review. There appears to be a progressive decrease in the incidence of this tumour since the period of Olurin's [1,4] report.

Conclusion: Malignancies of the eye and orbit remain important causes of ocular morbidity and subsequent loss of the eye especially in children. Retinoblastoma remains the commonest ocular malignancy while embryonal rhabdomyosarcoma is the commonest orbital malignancy, both tumours occurring in childhood. The only tumour known to be associated with HIV seen was squamous cell carcinoma with a 39% increase in its relative frequency since the first review in the study center three decades ago. HIV screening is not routinely ordered for in eye and orbital tumours making it difficult to establish any causal relationships between HIV and the increased frequency of squamous cell carcinoma. No case of kaposi's sarcoma was seen. It is recommended that routine HIV screening be done in future for safety of caregivers.

Acknowledgments

The authors would like to thank the Head of Pathology, Prof. (Mrs) Ogunniyi, for allowing us the use of departmental facilities and our residents, Drs Olubowale,

Adesina, and Nwegbu for their assistance with data collection. We also thank Mrs G.E. Bekibele for the secretarial assistance.

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