Trends in Incidence and Age Distribution of Oral Cavity and Oropharyngeal Squamous Cell Carcinomas, Kingston and St Andrew, Jamaica, 1978–2007

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ABSTRACT

Objective: *Several countries have reported increasing incidence of oral cavity and oropharyngeal (OCOP) squamous cell carcinoma (SCC) over recent years, particularly among young men and primarily in tongue and tonsil subsites, attributed to human papillomavirus (HPV) infection. This study examines trends in incidence and age distribution of OCOP SCC in Jamaica over a 30-year period.*
Methods: *We extracted all cases of OCOP SCC archived in the Jamaica Cancer Registry files over the 30 year-period from 1978 to 2007 and grouped them according to anatomical site (International Classification of Diseases; ICD-9), age and gender. The data were used to calculate age-standardized rates (ASRs) and age-specific incidence rates (ASIRs).*
Results: *There were 384 patients (age range 21 to 94 years; male to female ratio 2.6:1) with OCOP SCC; the majority (85.4%) was > 50 years. Age-standardized rates of all OCOP SCC combined were higher in males than in females and there was a decrease in both genders over the study period. Tongue and tonsil were the commonest subsites, and males showed decreasing ASR in both. Females showed decreasing ASR in tongue and fluctuation in tonsil SCCs. The highest ASIRs for tongue and tonsil SCC were consistently seen in patients older than 50 years of age.*
Conclusion: *The incidence of OCOP SCC is decreasing and continues to predominate among older men. The decreasing trend in incidence of tongue and tonsil SCC is unlike that reported elsewhere. This may be due to differences in sexual practices, small size of this study, or a lag time in emergence of a new trend.*

Keywords: Cancer, Jamaica, oral cavity, oropharynx

Tendencias de la Incidencia y la Distribución por Edad de los Carcinomas de Células Escamosas de la Orofaringe y la Cavidad Bucal, Kingston y Saint Andrew, Jamaica, 1978 – 2007

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RESUMEN

Objetivo: *Varios países han reportado una creciente incidencia del carcinoma de células escamosas o espinocelular (CEC) de la cavidad oral y la orofaringe (COOF) en los últimos años, particularmente entre los hombres jóvenes y principalmente en la lengua y los subsitios de las amígdalas, atribuido a la infección por el virus del papiloma humano (VPH). El presente estudio examina las tendencias de la incidencia y la distribución por edades del CEC COOF en Jamaica durante un período de 30 años.*
Métodos: *Tomamos todos los casos de CEC COOF archivados en el Registro de Cáncer de Jamaica por un período de 30 años, de 1978 a 2007, agrupándolos entonces de acuerdo con el sitio anatómico (Clasificación Internacional de Enfermedades; CIE-9), la edad y el género. Los datos se utilizaron para calcular las tasas estandarizadas por edad (TEE) y las tasas de incidencia específica por edad (TIEE).*
Resultados: *Hubo 384 pacientes (rango de edad 21 a 94 años; proporción varón: hembra 2.6:1) con CEC COOF; la mayoría (85.4%) tenía > 50 años. Las tasas estandarizadas por edad de todos los*

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casos de CEC COOF combinadas fueron más altas en los varones que en las mujeres, y hubo una disminución en ambos sexos en el período de estudio. La lengua y las amígdalas fueron los subsitios más comunes, y los varones mostraron una TEE decreciente en ambos. Las hembras mostraron una TEE decreciente en la lengua y fluctuación en los CEC de las amígdalas. Las TIEE más altas para las CEC de la lengua y las amígdalas se observaron de forma reiterada en los pacientes mayores de 50 años de edad.

Conclusión: *La incidencia de los carcinomas CEC COOF está disminuyendo y continúa siendo predominante entre los hombres mayores. La tendencia decreciente en la incidencia del CEC en lengua y amígdala es diferente a lo que se reporta en otros lugares. Esto puede deberse a diferencias en las prácticas sexuales, a la pequeña dimensión de este estudio, o al retraso en la aparición de una nueva tendencia.*

Palabras claves: Cáncer, Jamaica, cavidad oral, orofaringe

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INTRODUCTION

Several countries have reported increases in incidence of oral cavity and oropharyngeal squamous cell carcinomas (SCCs) over the past several years (1–6). These increases have been seen primarily with tonsillar and tongue cancers (1, 3, 5) and have occurred primarily among young adults (2, 3, 7). Reports from epidemiologic studies have suggested that the cancers responsible for this increased incidence are causally related to human papillomavirus (HPV) infection of the oral cavity and oropharynx (8–10), rather than to the traditional risk factors (tobacco, alcohol, betel quid, areca nut) associated with carcinomas in this anatomical region, which historically occur in older individuals (9–10). The association of tonsillar and base of tongue SCCs with HPV infection has important implications for prevention of these cancers, through administration of the HPV vaccine to adolescents.

The trends in incidence and age distribution of oral and oropharyngeal SCCs in Jamaica have not been previously analysed, and so it is unclear whether similar increases in incidence have occurred among young adults in our population. This information is crucial for appropriate planning of HPV vaccination programmes in adolescents, with regards to the inclusion of males. We decided therefore to analyse recent trends in the incidence and age distribution of oral and oropharyngeal SCCs in Jamaica.

SUBJECTS AND METHODS

The Jamaica Cancer Registry (JCR), established in 1958, is a population-based registry. Its population base is that of the Kingston and St Andrew region of Jamaica, which comprises approximately 26% of the total population of the country. The methodology of the Registry has been previously described in detail (11–12). Briefly, cases are registered from the medical records of public and private hospitals, general and specialist practitioners' offices, public and private pathology laboratories, radiotherapy facilities and death certificates in Kingston and St Andrew, and verified by pathologists at the Cancer Registry, in accordance with standard techniques of registration (13). Facilities in Kingston and St Andrew function as referral centres for much of the island outside of the Kingston and St Andrew region, but only cases from patients residing in Kingston and St Andrew are used in the calculation of rates. The population denominators for the Kingston and St Andrew region, required for these calculations, are supplied by the Statistical Institute of Jamaica.

Oral cavity and oropharyngeal SCC registrations for Kingston and St Andrew, for the period 1978–2007, were extracted from the files of the Jamaica Cancer Registry. This included all SCCs registered during that period with the following International Classification of Diseases (ICD)-9 topography codes: 140 (lip), 141 (tongue), 143–145 (mouth) and 146 (oropharynx). For each case, age, gender and anatomical site of tumour were abstracted. The proportionate distribution of cases according to topography was calculated and for each five-year period of the study, the data were used to calculate age-standardized rates (ASRs; standardized to the World Standard Population) and age-specific incidence rates (ASIRs).

RESULTS

A total of 384 cases of oral cavity and oropharyngeal SCCs were identified in the Jamaica Cancer Registry archives over the 30-year period 1978 to 2007. There were 277 males (72%) and 107 females (28%) [male to female ratio 2.6: 1], ranging in age from 21 to 94 years. The age of one female patient was unknown. The majority of patients (85.4%) were 50 years of age or older and the 60–69-year age group exhibited the highest frequency (Fig. 1).

Of the 384 SCCs, 83% were located within the oral cavity and 17% within the oropharynx (Fig. 2). Tongue was the commonest oral cavity site, accounting for 50% of those cases, and the palatine tonsil comprised the majority of cases within the oropharynx, accounting for 82% of that group (Fig. 2).

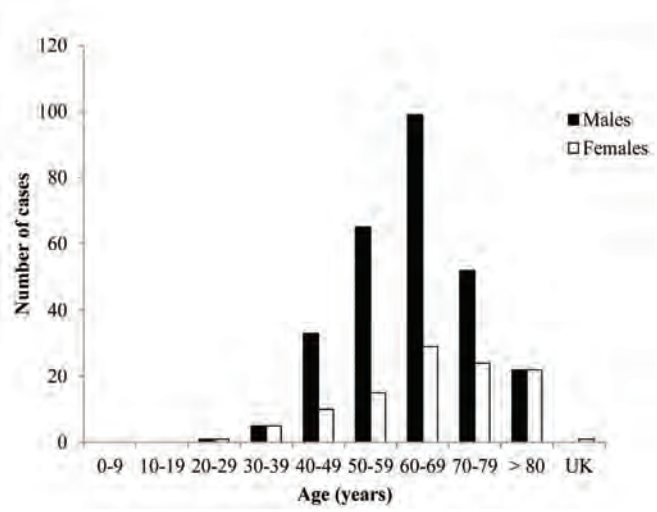

Fig. 1: Age and gender distribution of oral and oropharyngeal cancers, Kingston and St Andrew, Jamaica, 1978–2007. UK: unknown.

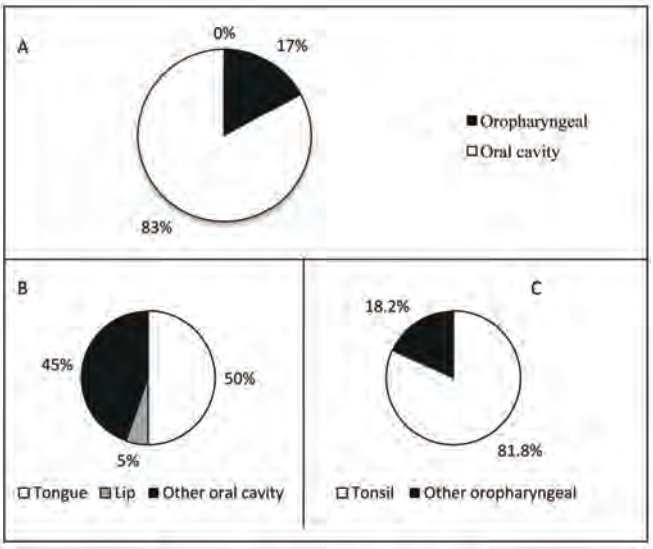

Fig. 2: Topographical distribution of oral cavity and oropharyngeal squamous cell carcinomas (SCCs), Kingston and St Andrew, Jamaica, 1978–2007. A: All oral cavity and oropharyngeal SCCs; B: Oral cavity SCCs; C: Oropharyngeal SCCs.

Figure 3 shows that the ASR for "all oral and oropharyngeal cancers combined" was higher among males than females for the entire study period, and both genders demonstrated progressive decrease in ASR over time. The ASRs for both tongue SCC and tonsil SCC were greater in males than in females, and this remained so over the 30-year period. In males, there was progressive decline in the ASR of tongue SCC over the 30-year period, while the ASR for tonsil SCC fluctuated over the period, but with a general trend of decrease. In females, there was progressive decline in the ASR for tonsil SCC and fluctuation without a notable trend in the ASR for tongue SCC.

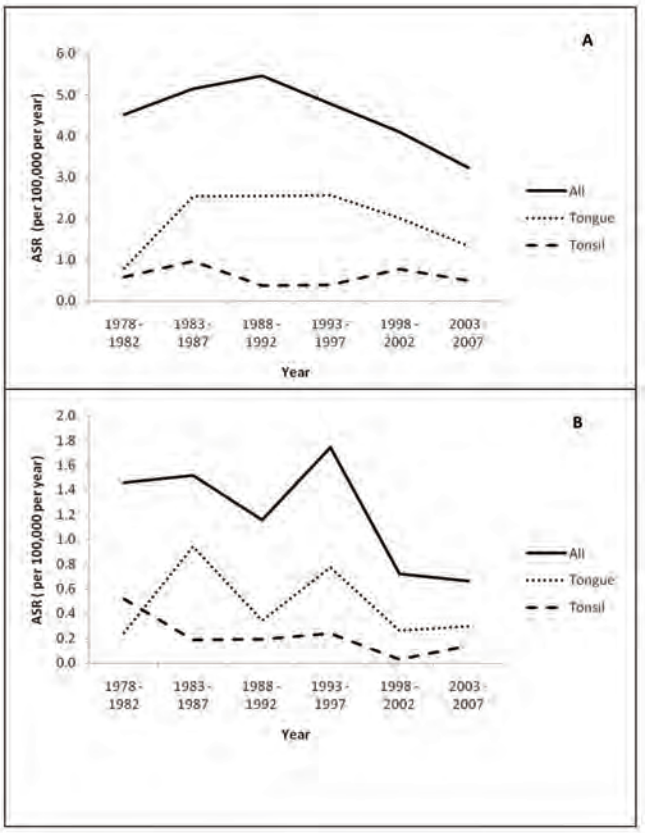

Fig. 3: Age-standardized rates (ASRs) of all oral and oropharyngeal squamous cell carcinomas (SCCs) combined, tongue SCCs and tonsillar SCCs in (A) males and (B) females in Kingston and St Andrew, Jamaica, 1978–2007.

Analysis of ASIRs for tongue SCC showed that, in males, the highest rates occurred in individuals aged 50 years and over, while in females, the highest rates were seen in those in the 60–69 and 70^{+}-year age groups (Fig. 4). Among males, there were initial increases (40–49, 50–59 and 60–69 -year age groups) or fluctuations (70^{+}-year age group) in ASIRs, but all age groups exhibited a general trend of decrease in the latter period of the study. Among females, there was marked fluctuation in the ASIRs of all age groups, but with the overall trend being that of decrease over time (Fig. 4).

Figure 5 shows trends in ASIRs for tonsillar SCC in males and females over the 30-year period. In males, the highest ASIRs were seen in those individuals in the 60–69 and 70^{+}-year- age groups. The ASIR for those patients aged 70 years and over showed progressive decrease over the 30-year period, while that for the 60–69-year age group fluctuated over time. The ASIRs for younger males also fluctuated over time. Among females, the highest ASIRs were seen in patients aged 50 years and older; the ASIRs for all age groups of females fluctuated over the 30-year period, with no discernible trend.

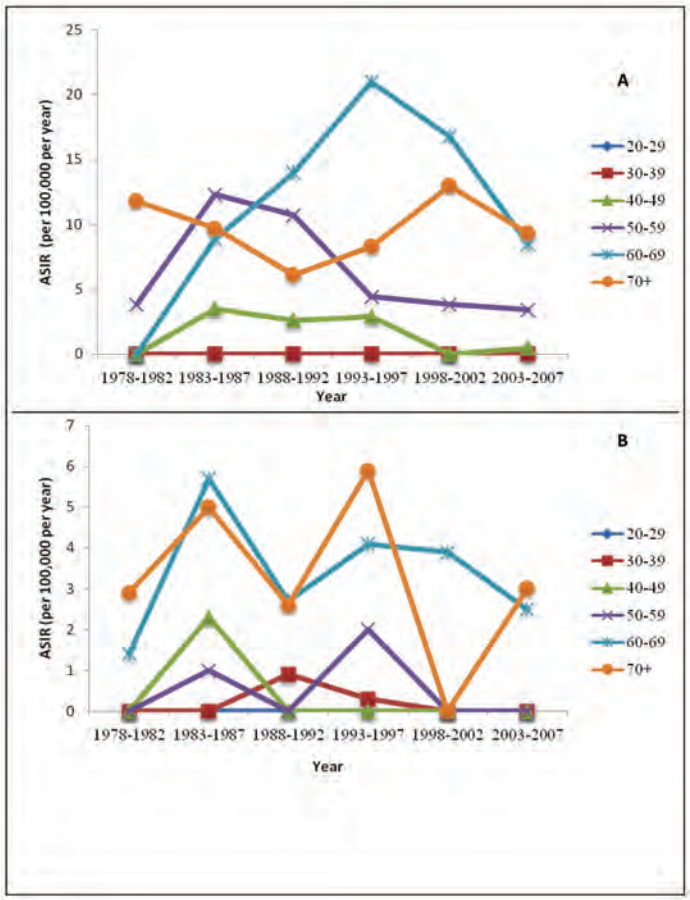

Fig. 4: Time trends in age-specific incidence rates (ASIRs) of tongue squamous cell carcinoma, by decade of age in years, in (A) males and (B) females, Kingston and St Andrew, Jamaica, 1978–2002.

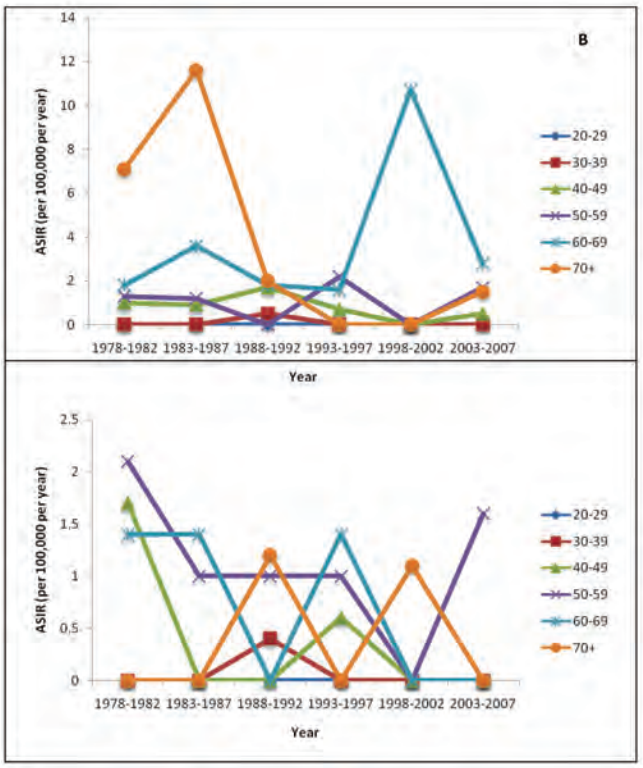

Fig. 5: Time trends in age-specific incidence rates (ASIRs) of tonsillar squamous cell carcinoma, by decade of age in years, in (A) males and (B) females, Kingston and St Andrew, Jamaica, 1978–2002.

DISCUSSION

The head and neck region is the 8th commonest cancer site in Jamaican men. Cancer of this anatomical region is less common in Jamaican women, in whom it is not ranked among the top ten commonest cancers (14). The male predominance seen in head and neck cancers is in keeping with data reported worldwide (5, 15–16), where male to female ratios for oral and oropharyngeal SCC range from 2.4:1 to 4:1 (15–17).

The data from the present study showed that 85.4% of oral and oropharyngeal cancers occurred in individuals 50 years of age and older, and this is also similar to data documented elsewhere, where the majority of cases of these cancers occur among older individuals (7, 16). Younger patients (under the age of 45–50 years) reportedly account for 6%–34% of oral and oropharyngeal cancers (7, 16).

Traditionally, oral and oropharyngeal SCCs have been causally linked to chronic cigarette smoking and alcohol consumption. It has been well established that the older age and male gender predominance observed in patients with these cancers exist because these activities have been generally pursued more commonly by males (10), and require several years of exposure to exert their carcinogenic effect.

Among oral and oropharyngeal SCCs, those of the tongue and palatine tonsil are the commonest documented worldwide (7, 16, 18), and this was also the case in the present study. In Asian populations, buccal cancer is more common due to betel quid/tobacco chewing habits (19).

The current ASR of all oral cavity and oropharyngeal SCCs combined in Jamaica is 3.2 per 100 000 per year in males, and 0.7 per 100 000 per year in females. There is marked global variation in the incidence of oral and oropharygeal cancers, and our rates fall within these ranges [0.3 to 9.3 per 100 000 per year in males and 0.1 to 1.4 per 100 000 per year in females] (20).

In recent years, the incidence rates of oral and oropharyngeal cancers have been decreasing in the United States of America [USA] (7, 15–16) while in other parts of the world, there have been reports of increasing incidence (3, 21). The overall decline in the USA is thought to reflect a downward trend in cigarette smoking (22). It has been suggested that, where incidence rates are not decreasing, the institution of measures to curb cancer-promoting behaviour (such as alcohol and tobacco consumption) may be rewarded by reductions in incidence rates (19). In fact, in Thailand,

recent decreases in rates of oral cancer have been attributed to a decrease in the prevalence of betel quid chewing (23).

The present study demonstrated progressive decrease in the overall incidence rates of oral and oropharyngeal cancers, and this reduction paralleled decreasing prevalence in cigarette smoking in Jamaica (24). Decreasing prevalence of cigarette smoking may therefore be a contributing factor for the decreasing incidence rates observed in our patients.

In regions showing overall increases in incidence of oral and oropharyngeal cancer (3–5), this has been attributed to increases in incidence of cancers of the tongue and tonsil subsites. Additionally, some of those studies with documented overall decreases in incidence of oral cavity and oropharyngeal cancer also showed increasing incidence rates of cancer in certain subsites within the oral cavity and pharynx, notably tongue and palatine tonsil (7, 15, 16). These recent increases in tongue and tonsil ASRs, not appreciated in the study, are thought to be due to SCCs causally related to infection by HPV.

In some populations that have observed increases in incidence of tongue and tonsil cancer, these increases have been documented in men over a fairly wide age range [45–64 years] (3, 16) and differences in ethnicity were not reported (3). In other studies, the increase in incidence has been observed primarily among young white men [less than 45 years old] (7), and some authors report further that, while in young white males the incidence is rising, in non-white males the incidence is stable or decreasing (7, 15–17). Specific analysis of younger patients in our cohort did not reveal any increases in incidence of tongue and tonsil cancer; rates in younger patients exhibited trends similar to the entire sample examined as a whole.

Some authors have attributed the higher incidence among white males to a higher likelihood of this subpopulation engaging in sexual practices (oral sex, multiple sexual partners) that increase exposure to HPV, when compared to black males (25). The predominantly black ethnicity (92.1%) of the Jamaican population (26) may therefore partially explain the trends observed. However, there are presently no published data looking at the incidence of oral HPV infection in Jamaican men.

CONCLUSION

In conclusion, the age standardized rate of oral and oropharyngeal cancers overall has been decreasing in the Jamaican population, in both males and females. With respect to specific anatomical sites, tonsillar SCC ASRs have been decreasing in both genders, and tongue SCC ASR has been decreasing in males and fluctuating in females.

Whereas the overall decrease in incidence of oral and oropharyngeal cancer seen in our population is similar to that reported elsewhere, and may be partially related to downward trends in cigarette smoking, the trends in tongue and tonsillar carcinoma incidence rates are unlike those reported in many other countries, where they are increasing, particularly among younger adults. It is unclear whether this difference is related to differences in sexual practices among different populations, small size of the current study, or a lag time in the emergence of a new trend. Further studies within the Jamaican population, including the evaluation of head and neck cancer tissue for HPV DNA, are warranted.

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