

Analysis and incidence of cutaneous melanoma in a cancer hospital in the Triângulo Mineiro

Análise e incidência do melanoma cutâneo em um hospital de câncer localizado no Triângulo Mineiro

Análisis e implicaciones del melanoma cutáneo em un hospital de cáncer situado en el Triángulo Mineiro

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Ricardo Dias da Silva¹
Meyre Aparecida Inácio Dias²

This study aimed to evaluate the cutaneous melanoma from the incidence and the variables: gender, color of skin, age, location of the tumor and histologic type. This is a descriptive, quantitative research, retrospective and cross-sectional. We evaluated 81 biopsies of patients in medical consultation in a cancer hospital in the city of Patrocínio, MG, Brazil, between January 2015 and May 2016. We found 42 biopsies with basal cell carcinoma (51.85%), 20 with squamous cell carcinoma (24.69%), 3 with melanoma (3.7%) and 16 with other diagnoses and inconclusive results (19.75%). The melanoma was lower between the skin neoplasms; prevalent in light-skinned people; gender variable depends on the population studied; the superficial spreading melanoma is the predominant type; and the variable age is controversial. The research provided information on skin cancer in a region of Minas Gerais State in the Southeast region of Brazil and can be a sensor for the inclusion of health actions especially in the prevention and early detection.

Descriptors: Melanoma; Skin neoplasms; Epidemiology.

Este estudo teve por objetivo avaliar o melanoma cutâneo a partir da incidência e das variáveis: gênero, cor da pele, idade, localização do tumor e tipo histológico. Esta é uma pesquisa descritiva, quantitativa, retrospectiva e, de corte transversal. Foram avaliadas 81 biópsias de pacientes atendidos em consulta médica em um hospital de câncer da cidade de Patrocínio, MG, entre janeiro de 2015 e maio de 2016. Encontrou-se 42 biópsias com carcinoma basocelular (51,85%), 20 com carcinoma espinocelular (24,69%), 3 com melanoma (3,7%) e, 16 com outros diagnósticos e resultados inconclusivos (19,75%). O melanoma foi o de menor incidência entre as neoplasias de pele; predominante em pessoas de pele clara; variável gênero depende da população estudada; o melanoma extensivo superficial é o tipo predominante; e, a variável idade mostrando-se controversa. A pesquisa propiciou informações sobre o câncer de pele numa região do estado de Minas Gerais e pode ser um sensor para a inclusão de ações de saúde sobretudo, nas de prevenção e de detecção precoce.

Descritores: Melanoma; Neoplasias cutâneas; Epidemiologia.

Este estudio tuvo por objetivo evaluar el melanoma cutáneo a partir de la incidencia y de las variables: género, color de la piel, edad, localización del tumor y tipo histológico. Esta es una investigación descriptiva, cuantitativa, retrospectiva y de corte transversal. Fueron evaluadas 81 biopsias de pacientes atendidos en consulta médica en un hospital de cáncer de la ciudad de Patrocínio, MG, entre enero de 2015 y mayo de 2016. Se encontraron 42 biopsias con carcinoma baso celular (51,85%), 20 con carcinoma espino-celular (24,69%), 3 con melanoma (3,7%) y, 16 con otros diagnósticos y resultados inconclusivos (19,75%). El melanoma fue el de menor incidencia entre las neoplasias de piel; predominante en personas de piel clara; variable del género depende de la población estudiada; el melanoma extensivo superficial es el tipo predominante; y, la variable edad mostrándose controversia. La investigación propició informaciones sobre el cáncer de piel en una región del estado de Minas Gerais y puede ser un sensor para la inclusión de acciones de salud sobre todo, en las de prevención y de detección precoz.

Descriptores: Melanoma, Neoplasias cutâneas, Epidemiología.

¹Nurse. Specialist in Oncology. Specialist in Collective Health. Post graduate student in High Education Teaching at Universidade Cruzeiro do Sul. Master's degree student in Health Care at Universidade Federal do Triângulo Mineiro. Nurse at Secretaria Municipal de Saúde de Patrocínio, MG, Brazil. ORCID: 0000-0002-5856-9318 E-mail: ricardodiv@yahoo.com.br

²Nurse. Specialist in Oncologic Nursing. Nurse at Hospital do Câncer Dr. José Figueiredo. Patrocínio, MG, Brazil. ORCID: 0000-0003-3436-821X E-mail: meyreapenf@gmail.com

INTRODUCTION

Skin cancer is the most common in all populations¹. In Brazil, skin malignant neoplasm corresponds to 30% of all malignant tumors registered². Cutaneous malignant neoplasms have basically two forms: melanoma and non melanoma¹.

Non-melanoma skin cancer (NMSC), the most incident, is divided in: basal cell carcinoma (BCC) and squamous cell carcinoma (SCC)^{1,2}. The BCC (70%) is more incident than the SCC (25%) in Brazil³. The prognosis of these neoplasms is good when the diagnosis and treatment occur early-high incidence and low mortality⁴.

Malignant cutaneous melanoma (CM) is the most aggressive skin cancer, although less incident than NMSC^{1,2,5}. Melanoma represents only 4% of malignant skin neoplasms, although it is most severe due to its high metastases development capacity³.

According to the 2016 estimate: incidence of cancer in Brazil, of the National Institute of Cancer (INCA), 5,670 cases of CM (3,000 in men and 2,670 in women) and 175,760 cases of NMSC in Brazil are expected for the year 2016¹. For the state of Minas Gerais 330 cases of CM are expected, being below the states of Sao Paulo, Rio Grande do Sul, Paraná, Santa Catarina and Rio de Janeiro, which have the highest estimates in the country¹.

In 2013 1,547 deaths caused by melanoma occurred in Brazil, 903 men and 644 women. Men are the most affected by CM^{1,2,6}. The incidence of CM has been growing in the last decades⁶⁻⁹.

In the period from 460 to 375 BC melanoma was first reported by Hippocrates; only in 1838 the term melanoma was used by Robert Carswell in skin pigmented malignant lesions⁸. Between the years 50 and 60 several researchers tried to list the prognostic factors of melanoma⁸. "In 1969 Clark and collaborators improved the micro staging system using as a criterion the levels of skin invasion"⁸. According to Wainstein and Belfort, "Breslow demonstrated the importance of primary melanoma thickness"⁸. The two parameters, Clark and Breslow are

used in the clinical management of melanoma nowadays⁸.

Cutaneous melanoma is a type of skin cancer that originates in melanocytes, prevalent in white adults^{1,6-9}. There are three types of melanin producing cells, responsible for pigmentary lesions: epidermal melanocytes; dermal melanocytes; and nevus cells⁶. Melanocytes are pigment cells located in the basal layer of the epidermis, infundibulum and bulbar region of the hair follicles, the choroid (intraocular) and in leptomeninges⁷. These cells are responsible for melanin production, which is the main protective factor of ultraviolet radiation (UVR) for cutaneous tissue¹⁰⁻¹².

There are four types of CM described in the literature: superficial spreading melanoma (SSM), which corresponds to 70% of cases and has equal distribution in both genders; nodular melanoma (NM), affecting 10% to 15% of the diagnoses; acral lentiginous melanoma (ALM), the most common in black and Asian people and responsible for 2% to 8% in white individuals and 30% to 60% in non-Caucasians; lentigo maligna melanoma (LMM), is rare and common in the elderly and reaches 4% of cases^{6,8,13}.

Melanoma is predominantly cutaneous but may arise in other areas: mucous membranes, eyes, meninges and others^{6,9}. The main CM locations according to histological type are: SSM -back in men and lower limbs in women; NM-back, head and neck; ALM-palmoplantar, digital extremities, peri and subungual; LMM-head, neck, back and hands⁹. The CM is characterized primarily by being an asymmetrical lesion with jagged edges, color changing and diameter greater than 6 mm⁸.

With respect to ethnicity, the incidence of CM is prevalent in people of light skin (Fitzpatrick photo types I and II)¹³. Fitzpatrick classification occurs through six phototypes of skin: I, II, III, IV, V and VI; the photo types I and II are characterized by light skin, eyes and hair that burn instead of tan¹⁴. Melanoma can occur in all races, but with lower incidence in black people⁹. In black population, the most common location of the CM is the palmoplantar⁹.

Among the risk factors for malignant melanoma are: genetics, family history of melanoma, gender (women under 40 years old and men over 50), intermittent solar exposure (mainly in Caucasians), cutaneous phototype (Fitzpatrick I and II), preexisting nevus (quantitative: more than 50 acquired nevus; qualitative: presence of atypical nevus), immunosuppression and phototherapy with UVA and UVB (to a lesser extent)^{6, 7, 9, 13,15-17}. CM focuses more on regions near the equator line⁹.

Solar exposure is the most important risk factor for the development of melanoma, responsible for 80% of cases, mainly in people with light skin and with multiple freckles¹. Preexisting nevus are responsible in a significant way by the incidence of CM^{6,9}. According to the 2016 estimate: incidence of cancer in Brazil, of the INCA, previous melanocytic nevus is responsible for 20% to 30% of melanoma cases¹.

Melanocytic lesions should be examined according to the ABCDE rule, where: A: asymmetry; B: irregular borders; C: heterogeneous coloration; D: diameter greater than 6mm; E: expansion (lesion aspect modification)^{6,7,15,17}.

In the case of confirmed diagnosis of CM, Breslow classification is adopted, in which the lesion is classified by thickness of five degrees (from I to V; from 0 mm to beyond 4 mm). Breslow classification is the most important to establish the therapeutic conduct, the risk of recurrence and the prognosis^{6,9,13}. Clark classification is also used, in which the tumor is evaluated by the location in the skin layers (epidermis, dermis and hypodermis), with degrees from I to V⁶. The depth of the tumor (invasion of the dermis) is also an important prognosis factor¹⁸.

Melanoma is characterized by its potential to develop metastases and consequent death^{6,7,9}. "Cutaneous melanoma spreads through early lymphatic via and the regional lymph nodes are the most common sites of metastases¹³."

Early diagnosis and appropriate treatment of CM confer good prognosis, being these injuries considered easy diagnosis^{1,13}.

But melanomas lately diagnosed present worse prognosis for these patients¹. CM is responsible for 79% of all skin neoplasms deaths, therefore studies and actions of promotion, prevention, early diagnosis, treatment and rehabilitation for this important illness are relevant¹³.

So, greater attention should be paid to CM early detection and treatment¹⁸. A research conducted in the State of São Paulo, in a city with 130,000 inhabitants, demonstrated effectiveness in results achieved in CM primary prevention and early detection, showing that the actions can be reproduced in other Brazilian cities¹⁸. Since cancer is a public health problem in Brazil, this fact requires actions of promotion, prevention, early diagnosis and appropriate treatment carried out by health services^{3,18}.

This study aimed to evaluate CM from the incidence and the variables gender, color of skin, age, location of the tumor and histologic type.

METHOD

It is a descriptive, quantitative, retrospective study of cross section. 81 were evaluated with skin diagnostic biopsies taken from the medical records of patients in a cancer hospital (CH), in the town of Patrocínio, located in the region of the Alto Paranaíba / Triângulo Mineiro, in the State of Minas Gerais.

The municipality has a population of 89,333 inhabitants and the human development index (HDI) of 0.72919 .20. The economy of the municipality is predominantly based in the agricultural sector.

The criteria to assess skin biopsies was based on the users' medical consultation in the Cancer Hospital Dr. José Figueiredo between January 2015 to May 2016. The inclusion criteria for participating in the research survey were: realization of histopathological cutaneous biopsy independent diagnosis; realization of treatment at the institution where the study was carried out; medical consultation at the institution between the months of January 2015 to May 2016.

From the scans that diagnosed CM and additional information of the register and medical records, we analyzed the following variables in the study: diagnosis of CM; gender; skin color; age; tumor location and histological characteristics. The findings of the biopsies were divided into CM, BCC, SCC and other inconclusive diagnoses/ results, to account for the impact of CM in front of other diagnoses.

Data were processed and managed in Excel ® 2007 version software, in the format of tables to analyze the variables. We prepared tables to analyze incidence, histological characteristics of the tumor, gender, skin color and location of the tumor.

Pearson's Chi-square non-parametric test was conducted to assess the incidence of CM, BCC and SCC, in isolation from the total sample, and the significance level (α) established in 5% and the degree of freedom (g.l.) in 2.

For data collection and study outline, we requested written prior authorization of

the institution by the competent authority, upon delivery of free and clarified consent term (FICS). This research was authorized by the institution that holds the users' records - CH Patrocínio-MG. The privacy of users' identity was guaranteed throughout the research process. The study is appropriate to the criteria of the 466/2012 Resolution of the National Council of health.

RESULTS

The study found the diagnoses of CM, BCC, SCC and other inconclusive diagnoses / results. By performing analysis isolated from the incidence of neoplasms of skin exams evaluated (without the presence of other diagnoses and inconclusive results found), we have a total of 65 of the 81 biopsies examined, confirming: 42 cases of BCC (64.6%), 20 cases of SCC (30.76%) and 3 cases of CM (4.61%) (Chart 1). The Chi-square test of Pearson applied to this sampling, with 5% and g.l. α 2 reached the value of 1.195 ($p < 0.05$).

Chart 1. Incidence of CM, BCC and SCC diagnoses between January 2015 and May 2016. Cancer Hospital Dr. José Figueiredo. Patrocínio / MG.



42 biopsies were detected with diagnostic BCC (51.85%), 20 with SCC (24.69%), 3 with CM (3.7%) and 16 with other inconclusive diagnoses and results (19.75%). CM showed less incidence than the NMSC. The incidence of BCC was greater than the SCC.

To CM, as the genre: 2 women (2.46%) and 1 man (1.46%). More women were

diagnosed with BCC and SCC (69.4%) than men (29.6%). Specifically, for BCC we found 10 men (23.8%) and 32 women (76.2%). In the case of SCC, there were 4 men (20%) and 16 women (60%). There are 14 NMSCin men and 48 in women. (Table 1).

Table 1. Incidence of SCC, BCC and CM and other diagnoses according to gender between January 2015 and May 2016. Cancer Hospital Dr. José Figueiredo. Patrocínio/MG.

| Sex | BCC % | SCC % | CM % | Other diagnoses % |
|-----|-------|-------|------|-------------------|
|-----|-------|-------|------|-------------------|

| | | | | | | | | |
|---------|----|-------|----|-------|---|------|----|-------|
| Female | 32 | 39,51 | 16 | 19,75 | 2 | 2,46 | 10 | 12,34 |
| Male | 10 | 12,34 | 4 | 4,94 | 1 | 1,23 | 6 | 7,41 |
| Results | 42 | 51,85 | 20 | 24,69 | 3 | 3,7 | 16 | 19,75 |

For the variable age, among melanomas we identified: 42, 44 and 68 years old, two women (42 and 68 years) and a man (44 years). For the 3 cases of melanoma the average age was 51.3 years old; an average of 56 years old for women and 42 years old for the man. The average age for BCC was 64 years old; 63.58 years for women and 65.30 years for men. Among the diagnoses of SCC, the average age was 64,80 years old; for women was 64, 81 and for men 64.75 years old among affected with SCC.

Regarding age, we found for the skin neoplasms 4 men between 40 and 49 years

old (6.15%), 2 men between 50 and 59 years old (3.07%), 3 between 60 and 69 years old (4.61%) and 6 men with 70 years old or more (9.23%). For females were 2 women between 30 and 39 years old (3.07%), 8 women between 40 and 49 years old (12.30%), 12 women between 50 and 59 years old (18.46%), 13 women between 60 and 69 years (20.00%) and 15 women with 70 years old or more (23.07%). We counted a total of 50 women with skin neoplasms (77.53%) and 15 men (23.06%) of 65 tests with a diagnosis of skin cancer (Table 2).

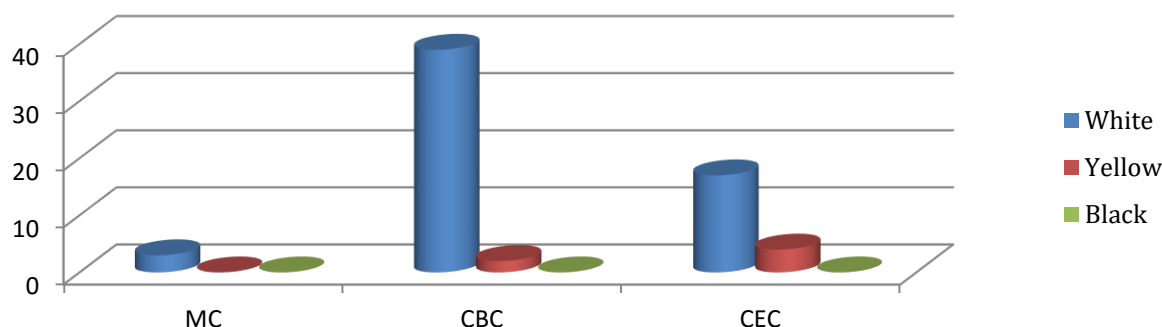
Table 2. Incidence of CM, BCC,SCC by gender and age in the biopsies with specific diagnoses NMSC between January 2015 and May 2016. Cancer Hospital de Dr. José Figueiredo. Patrocínio / MG.

| Gender | 30/39 years | | 40/49 years | | 50/59 years | | 60/69 years | | 70/79 years | |
|---------|-------------|------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|
| | n | % | n | % | n | % | n | % | N | % |
| Male | 0 | 0,0 | 4 | 6,15 | 2 | 3,07 | 3 | 4,61 | 6 | 9,23 |
| Female | 2 | 3,07 | 8 | 12,30 | 12 | 18,46 | 13 | 20,00 | 15 | 23,07 |
| Results | 2 | 3,07 | 12 | 18,45 | 14 | 21,53 | 16 | 24,61 | 21 | 32,30 |

In relation to the variable skin color, all cases of CM occurred in white people (in the biopsies there is no info as phototype of Fitzpatrick classification) with a total of 3. For the BCC we found 29 women and 10 men with white skin; 2 women and no men with

yellow skin. Among the cases of SCC were 14 women and 3 men white-skinned; 3 women and 1 man with yellow skin. There are no black individuals with skin neoplasms in the study (Chart 2)

Chart 2. Skin color and diagnosis of CM, BCC and SCC between January 2015 and May 2016. Cancer Hospital Dr. José Figueiredo. Patrocínio/MG.



The locations where the skin tumors diagnosed as CM are: 2 in right lower limb (RLL) and 1 left foot plantar region; female:

RLL (68 years old) and left plantar region (44 years old); male: RLL (42 years old). The histological types of melanomas detected

were: 2 SSM (male and female) and 1 ALM (females) (Table 3).

Table 3. Histological type, location and gender of CM of the skin biopsies evaluated between January and 2015 May 2016. Cancer Hospital Dr. José Figueiredo. Patrocínio/MG.

| Histological type | | Location | Gender |
|-------------------|-----|--------------------------|--------|
| SSM | 2* | RLL | M/F |
| NM | - | - | - |
| ALM | 1** | Left foot plantar region | F |
| LMM | - | - | - |

* Sex: female, location: RLL, age: 68 years old; Sex: male, location: RLL, age: 42 years old;

** Sex: female, location: left plantar; age: 44 years old.

DISCUSSION

Skin cancer is the most common among the malign neoplasms^{1,21}. Melanoma is the less common kind of cutaneous malignant neoplasm, however is the most aggressive^{1,17,21}. CM is responsible for about 79% of the skin cancer deaths²². The number of deaths caused by CM is three times higher than all the skin neoplasms together¹⁰. The increasing incidence rates and high mortality from cutaneous melanoma makes it the most important skin cancer^{21,22}.

The incidence of CM and NMSC found in the study, after processing and analyzing data, is very closed with the expected, according to the sources consulted. It appears that the region where the research occurred, follows the standards expected for CM and NMSC in Brazil. The submission of research data to the Chi-square test of Pearson validates this analysis.

Considering the variable gender, the sampling of melanoma cases is considered small (only 3 CM diagnoses). The Information System of Mortality (ISM) for melanoma in the year 2013 registers a higher number of cases in men than in women- of 1,547 deaths, 903 are men and 644 women².

CM is more incident in men, but in Brazil it is considered that this variable show homogeneity²³. Azulay considers that the differences in incidence related to the genre are not important. The prognosis of CMM in women is considered higher in every stage⁹. It should be noted that it may not be prudent to assess the gender feature concisely in this job, since it is a variable that depends

on the demand for health services and the characteristics of the population studied.

The color of the skin, for CM, was prevalent in the study with white individuals, although there was no classification of Fitzpatrick in the biopsy analyzed, using the criteria: white, yellow and black. The light skin risk factor shows predominantly for CM¹⁻¹¹. Although other skin types are also affected by melanoma, including black-skinned individuals, these findings are less frequent⁹.

For the variable age, it is reported that under 40 years, CM affects more women, while over 50 years old the occurrence is higher in men¹⁶. Under the age of 40 CM is not common²².

Studies differ in relation to the appearance of CMM prevailing age. For Sampaio and Rivetti, the predominant age is between 30 and 60 years old⁶. For Hoff et al., the major incidence is between the fourth and sixth decades of life⁷. A study conducted at Santa Catarina State Hospital between 2003 and 2007 shows CM is predominant in the sixth decade of life¹⁷.

The location of CMM is common in the torso in men and in the lower limbs (LL) between women^{9,17}. This study affirms that SEM is commonly detected in the back in men and in the LL in women^{10,23}. This research found SEM in the RLL, different from other researches^{10,23}. For ALM, which is frequent in the palmoplantar region, the cases of the study presented here, were located in the left plantar region, in agreement with other studies^{10,23}.

For the histologic type, SEM is the most incident type, but there is a specific place in

which MN was found more frequently than SEM¹⁵. This fact suggests that the studied sampling, the place, socioeconomic factors, the level of solar exposure and genetic predisposition influence the population submitted¹⁵. The incidence of CM is increasing, doubling the emergence of cases every 10 or 15 years²⁴.

Diagnosis and prognosis-related factors are extremely important in the cancer field. The biopsies submitted to analysis in the research do not provide standardized details such as skin color, age, classification of Breslow and Clark.

The depth of the tumor is a key factor for the prognosis and treatment used in CM²⁵. It is clear that the standardization of these exams between the laboratories, professionals and institutions of the oncology area become indispensable for the clinical and epidemiological management of skin cancer. The estimates of INCA 2016 bring the information of the probability of sub registration due to sub diagnosis of skin cancer, the most incident neoplasia in Brazil¹.

Health education, with the stimulation of individual protection against UVR, is effective and has low financial cost, being a primary prevention action of skincancer^{1,25}. The access and arrangement of health services interferes with the incidence of CM. The emergence of new stains or signs on the skin, as well as changes in coloration, size and edges of old lesions should be evaluated¹. Early detection is essential in early stages of skin neoplasms, including melanoma by its high metastatic power^{17,18}.

It is emphasized the importance that more scientific studies need to occur in the oncology area. Cancer is considered a public health problem in Brazil due to its epidemiological, social and economic magnitude^{3,18,24}.

CONCLUSION

The study concluded that CM is the least incident among malignant skin neoplasms; that there is predominance in people of light skin; gender variable depends on the population studied; SEM is the predominant type; and that, the location of the lesion is

pertinent to similar researches; but, the age factor is controversial.

The research provided information on skin cancer in a region of the state of Minas Gerais and can be a sensor for the inclusion of health actions, especially in prevention and early detection.

REFERENCES

1. Instituto Nacional do Câncer "José Alencar Gomes da Silva". Estimativa 2016: incidência de câncer no Brasil. Rio de Janeiro: INCA; 2015. 122p.
2. Instituto Nacional do Câncer "José Alencar Gomes da Silva". Pele melanoma [Internet]. Rio de Janeiro: INCA; 2017 [cited in: Jan 20, 2017]. Available in: http://www2.inca.gov.br/wps/wcm/connect/tiposdecancer/site/home/pele_melanoma/definicao+
3. Instituto Nacional do Câncer "José Alencar Gomes da Silva". ABC do câncer: abordagens básicas para o controle do câncer. Rio de Janeiro: INCA; 2011. 128 p.
4. Instituto Nacional do Câncer "José Alencar Gomes da Silva". Pele não melanoma [Internet]. Rio de Janeiro: INCA; 2017 [cited in: Jan 26, 2017]. Available in: http://www2.inca.gov.br/wps/wcm/connect/tiposdecancer/site/home/pele_ nao_melanoma
5. Moreira RB, Schmerling RA, Buzaid AC. Algoritmo de manejo do melanoma cutâneo metastático. Rev Bras Oncol Clínica. 2014; 10(37):108-15.
6. Rivetti EA. Manual de dermatologia clínica de Sampaio e Rivitti. São Paulo: Artes Médicas; 2014.
7. Hoff PMG, organizador. Tratado de oncologia. São Paulo: Atheneu; 2013.
8. Wainstein AJA, Belfort FA. Conduta para o melanoma cutâneo. RevColBras Cir. 2004; 31(3):204-14.
9. Azulay DR. Azulay: dermatologia. 6ed. Rio de Janeiro: Guanabara Koogan; 2013.
10. Bogliolo L. Bogliolo patologia. Bogliolo Filho G, editor. 8ed. Rio de Janeiro: Guanabara Koogan; 2012.
11. Smeltzer SC, Bare BG. Brunner & Suddarth: tratado de enfermagem Médico-cirúrgica. 13ed. Rio de Janeiro: Guanabara Koogan; 2015. v. 2.
12. Malagutti W, Kakihara CT. Curativos, estomia e dermatologia: uma abordagem multiprofissional. 2ed. São Paulo: Martinari; 2011.
13. Dimatos DC, Duarte FO, Machado RS, Vieira VJ, Vasconcellos VAC, Bins-Eli J et al. Melanoma cutâneo no Brasil. ACM Arq Catarin Med. 2009; 38(Supl. 1):14-9.

14. Sociedade Brasileira de Dermatologia. Classificação dos fototipos de pele [Internet]. Rio de Janeiro: Sociedade Brasileira de Dermatologia; 2017 [cited in: Feb 10, 2017]. Available in: <http://www.sbd.org.br/cuidado/classificacao-dos-fototipos-de-pele/>
15. Araújo IC, Coelho CMS, Saliba GAM, Lana PC, Almeida ACM, Pereira NA, et al. Melanoma cutâneo: aspectos clínicos, epidemiológicos e anatomopatológicos de um centro de formação em Belo Horizonte. *Rev Bras Cir Plást.* 2014; 29(4):497-503.
16. Ministério da Saúde (Br). Instituto Nacional do Câncer. Informativo detecção precoce: Monitoramento das ações de controle do câncer de pele. Rio de Janeiro: INCA. 2016; 7(3):1-8. [cited in: Feb 15, 2017] Available in: http://www1.inca.gov.br/inca/Arquivos/informativo_deteccao_precoce_03_2016.pdf
17. Purim KSM, Sandri CO, Pinto NT, Sousa RHS, Maluf EPC. Perfil de casos de melanoma em um hospital universitário, 2003 a 2007. *Rev Bras Cancerol.* 2013; 59(2):193-9.
18. Salvio AG, Assumpcao Junior A, Segalla JGM, Panfilo BL, Nicolini HR, Didone R. Experiência de um ano de modelo de programa de prevenção continua do melanoma na cidade de Jau-SP. *An Bras Dermatol.* 2011;86(4):669-74.
19. Instituto Brasileiro de Geografia e Estatística. Conheça cidades e estados do Brasil [Internet]. Rio de Janeiro: IBGE; 2017 [cited in: Feb 16, 2017]. Available in: <https://cidades.ibge.gov.br/brasil/mg/patrocio/panorama>
20. Instituto Brasileiro de Geografia e Estatística. Índice de Desenvolvimento Humano. [Internet]. Rio de Janeiro: IBGE; 2010 [cited in: Feb 17, 2017]. Available in: <https://cidades.ibge.gov.br/brasil/mg/patrocio/pesquisa/37/30255>
21. American Cancer Society. Why you should know about melanoma [Internet]. Atlanta, Geórgia: ACS; 2017 [Cited in: Feb 20, 2017] Available in: <https://www.cancer.org/content/dam/cancer-org/cancer-control/en/booklets-flyers/why-you-should-know-about-melanoma-handout.pdf>
22. Matheus LGM, Verri BHMAV. Aspectos epidemiológicos do melanoma cutâneo. *Rev Ciênc Estud Acad Medicina.* 2015(3):10-24.
23. Longo DL, organizador. Hematologia e oncologia de Harrison. 2ed. Porto Alegre: AMGH; 2015.
24. Pinheiro AMC, Friedman H, Cabral ALSV, Rodrigues HA. Melanoma cutâneo: características clínicas, epidemiológicas e histopatológicas no Hospital Universitário de Brasília entre janeiro de 1994 e abril de 1999. *An Bras Dermatol.* 2003;78(2):179-86.
25. Ministério da Saúde (Br). Secretaria de Atenção à Saúde. Protocolos clínicos e diretrizes terapêuticas em Oncologia. Brasília: Ministério da Saúde; 2014. 356p.

CONTRIBUTIONS

All authors contributed equally.

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