

MALIGNANT SQUAMOUS CELLS: A PANORAMIC VIEW

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ABSTRACT

Background: *The squamous epithelium is the most widely distributed epithelium in the human body. Malignant transformation does occur in these cells leading to squamous cell carcinoma. This cancer can arise in a site native to the epithelium or where squamous metaplasia has occurred. This malignancy therefore has been reported in various parts of the body.*

Method: *This was a retrospective case series study of all squamous cell carcinomas seen at the Histopathology Department of the Jos University Teaching Hospital between January 2008 and December 2014.*

Result: *Three hundred and twenty two (322) squamous cell carcinomas were seen during this period. The distribution of cases at various sites is as follows: cervix, 198 (61.5%); skin, 65 (20.2%); orbito-ocular region, 27 (8.4%); oesophagus, 14 (4.3%); bladder, 8 (2.5%); nasopharynx, 5 (1.6%); and larynx, 5 (1.6%). There were 265 (82.3%) cases of squamous cell carcinomas in females and 57 (17.7%) in males. The age range at diagnosis of all cases of the tumour was 16 - 85 years and the mean age was 50.1 years.*

Conclusion: *Squamous cell carcinomas in Jos are commonly seen in the cervix. This finding mirrors the high ranking of cervical cancer in general as the second commonest malignant neoplasm in women in our locality. Understandably therefore more women were seen with this malignancy as cervical cancer is a female disease. We recommend an aggressive approach towards stemming the tide of this preventable cancer.*

Key words: *Squamous, cell, carcinoma, panoramic view.*

INTRODUCTION

The squamous epithelium is the most widely distributed epithelium in the human body. It consist of flattened cells whose height is marginal when compared to their elongated width.¹ like other cell types in the body, malignant transformation do occur in these cells leading to squamous cell carcinoma. This cancer can arise in a site native of the epithelium or at locales where metaplastic squamous epithelium have developed. This malignancy therefore had been reported in various parts of the body.

The cervix is a frequent site for malignant

neoplasms. In Africa, cervical cancer is second only to breast cancer as the commonest malignancy in females.^{2,3,4,5} Squamous cell carcinoma is the largest contributor to this burden of cervical cancer accounting for 85.2% to 92% of histological types of this tumour.^{6,7,8,9} These studies also found an age range of 15 to 90 years and a mean age ranging from 46.25 to 57.80 years for all cervical cancers.

Squamous cell carcinoma also occurs commonly in the skin. It has been reported as the commonest cutaneous malignancy accounting for 40% to 51% of skin cancers in Nigeria and Ghana.^{10,11,12,13} Other

studies reported malignant melanoma as the commonest skin malignancy.^{14,15} Men are reported to more be affected in these studies.^{10,12,14} The lower limb is the commonest site for skin cancers in general and also squamous cell carcinoma. The mean age at diagnosis of skin cancer ranges from 45.0 years to 54.5 years.^{12,13,15}

In the orbito-ocular region, malignant squames have been reported to be very common accounting for 72% to 74% of cancers at this site.^{16,17} It is also the commonest lesion of the conjunctiva.¹⁷ Ackuaku-Dogbe studied 77 squamous cell carcinomas of the orbito-ocular region and found out that, 63.6%, 32.5%, and 3.9% of this malignancy occur in the conjunctiva, orbit, and eyelid respectively with fairly equal frequency in males and females.¹⁶ Ukponwan et al, reported an age range of 20 years to 70 years with mean age of 42 years for orbito-ocular tumours.¹⁸

Oesophageal cancer is the 8th commonest cancer in the world.²⁰ At this site, malignant squamous cells are the most frequently diagnosed cancer worldwide.²¹ Adenocarcinoma of the oesophagus is essentially a problem of the developed nations.²¹ In comparative study, Crofts found out that 100% of patients in Malawi with oesophageal cancer had squamous cell carcinoma, while 22.6% and 77.4% of this category of patients in Scotland had squamous cell carcinoma and adenocarcinoma respectively.²² The age range of diagnosis reported at 20 years to 96 years with mean age between 55.5 years and 59.0 years.^{22,23,24} These studies showed men to be commonly affected than females.

Squamous cell carcinoma is the most common histological type of bladder cancer.²⁵ Studies from Africa showed that 46.2% to 60.4% of bladder cancers are of the squamous cell type.^{26,27,28} Transitional cell carcinoma lags behind as the second most frequent cancer in these studies. Also, age range at diagnosis is 26 years to 80 years, and peak incidence is between the 5th and 6th decade of life, and mean age at diagnosis is 48.8 years to 55.3 years.^{26,27,28,29} Bladder cancers frequently afflicts males.^{27,28}

In Nigeria, squamous cell carcinoma is the commonest cancer of the Nasopharyngeal region accounting for 76.7% to 100% of malignancies at this site.^{30,31,32} An age range of 6 years to 80 years was reported in these studies. Also, the mean age was put

at 39.1 years to 48.7 years.^{30,31,32,33} These studies further recorded a preponderance of the disease in males.

Worldwide, Laryngeal cancer is the second most common head and neck tumour.³⁴ Squamous cell carcinoma accounted for 66.7% to 100% of laryngeal cancers in African reports.^{35,36,37,38} An age range of 36 years to 88 years, with mean age of 69.9 years was documented.^{37,38} Males are more frequently affected than females with a ratio of 5.7-19.7:1.^{35,37,38}

The literature reviewed above present a pool of factors associated with development of squamous cell carcinomas. These factors exert their influence in varying degrees of importance at different sites. They include: high risk human papilloma viruses; exposure to ultraviolet radiations; immunosuppression; industrial carcinogens; chronic ulcers; burns scars; poor diet and hot beverages; alcohol and tobacco; osteomyelitis and Helicobacter pylori infection.

MATERIALS AND METHODS

This was a retrospective case series study of all squamous cell carcinomas seen at the Histopathology Department of the Jos University Teaching Hospital between January 2008 and December 2014. Patients' information including: bio-data; anatomical site of lesion; and histopathological diagnosis were extracted from patients' records in the Medical Records Department and the Histopathology Department. The data was analysed using SPSS statistical software and presented in tables as simple frequencies and percentages.

RESULTS

Three hundred and twenty two (322) squamous cell carcinomas were diagnosed at the Jos University Teaching Hospital between 2008 and 2014. The commonest site of occurrence of this malignancy is the cervix, accounting for 198 (61.5%) of cases. The distribution at other sites is as follows: skin, 65 (20.2%); orbito-ocular region, 27 (8.4%); oesophagus, 14 (4.3%); bladder, 8 (2.5%); nasopharynx, 5 (1.6%); and larynx, 5 (1.6%). Table 1.

There were 265 (82.3%) cases of squamous cell carcinomas in females and 57 (17.7%) in males. The male to female ratio seen at the various site are as follows: skin (1:1.6), orbito-ocular region (2:1),

oesophagus (1:3.7), bladder (1:1.7), nasopharynx (1:1.5), and larynx (4:1). Table 1.

The age range at diagnosis of all cases of the tumour was 16-85 years. Different sites had varying figures: cervix, 20-85 years; skin, 18-85 years; orbito-ocular region, 16-70 years; oesophagus, 45-80 years; bladder, 31-80 years; nasopharynx, 40-70 years; larynx, 35-65 years. The mean age at diagnosis of all cases was 50.1 years. The respective mean age at diagnosis of the malignancy at these sites are as follows: 50.5 years; 48.7 years; 40.9 years; 60.5 years; 58.0 years; 52.6 years; and 51.6 years. Table 2, 3, 4, and 5.

The 198 cases of squamous cell carcinoma showed 7

variants: non-keratinizing, 138 (69.7%); keratinizing, 38 (19.2%); warty, 7 (3.5%); clear cell, 2 (1.0%); papillary, 4 (2.0%); lymphoepithelial 8 (4.0%); and transitional, 1 (0.5%). Table 2.

For squamous cell carcinomas of the skin, the lower limb has the highest of (20, 30.8%), while the trunk and gluteal region had the lowest (2, 3.1%) frequency each of occurrence of the malignancy. Table 3.

The 27 cases of the malignancy in the orbito-ocular region were distributed to the the following sites: eyelid, 5 (18.5%); conjunctiva, 21 (77.8%); and orbit 1 (3.7%). Table 3.

Table 1. Sex distribution of squamous cell carcinoma according to anatomical site

Site of Squamous cell carcinoma	Male	Female	Total
Cervix	-	198	198
Skin	25	40	65(20.2%)
Orbito-ocular	18	9	27(8.4%)
Oesophagus	3	11	14(4.3%)
Bladder	5	3	8(2.5%)
Nasopharyngeal	2	3	5(1.6%)
Laryngeal	4	1	5(1.6%)
	57(17.7%)	265(82.3%)	322(100%)

Table 2. Age distribution of squamous cell carcinoma of the cervix according to histological types

Type of cervical squamous cell carcinoma	Age(years)							Total
	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
Non-keratinizing	5	18	36	30	30	17	2	138(69.7%)
Keratinizing	1	10	5	10	10	2	0	38(19.2%)
Warty	1	1	2	2	1	0	0	7(3.5%)
Basaloid	0	0	0	0	0	0	0	0(0.0%)
Clear cell	0	1	0	0	0	1	0	2(1.0%)
Papillary	0	2	0	0	1	0	1	4(2.0%)
Lymphoepithelial	0	1	2	3	1	1	0	8(4.0%)
Transitional	0	0	0	0	1	0	0	1(0.5%)
Total	7(3.5%)	33(16.7%)	45(22.7%)	45(22.7%)	44(22.2%)	21(10.6%)	3(1.5%)	198(100.0%)

Table 3. Age distribution of squamous carcinoma of the skin according to anatomical site

Squamous cell carcinoma (site on skin)	Age(years)								Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
Head and Neck	2	3	1	0	4	2	0	1	13(20.0%)
Trunk	0	0	0	1	0		0	0	2(3.1%)
Upper limb	0	4	7	0	2	0	0	0	13(20.3%)
Lower limb	0	1	3	2	5	4	4	1	20(30.8%)
Anal	0	0	0	3	3	1	1	0	8(12.3%)
Glutael	0	0	1	0	1	0	0	0	2(3.1%)
Penile	0	0	0	1	0	2	1	0	4(6.2%)
Vagina	0	0	0	0	1	2	0	0	3(4.6%)
Total	2(3.1%)	8(12.3%)	12(18.5%)	7(10.8%)	16(24.6%)	12(18.5%)	6(9.2%)	2(3.1%)	65(100.0%)

Table 4. Age distribution of squamous carcinoma of the Orbito-ocular region according to anatomical site

Squamous cell carcinoma (site orbit-ocular region)	Age(years)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	

DISCUSSION

The vast majority of squamous cell carcinomas in this study (61.5%) occurred in the cervix. This is not surprising as cervical cancer is the second commonest cancer in our locality and squamous cell carcinoma is the predominant histological type of this malignancy.^{2,3,4,5} Mandong et al, in a previous study in Jos found cervical carcinoma ranking second in frequency only to breast cancer in females.⁵ The vast majority of cervical carcinoma in Africa are of the squamous cell type.^{6,7,8,9}

It follows therefore that as cervical cancer is a female disease, it is not alarming that more women (82.3%) were diagnosed with squamous cell carcinoma than men. The preponderance of the non-keratinizing type of cervical squamous cell carcinoma over other variants of this histological type of cancer, is in agreement with a study by Nnandi et al, but is not in consonance with that by Der et al, where the keratinizing type was found to be commonest.^{8,9} There was no significant variation of the age range or mean age at diagnosis of cervical between the finding in this study and other African reports.^{6,7,8,9}

The skin is the second most frequent site for

squamous cell carcinoma in this study. The finding that the lower limb has majority of cases was corroborated by Chalya et al, although their value of 46.2% is higher than the 30.8% we found. The age range and mean age of diagnosis of skin cancers in earlier African reports are in tandem with our finding for squamous cell carcinomas in this organ.^{12,13,15} However, we found more females with squamous cell carcinoma, and this is at variance with the male gender dominance for skin cancers in Africa.^{10,12,14}

Ackuaku-Dogbe reported the conjunctiva as the commonest orbito-ocular site for squamous cell carcinoma which agrees with our finding.¹⁷ However, we differ in that the eyelid was our second commonest site for this malignancy; the orbit was reported in his. Also he reported an equal frequency of the tumour in males and female, while we found the malignancy occurring twice more frequent in males. The age range and mean age in our study is quite similar to that reported by Lee et al.¹⁸

Our study found the oesophagus, bladder, nasopharynx, and larynx each recording a low frequency of squamous cell carcinoma. Each site has less than 5% of squamous cell carcinoma, and in this order shows decreasing frequency of the

malignancy. Understandably, cancers at these sites are low in the ranking of cancer frequency in our environment.^{2,3}

REFERENCES

1. Signh I, editor. Textbook of Human Histology. Jaypee. 6th edition. 2011: 44-56.
2. Awodele O, Adeyomoye AA, Awodele DF, et al. Cancer distribution in South-Western Nigeria. Tanzania Journal of Health Research 2011; 13(2): 1-7.
3. Bouchbika Z, Haddad H, Benchakroun N, et al. Cancer incidence in Morocco: report from Casablanca registry 2005-2007. Pan African Medical Journal 2013; 16(31). (doi: 10.11604/pamj.2013.16.31.2791).
4. Enow-Orock G, Mbu R, Ngowe NM, et al. Gynaecological cancer profile in the Yaounde population, Cameroun. Clin Mother Health 2006; 3(1): 437-44.
5. Mandong BM, Madaki AKJ, Manasseh AN. Malignant disease in Jos: A follow up. Annals of African Medicicine 2003; 2(2): 49-53.
6. Ijaiya MA, Aboye PA, Buhari MD. Cancer of the cervix in Ilorin, Nigeria. WAJM 2004; 23(4): 319-22.
7. Yakassai IA, Ugwa EA, Otubu J. Gynaecological malignancies in Aminu Kano Teaching Hospital, Kano: A 3 year review. Nigeria Journal of clinical practice 2013; 16(1): 63-6.
8. Der EM, Adu-Bonsaffoh K, Tettey Y, et al. Clinico-pathological characteristics of cervical cancer in Ghanaian women. J of Med and Biomedical Sciences 2014; 3(3): 27-32.
9. Nnadi DC, Singh S, Ahmed Y, et al. Histological features of genital tract malignancies as seen in a tertiary health centre in North-Wester Nigeria: Annals of Medical and Health Sciences Research 2014; 4(3): 213-17.
10. Ochicha O, Edino ST, Mohammed AS, et al. Dermatological malignancies in Kano, Northen Nigeria: a histopathological review. *Annals of African Medicine* 3,188-191.
11. Gana JY, Ademola SA. Skin malignancies in Ibadan: a comparative study. Nigerian Journal of Plastic Surgery 2008; 4(1): 1-6.
12. Adu EJ, Annan C. Primary malignant skin tumours in Ghanaians: a prospective study of 31 cases. Nigerian Journal of Plastic Surgery 2008; 4(1): 7-13.
13. Nnabuko RE, Otene CI, Otei OO, et al. Pattern of skin cancers at the National Orthopaedic Hospital Enugu from Jan. 1996 to Dec. 2005. Nigerian Journal of Plastic Surgery 2008; 4(1): 13-18.
14. Oseini G, Olaitan PBO, Komolafe AO, et al. Malignant skin lesions in Oshogbo, Nigeria. Pan African Medical Journal 2015; 20(1):
15. Chalya PL, Gilyoma JM, Kanumba ES, et al. Dermatological Malignancies at the University Teaching Hospital in North-Western Tanzania: a retrospective review of 154 cases. Tanzania Journal of Health Research 2012; 14(1): 1-9.
16. Ajaiyeoba IA, Pindiga HU, Akang EEU. Tumours of the eye and orbit in Ibadan. East African Medical Journal 1992; 486-8.
17. Ackuaku-Dogbe E. Histological features of tumours of the orbit and adnexae seen in Korle-Bu Teaching Hoapital. West African Journal of Medicine 2012; 31(1): 58-62.
18. Lee GA, Hirst LW. Occular Surface Squamous Neoplasia. Surv Ophthalmol 1995; 39(6): 429-50.
19. Ukponwan CU, Igbokwe UO, Aligbe JU. Squamous cell carcinoma in the conjunctiva in Benin City Nigeria. Nigerian Journal of Clinical Practice 2002; 5(2): 143-7.
20. <http://pn.bmj.com/cgi/reprint/5/1/56.pdf>.
21. Melhedo RE, Alderson D, Tucker O. The challenging face of oesophageal cancer. Journal of cancer 2010; 2: 1379-404.
22. Crofts T. A tale of two cities-oesophageal cancer in Malawi and Scotland. MMJ 2008; 20(4): 135-9.
23. Alema ON, Iva B. Cancer of the oesophagus: histopathological sub-types in Northern Uganda. African Health Science 2014; 14(1): 17-21.
24. Kachala R. Systemic review: epidemiology of oesophageal cancer in Sub-Saharan Africa. MMJ 2010; 22(3): 65-8.
25. Chalasani V, Chin JL, Izawa JI. Histological variants of urothelial bladder cancer and non-urothelial histology in bladder cancer. CUAJ 2009; 3(6): 193-8.
26. Bowa K, Kachimba JS, Labib MA, et al. The pattern of Urological Cancers in Zambia. African Journal of Urology 20090; 15(2): 84-7.

27. Ochicha O, Alhassan S, Mohammed AZ, et al. Bladder cancer in Kano- A histopathological review. *West African Journal of Medicine* 2003; 22(3): 2002-4.
28. Mapulanga V, Labib M, Bowa K. Pattern of bladder cancer at the University Teaching Hospital, Lusaka, Zambia in an Era of HIV epidemic. *Medical Journal of Zambia* 2013; 40(1): 1-6.
29. Hassan TMM, Al-zahrani IH. Bladder cancer: Analysis of the 2004 WHO classification in conjunction with pathological and geographical variables. *African Journal of Urology* 2012; 18: 118-23.
30. Iseh KK, Abdullahi A, Malami SA. Clinical and histological characteristics of Nasopharyngeal cancers in Sokoto, North-Western Nigeria. *West African Journal of Medicine* 2009; 28(3): 151-5
31. Garandawa HI, Ahmed BU, Ngadda HA. Nasopharyngeal cancer in North-Eastern Nigeria: clinical trends. *Nigeria Journal of Clinical Practice* 2009; 12(4): 379-82.
32. Alibi BS, Badmos KB, Afolabi OA, et al. Clinicopathological pattern of Nasopharyngeal carcinoma in Ilorin, Nigeria. *Nigerian Journal of Clinical practical* 2010; 13(4): 445-8.
33. Nwaorgu OGB, Ogunbiyi JO. Nasopharyngeal cancer at the University College Hospital Ibadan cancer registry: an update. *West African Journal of Medicine* 2004; 23(2): 135-8.
34. Chu EA, Young JK. Laryngeal cancer: diagnosis and pre-operative work-up. *Otolaryngologic clinics of North America* 2008; 41: 673-95.
35. Iseh KR, Abdullahi M, Aliyu MD. Laryngeal tumours: clinical pattern in Sokoto, North-Western Nigeria. *Nigerian Journal of Medicine* 2011; 20(1): 75-82.
36. Kitcher ED, Yarney JY, Gyasi RK, et al. Laryngeal cancers at the Korle Bu Teaching Hospital Accra. *Ghana Medical Journal* 2006; 40(2): 45-9.
37. Opoku-Buabeng J, Owosu-Afriye O. Histological pattern of laryngeal cancers in Komfo Anoye Teaching Hospital. *Journal of Science and Technology* 2013; 33(3): 16-21.
38. Amusa YB, Badmos A, Olabanji JK, et al. Laryngeal carcinoma. Experience in Ile-ife, Nigeria. *Nigerian Journal of Clinical Practice* 2011; 14(1): 74-8