Cutaneous Malignant Melanoma in Jamaica, 1958 to 2007

CG Liburd, TN Gibson, B Hanchard, N Waugh, D McNaughton

ABSTRACT

Objective: *To document the epidemiology of cutaneous malignant melanoma (CMM) in Jamaica over the 50-year period, 1958–2007.*

Methods: *All cases of CMM recorded in the Jamaica Cancer Registry (JCR), for the period 1958–2007 were collected. For each case, we documented method of ascertainment, age, gender and anatomical location. Age standardized incidence rates (ASRs) for the seven five-year periods from 1973–2007 were also obtained from the JCR.*

Results: *There were 220 cases of CMM from 218 patients (131 females, 87 males; male:female ratio 1:1.5), ranging in age from 21 to 98 years (median age 62 years). The majority of cases (94%) were ascertained via biopsy. The ASRs fluctuated around 0.9 per 100 000 per year from 1973 to 2007, ranging from 0.6–1.4 per 100 000 per year in females and 0.5–1.1 per 100 000 per year in males. Cutaneous malignant melanoma was most common in the lower limb (59% of males and 69% of females). The foot was the most common lower limb site (female: 77%, male: 83%) and the commonest site overall (female: 53%, male: 49%).*

Conclusion: *In Jamaica, CMM is more common in females than in males. In both genders, the ASRs were noted to be low and fluctuated around 0.9 per 100 000 per year since 1973. The lower limb is the commonest anatomical site, with the majority of cases involving the foot. These findings are similar to those documented in other predominantly Black populations.*

Keywords: Jamaica, malignant melanoma

Melanoma Maligno Cutáneo en Jamaica, 1958–2007

CG Liburd, TN Gibson, B Hanchard, N Waugh, D McNaughton

RESUMEN

Objetivo: *Documentar la epidemiología del melanoma maligno cutáneo (MMC) en Jamaica durante el período de 50 años, 1958 – 2007.*

Métodos: *Se recopilaron todos los casos de MMC recogidos en el Registro de Cáncer de Jamaica (JCR, siglas en inglés) correspondientes al período 1958 – 2007. Para cada caso, se documentó el método de determinación, la edad, el género, y la localización anatómica. También se obtuvieron las tasas de incidencia de edad estandarizada (TEE) para los siete períodos de cinco años de 1973 – 2007, a partir del JCR.*

Resultados: *Hubo 220 casos de MMC de 218 pacientes (131 hembras, 87 varones; proporción varón: hembra 1: 1.5), cuyas edades oscilaban de 21 a 98 años (edad promedio 62 años). La mayoría de los casos (94%) fueron determinados mediante biopsia. Las TEEs fluctuaron aproximadamente de 0.9 por 100 000 por año de 1973 a 2007, fluctuando de 0.6 – 1.4 por 100 000 por año en las hembras, y 0.5 – 1.1 por 100 000 por año en los varones. El melanoma maligno cutáneo fue más común en los miembros inferiores (59% de los varones y 69% de las hembras). El pie era el sitio más común de la extremidad inferior (hembras: 77%, varones: 83%), y el sitio más común en general (hembras: 53%, varones: 49%).*

Conclusión: *En Jamaica, el MMC es más común en las mujeres que en los hombres. Se observó que las tasas TEEs eran bajas para ambos sexos, fluctuando aproximadamente 0.9 por 100 000 por año desde 1973. La extremidad inferior es el sitio anatómico más frecuente, implicando el pie en la mayor*

From: Jamaica Cancer Registry, Department of Pathology, The University of the West Indies, Kingston 7, Jamaica.

Correspondence: Dr T Gibson, Department of Pathology, The University of the West Indies, Kingston 7, Jamaica. Fax: 876 977 1811; e-mail: tracey.gibson@uwimona.edu.jm

DOI: 10.7727/wimj.2013.265

parte de los casos. Estos resultados son similares a los que se documentan en otras poblaciones predominantemente negras.

Palabras claves: Jamaica, melanoma maligno

West Indian Med J 2014; 63 (7): 718

INTRODUCTION

Malignant melanoma (MM) is found primarily within the skin (95%), where it is termed cutaneous malignant melanoma (CMM), but it may also occur as a primary tumour in extra-cutaneous sites, including the eyes (conjunctiva and retina), leptomeninges and mucous membranes of the mouth, nose, anogenital region and bowel (1).

Cutaneous malignant melanoma is far less prevalent than non-melanoma skin cancer, but it accounts for the majority of skin cancer deaths (2). Worldwide, there are approximately 160 000 new cases of CMM diagnosed each year (1) and in many countries, the incidence has been increasing since the early 1970s (1, 3).

The major risk factor for CMM is excessive exposure to ultraviolet light, which accounts for approximately 80% of cases (1). Ultraviolet light exerts its oncogenic effect primarily in individuals with decreased pigmentation, such as Caucasians, particularly those with a phenotype characterized by multiple freckles, fair skin (1, 3) and blonde or red hair (3). Melanocytic naevi constitute another risk factor (1). In the United States of America (USA), the lifetime risk of developing CMM is 20 times higher in Caucasians than in African Americans (2). This pattern of ethnic distribution of MM is also seen globally, where countries with fair-skinned populations and high exposure to ultraviolet light (such as Australia), exhibit the highest incidence rates, and those with dark-skinned populations, the lowest (1).

In non-Caucasian populations, CMM most often occurs in non-pigmented skin, particularly in the palms, soles and subungual regions (3, 4). Among these sites, the commonest is the sole of the foot (1, 3, 4).

The purpose of this paper is to present the epidemiology of CMM in Jamaica from 1958 to 2007 utilizing data from the Jamaica Cancer Registry (JCR). There has been no recently published information on MM in Jamaica, a country with high exposure to sunlight (latitude 18 °N), where the majority of the population is dark-skinned, with individuals of African descent accounting for 92.1% (5).

SUBJECTS AND METHODS

All cases of CMM diagnosed over the 50-year period from 1958 to 2007 were extracted from the archives of the JCR. Data concerning method of ascertainment, age, gender and anatomical site (head and neck, trunk, upper limb and lower limb) were collected. Lower limb sites were further categorized into the sub-sites: buttock, thigh, leg and foot. The data were used to calculate frequencies. Five-year cancer incidence reports published by the registry were also reviewed to obtain age standardized incidence rates (ASRs) of CMM for each of the seven five-year periods from 1973 to 2007; prior to 1973 only crude incidence rates were available.

RESULTS

During the 50-year period, 1958 to 2007, there were 220 cases of CMM recorded in 218 patients in the JCR. Two patients had two primary tumours each. The methods of ascertainment of the primary site of CMM were biopsy (206 [94%]), clinical (10 [5%]) and postmortem (2 [1%]). There were 131 females and 87 males (M:F ratio 1:1.5), ranging in age from 21 to 98 years. There were four patients of unknown age, two of each gender. The median age of diagnosis was 63 years for females and 61 years for males (Fig. 1).

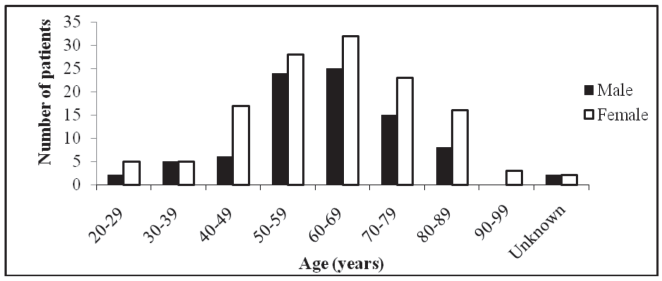

Fig. 1: Age and gender distribution of 218 patients with cutaneous malignant melanoma.

Figure 2 shows the ASRs of CMM from 1973 to 2007. Since 1973, the ASRs in both genders have fluctuated around 0.9 per 100 000 per year, with the last five-year report (2003–2007) accounting for one of the upward trends of the fluctuation, and exhibiting values of 1.0 per 100 000 per year in males and 1.3 per 100 000 per year in females. The median (range) ASRs were 1.01 (0.6–1.4) per 100 000 per year in females and 0.81 (0.5–1.1) per 100 000 per year in males. Females showed the highest ASRs (per 100 000 per year) in each five-year period except for 1988 to 1992 (females: 0.6 and males: 1.1) and 1993 to 1997 (females: 1 and males: 1).

In Fig. 3, the anatomical distribution of CMM according to gender is shown. There were two patients with more than one tumour (one female: upper and lower limb [thigh] and one male: head and neck and upper limb). Cutaneous malignant melanoma of the lower limb (female: 91 [69%] and male: 52 [59%]) was the most frequent site of diagnosis in both genders. This was followed by head and neck (20 [15%]) for females and trunk (12 [14%]) for males.

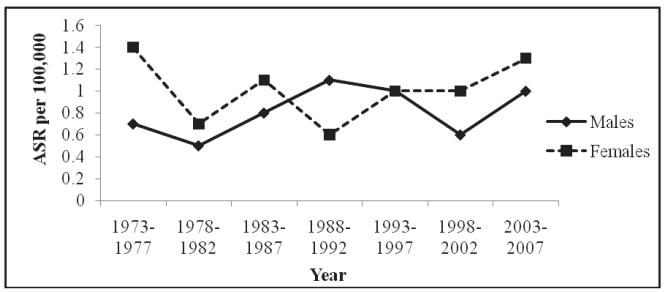

Fig. 2: Age standardized incidence rates (ASRs) of cutaneous malignant melanoma, 1973–2007.

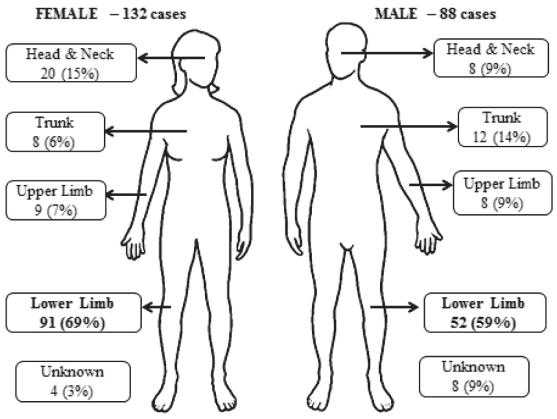

Fig. 3: Anatomical distribution of cutaneous malignant melanoma: number of cases (percentage).

Figure 4 shows the lower limb distribution of CMM in both genders. The foot was the most common lower limb site (female: 70 [77%] and male: 43 [83%]) and the commonest site overall (female: 70 [53%] and male: 43 [49%]).

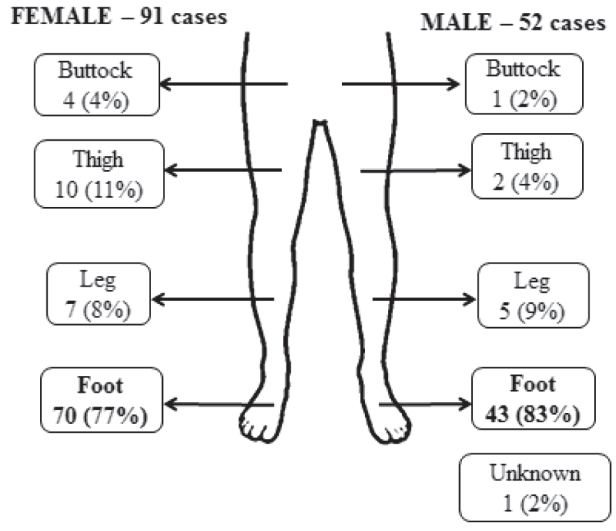

Fig. 4: Lower limb distribution of cutaneous malignant melanoma: number of cases (percentage).

DISCUSSION

Cutaneous malignant melanoma is more common in Caucasian populations than in non-Caucasian populations, and the highest ASRs in the world have been recorded in Australia with 62 per 100 000 per year in males and 40 per 100 000 per year in females (6). In Black populations, lower ASRs are noted (1, 7, 8) and there is variation in gender predominance with some studies showing higher ASRs in females than in males. In Martinique, Garsaud *et al* reported a female to male ratio of 1.48 to 0.9 per 100 000 per year (7) and in Florida, USA, Pinheiro *et al* reported a female to male ratio of 1.6 (0.9–2.7) to 1.3 (0.6–2.6) per 100 000 per year (9). In other reports, males showed higher ASRs than females: Roche *et al* reported a male to female ratio of 1.2 to 0.9 per 100 000 per year in US blacks (8), and the 2008 GLOBOCAN report documented a male to female ratio of 1.6 to 1.4 per 100 000 per year in Africans (10). The low ASRs documented in this study, conducted in a population of predominantly African descent, are in keeping with the low values observed in other Black populations (1, 7−9). The female preponderance is also consistent with that observed in other studies (7, 9), although a previous hospital-based study from Jamaica, published by Butler in 1967, showed a male predominance (male:female ratio 1.44:1), which he reported as being unusual (11).

The incidence of CMM has been increasing in Caucasians for decades (1); in non-Caucasian populations, the trends in incidence have been variable. In the USA, on the one hand, an increase has been documented in recent years (1988–2001) in Hispanics (3), but, on the other hand, the Black population has shown relatively stable ASRs over the last several years (12, 13). Cutaneous malignant melanoma ASRs in Black East Africans have been fluctuating over the past several years (14−16), and in Uganda specifically, Parkin *et al* showed a small increase in ASRs over the period 2002–2006 for males, but the ASRs for females remained the same (17). In Jamaica, trends in CMM ASRs are similar to those reported in other Black populations. From 1973–2007, CMM ASRs in Jamaica have fluctuated around 0.9 per 100 000 per year, and it is unclear whether the upward trend noted in the last five-year cancer incidence report (2003−2007) will be sustained.

In this study, CMM was most commonly seen in the seventh decade (median ages: males 61 years and females 63 years). A similar age distribution was observed in other Black populations (7, 18). Butler, however, reported a lower median age (6th decade) in both males and females in his study (11) and Lodder *et al* reported a much wider age distribution, ranging from the 6th to 7th decades, in Black South Africans (4). In Caucasian populations, CMM is most commonly seen in the 6th decade (19, 20). The proportionate contribution of Caucasians to the Jamaican population is currently less [0.2%] (5) than that documented during the period of Butler's study [0.8%] (21). This may partially

explain the difference in age distribution between Butler's study and ours.

The most common anatomical location for both genders in this study was the lower limb (female 69% and male 59%), followed by head and neck (15%) for females and trunk (14%) for males. The foot was the most common lower limb site and the commonest site overall. Other studies in Black populations showed similar reports with the lower limb being the most common anatomical site (4, 7, 8, 11, 18) and the foot being the most common lower limb site and the commonest site overall (4, 7, 11). However, the second commonest anatomical location reported in other Black populations was either the trunk (8, 11, 18) or upper limb (4, 7, 8) unlike in our study. In Caucasian populations, the most common anatomical location for males is the trunk and the lower limb is the commonest in females (8, 22).

REFERENCES

1. Boyle P, Levin B, eds. World cancer report 2008. Lyon, France: International Agency for Research on Cancer; 2008.
2. Shenenberger DW. Cutaneous malignant melanoma: A primary care perspective. Am Fam Physician 2012; **85:** 161−8.
3. Bradford PT. Skin cancer in skin of color. Dermatol Nurs 2009; **21:** 170−8.
4. Lodder JV, Simson W, Becker PJ. Malignant melanoma of the skin in Black South Africans: a 15-year experience. S Afr J Surg 2010; **48:** 76−9.
5. Statistical Institute of Jamaica [Internet]. Kingston, Jamaica: Population and Housing Census 2011 General report, Volume I. [updated 2012; cited 2013 Aug]. Available from: http://www.jis.gov.jm/pdf/General%20Report%20Census%202011%20Revised%20Copy%20Oct.%2019.pdf
6. Australian Institute of Health and Welfare & Australasian Association of Cancer Registries [Internet]. Canberra, Australia: Cancer in Australia: an overview, 2012. Cancer series no. 74. [updated 2012; cited August 2013]. Available from: http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129542353
7. Garsaud P, Boisseau-Garsaud AM, Ossondo M, Azaloux H, Escarmant P, LeMab G et al. Epidemiology of cutaneous melanoma in the French West Indies (Martinique). Am J Epidemiol 1998; **147:** 66−8.
8. Roche LM, Wu XC, Chen V, Hamilton-Byrd E, Groves FD, Jemal A et al. Cutaneous melanoma incidence and survival among Black, Asian and Pacific Islander and White populations in the United States. Clin Med Insights Dermatol 2010; **3:** 15−24.
9. Pinheiro PS, Sherman RL, Trapido EJ, Fleming LE, Huang Y, Gomez-Martin O et al. Cancer incidence in first generation U.S. Hispanics: Cubans, Mexicans, Puerto Ricans, and New Latinos. Cancer Epidemiol Biomarkers Prev 2009; **18:** 2162−9.
10. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. GLOBOCAN 2008 v2.0, Cancer incidence and mortality worldwide: IARC CancerBase No. 10 [Internet]. Lyon, France: International Agency for Research on Cancer; 2010 [modified 2011 Dec; cited 2013 Aug 19]. Available from: http://globocan.iarc.fr
11. Butler AK. Malignant melanoma in Jamaica. Postgrad Med J 1967; **43:** 449−53.
12. Eide MJ, Weinstock MA. Association of UV index, latitude, and melanoma incidence in nonwhite populations – US Surveillance, Epidemiology, and End Results (SEER) program, 1992 to 2001. Arch Dermatol 2005; **141:** 477−81.
13. Hu S, Parmet Y, Allen G, Parker DF, Ma F, Rouhani P et al. Disparity in melanoma: a trend analysis of melanoma incidence and stage at diagnosis among Whites, Hispanics and Blacks in Florida. Arch Dermatol 2009; **145:** 1369−74.
14. Parkin DM, Whelan SL, Ferlay J, Raymond L, Young J, eds. Cancer incidence in five continents. Vol VII No. 143. Lyon: IARC Scientific Publications; 1997.
15. Parkin DM, Whelan SL, Ferlay J, Teppo L, Thomas DB, eds. Cancer incidence in five continents. Vol VIII No. 155. Lyon: IARC Scientific Publications; 2002.
16. Curado MP, Edwards B, Shin HR, Storm H, Ferlay J, Heanue M et al. Cancer incidence in five continents. Vol. IX No. 160. Lyon: IARC Scientific Publications; 2007.
17. Parkin DM, Nambooze S, Wabwire-Mangen F, Wabinga HR. Changing cancer incidence in Kampala, Uganda, 1991–2006. Int J Cancer 2010; **126:** 1187−95.
18. Myles ZM, Buchanan N, King JB, Singh S, White A, Wu M et al. Anatomic distribution of malignant melanoma on the non-Hispanic Black patient, 1998–2007. Arch Dermatol 2012; **148:** 797−801.
19. Rager EL, Bridgeford EP, Ollila DW. Cutaneous melanoma: update on prevention, screening, diagnosis, and treatment. Am Fam Physician 2005; **72:** 269−76.
20. Garbe C, McLoed GR, Buettner PG. Time trends of cutaneous melanoma in Queensland, Australia and Central Europe. Cancer 2000; **89:** 1269−78.
21. Statistical Institute of Jamaica. Statistical yearbook of Jamaica 1999. Kingston, Jamaica: Statistical Institute of Jamaica; 1999.
22. Marrett LD, Nguyen HL, Armstrong BK. Trends in the incidence of cutaneous malignant melanoma in New South Wales, 1983–1996. Int J Cancer 2001; **92:** 457−62.