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Estimated effect of COVID-19 lockdown on melanoma thickness and prognosis: a rate of growth model

To the Editor,

The coronavirus COVID-19 pandemic, which emerged in Wuhan, China several months ago,[1] has led to large-scale lockdown in many countries around the world, including Spain. Uncertainty about the duration of these measures led us to consider the potential impact of diagnostic delays due to the paralysation of certain health procedures and services on the prognosis of patients with melanoma.

To estimate this impact, we built a model based on melanoma rate of growth (ROG).[2] ROG is the rate of increase in Breslow thickness, as a surrogate measure for tumour volume, from the time a patient first notices a lesion or observes changes in an existing lesion, to excision of the tumour. It is measured as millimetres per month (Fig. 1). Although ROG in our model was based on subjective information provided by the patient, it has been found to match ROG values calculated using biopsy specimens taken from the same lesions at different moments of time.[3] Melanoma ROG has been associated with prognosis[4,5] and a higher probability of lymph node involvement.[6]

We randomly selected 1000 melanomas with a known ROG from the database of *Instituto Valenciano de Oncología* in Valencia, Spain. The tumours were classified according to thickness (T1, T2, T3 or T4) based on the melanoma staging criteria of the American Joint Committee on Cancer (AJCC).[7] For each case, we used ROG to estimate tumour thickness after a diagnostic delay of 1, 2 and 3 months. We calculated, e.g., that a melanoma with a Breslow thickness of 2 mm at diagnosis and a ROG of 0.5 mm a month would measure 2.5 mm after 1 month, 3 mm after 2 months and 3.5 mm after 3 months. Using AJCC survival data for the different T stages,[7] we then calculated 5- and 10-year survival rates for the patients divided into diagnostic groups (initial sample and the same group at the three time points analysed).

Over half of the melanomas in the initial sample (n = 403; 40.3%) were T1. Of the remaining tumours, 24.2% were T2, 19.2% were T3, and 16.3% were T4. For patients in the 1-month diagnostic delay group, the model predicted an upstaging rate of 21% (i.e. progression to the next tumour stage in 21% of cases). The proportion of tumours that would be upstaged in the other two groups was 29% in the 2-month-delay group and 45% in the 3-month-delay group (Table 1). After 3 months, thus, there were 275 (27.5%) stage T1 tumours (vs. 40.3% in the initial sample) and 304 (30.4%) stage T4 tumours (vs. 16.3% in the initial sample).

Estimated 5-year survival for the group as a whole was 94.2% in the initial sample and 92.3% in the group of patients whose diagnosis was delayed by 3 months. The respective 10-year survival rates were 90% and 87.6%.

One limitation of our study is that the random sample included 1000 cases, although the distribution of tumour thickness measurements was very similar to that in the Spanish National Melanoma Registry.[8] We did not estimate clinical progression rates, as it was impossible to estimate the proportion of non-ulcerated tumours that would become ulcerated in the time periods considered. The actual differences in survival rates could thus be even greater.

Our ROG model shows that in the absence of adequate care for cancer patients in the current lockdown situation in Spain, our healthcare system could see a considerable rise in melanoma upstaging cases, and, of course, healthcare costs.[9]

Approximately 300 patients are diagnosed of cutaneous melanoma every month in Spain,[10] and if we extrapolate this figure to countries with similar lockdown measures, many of which have a higher incidence of melanoma, it would not be unrealistic to predict a situation with potentially serious consequences. In conclusion, considering the current situation, efforts should be made to promote self-examination and facilitate controlled

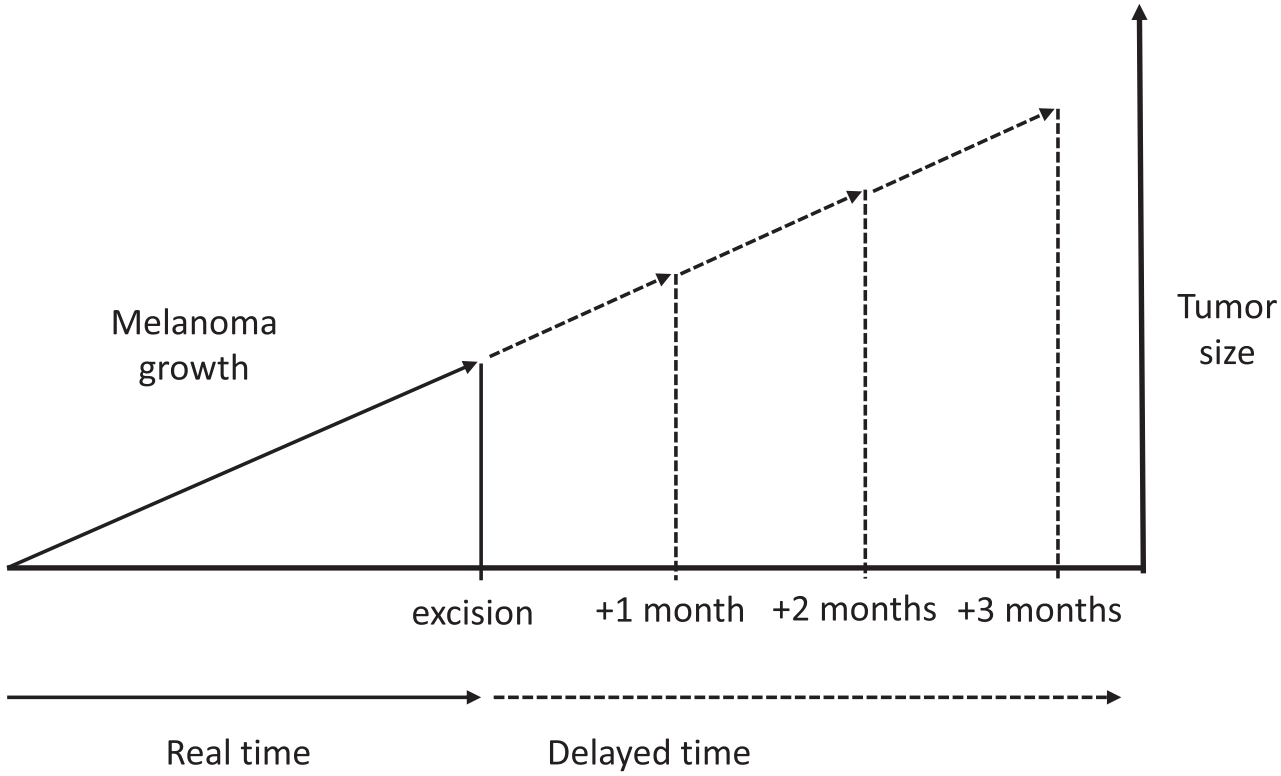

Figure 1 Theoretical basis of model. Growth rate over time to estimate tumour thickness in successive months.

Table 1 Tumour thickness at diagnosis and estimated thickness after 1, 2 and 3 months of diagnostic delay based on rate of growth calculations (mm/month) for 1000 randomly selected melanomas from the database of the *Instituto Valenciano de Oncología*

Thickness	Study group	1-month diagnostic delay	2-month diagnostic delay	3-month diagnostic delay
T1 (≤1 mm)	403 (40.3%)	339 (33.9%)	304 (30.4%)	275 (27.5%)
T2 (1.1–2.0 mm)	242 (24.2%)	227 (22.7%)	217 (21.7%)	219 (21.9%)
T3 (2.1–4 mm)	192 (19.2%)	202 (20.2%)	203 (20.3%)	202 (20.2%)
T4 (>4 mm)	163 (16.3%)	232 (23.2%)	276 (27.6%)	304 (30.4%)
Estimated 5-year survival† (%)	94.2	93.2	92.7	92.3
Estimated 10-year survival† (%)	90	88.8	88.1	87.6

†Based on American Joint Committee on Cancer survival data for T1–T4 melanomas.

access to dermatologists (through teledermatology, e.g.), as this will prevent delays resulting in worse prognosis.

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European Task Force on Contact Dermatitis statement on coronavirus disease-19 (COVID-19) outbreak and the risk of adverse cutaneous reactions

Editor

Among the basic protective measures against COVID-19, the need to wash hands frequently and in a prolonged way using soap and to regularly use alcohol-based hand sanitizers is well established for the whole population. Healthcare workers in general, and particularly those involved in the direct care of COVID-19-infected patients, have to wear personal protective equipment (PPE) daily for many hours and also accomplish general preventive measurements outside their work. Cutaneous adverse reactions can develop that need to be prevented, identified and therapeutically managed. According to the data reported by Lin *et al*.,[1] based on the experience from healthcare workers in Wuhan, adverse skin reactions were reported in 74% of responders (n = 376) to a general survey. The most commonly reported types of eruptions were skin dryness or desquamation (68.6%), papules or erythema (60.4%) and maceration (52.9%). Hands, cheeks and nasal bridge were the top three most commonly affected areas. Adverse skin reactions showed in the univariate analysis a significant association with sex, epidemic level, working place, duration of full-body PPE use, getting soaking wet after work and frequency of handwashing. The multivariate analysis showed an increased number of reactions in females, who work at the hospitals, in inpatient wards and use full-body PPE for over 6 h per day. Similar results were reported from Chengdu, with 198 of 404 (49.0%) respondents to an online survey from the healthcare sector reporting mask-related skin reactions, mostly, in 169, in the face following prolonged use of N95 and medical-grade masks. Of note, worsening of pre-existing facial skin problems such as acne or rosacea was frequently reported.[2] This scenario is certainly similar to what the health care personnel is suffering nowadays in Europe.[3] The identification of these cutaneous reactions, how to prevent and treat them is the objective of this document.

Prevention and management of irritant and allergic contact dermatitis in relation to hand hygiene, hand personal protective devices and the use of face protection masks in the COVID-19 environment.

During this pandemic, the mandatory protection regime against the viral infection aggravates the risk of developing severe hand dermatitis. Handwashing is essential to prevent COVID-19 infection and should be performed before and after each activity using soap without fragrance and preservatives without or a low sensitizing potential. There is also a recommendation to use hydro alcoholic solutions with glycerin. Alcohol-based hand solutions containing glycerin as moisturizer were studied intensively and are recommended to replace traditional soaps for handwashing within healthcare facilities.[4,5] Although these solutions are better tolerated than standard detergents,[5,6] the additional regular use of a fragrance-free[7] emollient after these procedures greatly improves its acceptance, as already stated by Wollenberg *et al*.[8] It is recommendable to protect the hands with a fragrance-free, lighter moisturizing lotion during the day after each handwashing procedure and a fragrance-free, lipid-rich moisturizer before bedtime. True allergic reactions to alcohol-based formulations are very rare.[9] In most situations, a double set of gloves is used for prolonged periods and accurate hygiene of such gloves with hydro alcoholic solutions are required. In order to minimize sweating and skin irritation, cotton gloves should be worn underneath as liners.

Irritant or mechanical/friction dermatitis due to the use of masks and protective glasses is frequent among healthcare personnel. The use of dressings at pressure points on the face and ears to prevent rubbing against masks and goggles, such as hydrocolloid dressings, or the fixation of these dressings with dimethicone polymers or silicone gels could minimize the risk of adverse cutaneous reactions from mechanical friction. Promoting education on proper use of PPE and restriction on the duration of wearing could avoid some cutaneous adverse events. Correct hand hygiene, adequate glove use, as well as hand and facial care are recommended in the general population and particularly among healthcare personnel; the care of occupational physicians and occupational dermatologists can contribute to the prevention and treatment of more severe cases.

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