

AN APPROACH TO THE INCIDENCE OF SKIN CANCER IN SPAIN.

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Objective: 1) To estimate the incidence of skin cancer (basal cell carcinoma [BCC], squamous cell carcinoma [SCC] and malignant melanoma [MM]) during the years 2000, 2003 and 2005 in four Spanish hospitals (Málaga, Madrid, La Coruña and Barcelona). 2) To study the geographical variability and the temporal trends of this type of tumors between 2000 and 2005.

Methods: *Design:* multicenter longitudinal study with a mixed design: 1) retrospective, with collection of the cases of years 2000 and 2003 from Pathology departments and 2) prospective, with active search of cases in Dermatology departments during 2005. *Inclusion criteria:* new cases of skin cancer in subjects who belong to the hospital reference area. *Exclusion criteria:* relapses, metastasis, keratoacantoma and actinic keratosis. *Denominators:* population of the reference area of each hospital. *Statistical analysis:* descriptive study; calculation of specific incidence rates by sex and age. The annual incidence rates were computed per 100,000 inhabitants and standardized by direct method according to the European Standard Population; analysis of the geographical variability and the temporal trends by multivariate models of Poisson regression.

Results: The sample was formed by 5,106 cases for the retrospective study and 2,656 for the prospective study. Nonmelanocytic tumors are more frequent in men and melanoma is commoner in women. The standardized rates (per 100,000) for BCC, SCC and MM were different according to hospital and year. In the case of BCC the incidence varied from 71 to 84 in 2000; from 73 to 108 in 2003 and from 68 to 108 in 2005. For SCC the variation was from 17 to 26 in 2000, 16 to 24 in 2003 and 16 to 22 in 2005. Finally, the incidence of MM was also variable. In the Barcelona's hospital an important increase of incidence in 2003 for all of the tumors was observed (*Table 1*). The results of regression models demonstrate the effect of age and sex in the three skin cancers. For BCC it was observed a geographical variation pattern, with increased risk in Barcelona (15%), Madrid (26%) and Málaga (25%) in relation to La Coruña (*Table 2*). In the case of SCC, the only observed change is an increase of the risk in Málaga (29%) with respect to La Coruña (*Table 3*). Finally, models designed for MM don't show any differences of risk between the four participant hospitals (*Table 4*). The individual models for each hospital (data not showed) pointed out a temporal trend for BCC in Barcelona (increase of 60% in 2003) and in Madrid (23% in 2003 and 53% in 2005). For SCC and MM the only changes were observed in Barcelona's hospital for SCC, with an increase of 33% in 2003, of more than four times for MM in 2003 and of more than double in 2005.

Table 1. Standardized rates 2000-2005 (per 100,000 population)

	2000	2003	2005
BASAL CELL CARCINOMA			
Málaga	83.6	101.0	91.7
Coruña	71.2	72.8	68.0
Barcelona	69.6	108.5	71.0
Madrid	73.5	85.2	108.1
SQUAMOUS CELL CARCINOMA			
Málaga	25.7	23.1	21.8
Coruña	16.6	15.7	18.2
Barcelona	19.2	24.2	19.7
Madrid	16.6	18.3	16.3
MALIGNANT MELANOMA			
Málaga	6.4	6.7	4.8
Coruña	6.5	8.5	5.8
Barcelona	2.8	10.0	5.6
Madrid	8.1	5.6	8.2

Table 3. Poisson regression models. Squamous cell carcinoma

	RR	P value
AGE		
35-64	1.00	
65-69	5.83	<0.001
70-74	8.64	<0.001
75-79	13.73	<0.001
80-84	21.75	<0.001
>=85	32.78	<0.001
SEX		
Man	1.00	
Woman	0.44	<0.001
YEAR		
2000	1.00	
2003	1.04	0.544
2005	1.02	0.798
HOSPITAL		
Coruña	1.00	
Barcelona	1.16	0.091
Madrid	1.00	0.971
Málaga	1.29	0.002

Table 4. Poisson regression models. Malignant melanoma

	RR	P value
AGE		
20-39	1.00	
40-49	2.43	<0.001
50-59	3.12	<0.001
60-69	4.47	<0.001
70-79	6.89	<0.001
>=80	7.46	<0.001
SEX		
Man	1.00	
Woman	1.20	0.131
YEAR		
2000	1.00	
2003	1.26	0.098
2005	0.99	0.925
HOSPITAL		
Coruña	1.00	
Barcelona	0.91	0.591
Madrid	1.04	0.764
Málaga	0.83	0.241

Table 2. Poisson regression models. Basal cell carcinoma

	RR	P value
AGE		
25-49	1.00	
50-54	3.94	<0.001
55-59	5.52	<0.001
60-64	8.85	<0.001
65-69	12.54	<0.001
70-74	17.42	<0.001
75-79	22.24	<0.001
80-84	26.96	<0.001
>=85	25.45	<0.001
SEX		
Man	1.00	
Woman	0.62	<0.001
YEAR		
2000	1.00	
2003	1.22	<0.001
2005	1.18	0.001
HOSPITAL		
Coruña	1.00	
Barcelona	1.15	0.016
Madrid	1.26	<0.001
Málaga	1.25	<0.001

Conclusions: The results of this study point out a certain pattern of geographical variability for nonmelanocytic skin cancer, without evident changes in temporal trends. The interannual differences observed are not explained by natural trends and could be due to changes in derivation of patients or difficulties in the collection of cases.

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