

Malignant melanoma in Chile: an unusual distribution of primary sites in men from low socioeconomic strata

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Summary

Background. Mortality from malignant melanoma (MM) has increased in Chile in the past decade. The location of MM lesions on the body has been correlated with prognosis and survival.

Aim. To review body site and gender relationships with histopathologically confirmed primary MM in Chile.

Methods. Records of 575 cases presenting to 5 state hospitals from 1992 to 2001 were analysed.

Results. There were 360 women and 215 men. Women showed a significantly higher number of MM on the legs, cheeks and arms, and in the genital area, whereas men showed a significantly higher number on the ears, backs of the hands, soles and feet. Men had a predilection for MM with a poor prognosis.

Conclusion. The different body site distribution of primary MM in men and women may be explained by a different pattern of sun exposure. Ethnic and genetic factors may also be involved. The predominant location of MM in women in Chile is similar to white populations, whereas the location in men is similar to that observed in black and Asian populations. These observations may be relevant to the high mortality of MM in Chilean men.

Introduction

The incidence and mortality of malignant melanoma (MM) have increased many times during the past several decades in white populations. In Chile, the mortality rate increased by 14% between 1988 and 1998,¹ and the incidence rate increased by 105% between 1992 and 1998 in Santiago's state hospitals.²

The body site location of primary cutaneous MM has been correlated with prognosis and survival. High-risk sites of MM in stage I include the scalp, trunk, hands, feet and genital area.³ There is a gender difference; MM located in the upper part of the back, back of the arms,

and the neck and scalp region occur more frequently in men than women.⁴ In addition, it has been observed that MM in less visible body areas are significantly thicker at the time of diagnosis than those occurring in more visible areas.^{5,6} The anatomical location of MM is related to ethnic background; MM in black and Asian populations are mainly located on the soles and palms, whereas in white populations, the main location is the trunk in men and legs in women.⁷

The Chilean population is mainly descended from white men (mostly Spaniards) and Amerindian women. At the present time, the Chilean population breakdown is: (i) high socioeconomic stratum (5% of the population) with no Amerindian mixture, (ii) the middle stratum (20% of population) with 20% Amerindian, and (iii) the low stratum (75% of population) with 35–40% Amerindian.^{8,9} A previous study on skin colour in the Chilean population showed that individuals from the low stratum were darker than those from the high

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stratum, but women from the low stratum had lighter skin than men, a difference not found in the high stratum.¹⁰ The majority of the low-stratum population in Chile seek medical attention from state hospitals.

As mentioned above, the main location in whites is different by gender. In Chile, more men than women die from MM,¹ and because prognosis and survival of MM has been related to location, we considered it important to study the location of MM in the majority of the Chilean population. The aim of this study was to analyse by gender the anatomical distribution of primary MM in patients from Santiago state hospitals.

Methods

We analysed all histopathological reports (600 000) between 1992 and 2001 in the histopathology departments from five major state hospitals in Santiago. These hospitals belong to the Chilean Health Service Program and cover a population of approximately 2 million people. In total, 575 primary malignant melanomas (MM) were retrieved and their anatomical site studied. Average age of the patients was 61 years.

Statistical analysis

The χ^2 test was used for the statistical analysis, and log-likelihood χ^2 or Fisher's exact test were used when expected values were <5.¹¹ *P*-values of 0.05 and 0.01 were considered significant.

Results

Table 1 shows the anatomical site of 575 MM (360 MM in women and 215 MM in men) from the state hospitals. The main locations were feet (16.9%) and legs (16.4%), followed by cheeks (13.9%) and trunk (11.8%). A gender difference in site distribution was observed: the main location site in women was the legs (20.3%), followed by cheeks (17.5%), feet (13.3%) and trunk (10.3%), whereas in men, the sites were feet (22.8%, 13% on the soles), trunk (14.4%), legs (9.8%) and cheeks (7.9%). Women showed a significantly higher number of MM on the cheeks, legs, arms and genital area than men, whereas men showed a significantly higher number of MM on the ears, dorsal hand, soles and feet.

Data on the histological type of MM were only registered for 78% of the men; the main type was nodular (51.5%), followed by acral lentiginous (18.6%), superficial spreading (16.8%), lentigo maligna (10.2%) and nonclassified types (3.0%). In women, the data were only registered for 73% of the cases; the main

histological type was also nodular (37.9%), followed by superficial spreading (30.7%), lentigo maligna (19.3%) and acral lentiginous (10.6%). We observed a significantly higher percentage of superficial spreading and lentigo maligna MM in women than in men, but we found a significantly higher percentage of acral lentiginous and nodular MM in men than in women.

MM were classified according to Breslow thickness (BT): < 0.76 mm, BT I; 0.76–1.69 mm, BT II; 1.70–3.60 mm, Breslow III; and > 3.60 mm, BT IV.¹² Data were only registered for 87% of men; most MM were BT IV (33.2%), followed by III (27.3%), I (23.5%) and II (16.0%). In women, the data were only registered for 78% of the cases, with most MM being BT I (43.2%), followed by III (21.1%), II (18.2%) and IV (17.5%). Women had a significantly higher number of BT I and men a higher number of BT IV.

Discussion

The analysis of this sample shows that MM are mainly located in lower limbs, with half of the cases located on the feet, and that there is a gender difference in location. The main location for men was the feet and for women it was the legs. In other countries of Latin America, the main location for MM has also been shown to be the lower limbs, with a high percentage on the feet in both sexes. In Puerto Rico, a study on 367 MM showed that half were located on the lower limbs, mainly on the feet.¹³ In Peru, the main location observed in both sexes was also the lower limbs, with 62% on the feet,¹⁴ while a study in Mexico showed 31.8% of the MM were on the soles.¹⁵ These findings are in agreement with those found in black and Asian populations. However, in other countries of South America, a different pattern of MM location has been reported. In studies from Argentina and Uruguay, the main location was the legs for women and the trunk for men.^{16,17}

These results are similar to those found in the Spanish¹⁸ and other white populations.^{19–21} The different site distribution of primary MM in men and women may be explained by a different sun-exposure pattern in both sexes, but genetic factors may also be involved. In this study, the fact that men show a significantly higher number of MM on the ears and dorsal hand may be explained by the higher sun exposure of those areas in men. Women show higher numbers of MM on the arms and legs, which also correlated well with differences in sun exposure between men and women. The fact that women show more MM on the cheeks may be explained by the fact that women in this population are more likely to seek medical attention for any facial lesion. MM

Table 1 Anatomical site by gender.

Anatomical site	Female		Male		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Forehead	8	2.2	3	1.4	11	1.9
Cheeks	63	17.5†	17	7.9	80	13.9
Middle face area	10	2.8	4	1.9	14	2.4
Chin	1	0.3	2	0.9	3	0.5
Ears	3	0.8	9	4.2†	12	2.1
Scalp	2	0.6	5	2.3	7	1.2
Eye area	11	3.1	8	3.7	19	3.3
Face, NS	9	2.5	3	1.4	12	2.1
Total face	107	29.7	51	23.7	158	27.5
Neck	3	0.8	3	1.4	6	1.0
Trunk	37	10.3	31	14.4	68	11.8
Abdomen	1	0.3	3	1.4	4	0.7
Genital area	5	1.4*‡	0	0.0	5	0.9
Buttock	2	0.6	1	0.5	3	0.5
Legs	73	20.3**	21	9.8	94	16.4
Arms	25	6.9*	6	2.8	31	5.4
Palms	1	0.3	1	0.5	2	0.3
Dorsal hand	0	0.0	3	1.4*§	3	0.5
Hands, NS	11	3.1	6	2.8	17	3.0
Total hand	12	3.3	10	4.7	22	3.8
Soles	28	7.8	27	12.6	55	9.6
Dorsal foot	0	0.0	3	1.4*§	3	0.5
Foot, NS	20	5.6	19	8.8	39	6.8
Total foot	48	13.3	49	22.8†	97	16.9
Body, NS	6	1.7	5	2.3	11	1.9
Location NS	41	11.4	35	16.3	76	13.2
Total	360	100.3	215	100.1	575	99.9

* $P < 0.05$; † $P < 0.01$. Fisher's exact test: ‡0.0518; §0.0952. NS, not specified.

arising in the genital area is rare; we had only a few cases in women, but our results confirm the findings in other populations that show a higher frequency of MM in the genital area in women than in men.²² The higher number of MM on the soles in men may well indicate genetic differences between the sexes. Trauma and friction as a risk factor for the development of plantar MM is controversial; some authors have indicated a relationship between plantar melanoma and weight-bearing areas in subjects in India,²³ but other studies have shown no association between mechanical trauma and MM.^{24,25} In our study, trauma would not explain the gender differences. The main location of MM observed in our study, where women presented a pattern similar to white and men similar to Asian and black populations, may be explained by a different gene composition between men and women in this Chilean population.²⁶ The gender difference correlated well with that found for skin, eye and hair colour in the same groups.¹⁰

Our study showed that men have a predilection for MM located in areas associated with the worst prognosis and survival, and these findings correlate with previous

results on Chilean mortality rates from MM. Mortality from MM in Chilean women is lower than in men; the relative risk of dying from MM in Chile is 1.3 (men vs. women), with a tendency to rise.¹ These conclusions are in agreement with the results on the BT and histological type found in this study. Women showed less aggressive histological types of MM than men and also presented more superficial tumours.

This study shows that the genetic composition of the Chilean population influences the anatomical location of MM. Research into factors associated with prognosis and survival of MM may help to achieve an early diagnosis of MM and to establish future campaigns of MM prevention and MM self-detection in Chile.

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