

# Influence of COVID-19 confinement on the size of malignant skin tumours surgically removed at a Spanish hospital

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## Summary

The COVID-19 pandemic required people to confine themselves to their homes where possible, and disrupted normal hospital activities. We examine whether this lockdown generated changes in the size of the tumours. We compared the dimensions of the surgically removed malignant skin tumours from the first 150 patients treated after the confinement ended in Spain (22 May 2020) with those of the last 150 patients to receive such treatment before the confinement began (13 March 2020). Data on tumour surface area were collected from pathology reports. Overall, no significant difference was seen in the tumour sizes. However, among men, the tumours removed after confinement were significantly larger ( $P < 0.05$ ). Controversy exists over how the reduction in the number of tumours diagnosed during lockdowns might have influenced the characteristics of tumours. In this study, no overall difference was seen in the size of the tumours removed, although those removed from men after confinement were larger.

The COVID-19 pandemic required people to confine themselves to their homes where possible and disrupted normal hospital activities. In Spain, a strict lockdown was in place from 13 March to 22 May 2020. During this time, hospitals were focused on patients who required urgent treatment for COVID-19. Normal surgical activity was reduced, and only those patients with the most aggressive tumours or whose condition required urgent action could be treated. The general population also delayed or even avoided seeking medical assistance at health centres, with reasons including fear of becoming infected and a perception that health services were overwhelmed. At the same time, there seemed to be a general reduction in concern over skin cancer; several authors even proposed that, during the worst moments of the pandemic,

treatment for skin tumours posing less risk should be delayed to protect patients from possible infection during hospital visits.<sup>1</sup> Potentially, such delays could have led to tumours being larger when eventually treated. The aim of this study was to examine whether the size of malignant skin tumours surgically removed in the postconfinement period at the dermatology unit of a tertiary Spanish hospital were larger as a consequence of this unprecedented situation.

## Report

No ethics approval or informed consent was required for the study because it was an observational study without intervention and patient information was anonymized.

The dimensions of surgically removed malignant skin tumours from the first 150 patients treated after the confinement ended in Spain (22 May 2020) were compared with those of the last 150 patients to receive such treatment before the confinement began (13 March 2020). All types of pathologically diagnosed malignant skin tumours were included.

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Extirpated tumour dimensions (length × width in mm) were recorded from pathology reports, and tumour surface area was then determined. Patient age and sex was also recorded, along with tumour location, date of surgery and length of time waiting for treatment.

Tumour sizes before and after confinement were compared using the Mann–Whitney test, and patient demographic characteristics were compared using the  $\chi^2$  test. Significance was set at  $P < 0.05$ . All calculations were performed using SPSS software (V21.0; IBM SPSS, Armonk, NY, USA).

The total number of dermatological surgical procedures in our department was 397 in January 2020 and 497 in February 2020, whereas during the lockdown (13 March to 22 May) only 37 procedures were performed. After this period, the surgical activity slowly recovered, and 177 patients were treated in June 2020.

Table 1 shows the results for patient age, sex and tumour types treated before and after confinement; no significant differences were found. Basal cell carcinoma (BCC) was the most common tumour type removed, both before (78.7%) and after (66.7%) confinement. Overall, the median surface area of the preconfinement tumours was 30 mm<sup>2</sup> (25th percentile 18 mm<sup>2</sup>, 75th percentile 80 mm<sup>2</sup>) while that of the postconfinement tumours was larger at 40 mm<sup>2</sup> (25th percentile 15 mm<sup>2</sup>, 75th percentile 100 mm<sup>2</sup>) but this difference was not significant. However, a significant difference was seen in tumour size between the preconfinement and postconfinement periods in men (30 mm<sup>2</sup> and 49 mm<sup>2</sup>, respectively;  $P < 0.02$ ). No differences were seen in the preconfinement and postconfinement tumour dimensions with respect to patient age. The time elapsed between diagnosis and treatment was 4 and 11 days, respectively, in the preconfinement and

postconfinement periods, with no differences between men and women.

Overall, no differences were seen in the size of tumours treated before and after confinement, although in men, the postconfinement-treated tumours were significantly larger. A UK study also reported no differences between preconfinement and postconfinement-treated malignant melanoma (MM), BCC or squamous cell carcinoma (SCC) with respect to tumour invasion, mitotic rate, perivascular/perineural infiltration or other risk factors,<sup>2</sup> which the authors attributed to the rapid recovery of surgical activity after the confinement period. By contrast, a study performed in Milan reported a larger number of high-risk malignant skin tumours (BCC and SCC, but not MM) being treated after confinement compared with the same period in the previous year.<sup>3</sup> Another Italian study noted a significant increase in the Breslow thickness of MM both in men and in patients over 50 years of age after the confinement period.<sup>4</sup> Taken as a whole, these results do not agree well with mathematical models, which predicted that a notable increase in the number of large, thick SCCs was to be expected.<sup>5</sup>

With respect to skin tumours treated during the worst moments of the pandemic, one centre in the USA reported more interventions for SCC but fewer for BCC, a consequence of triage prioritizing treatment for higher-risk lesions. Even so, no increase was seen in the size of the surgical wound, nor were there any important differences in the techniques used compared with the same time in the previous year.<sup>6</sup> By contrast, a report from a plastic surgery unit in the USA indicated that the mean size of tumours treated at the height of the pandemic was greater than that recorded during 2019.<sup>7</sup> Other US authors reported no difference in the proportion of *in situ* and invasive tumours for the same time periods, although the Breslow thickness of invasive tumours was greater.<sup>8</sup>

Several studies have reported a clear reduction in the number of skin tumours diagnosed during the pandemic.<sup>9</sup> There is some controversy over the influence that this might have had on the tumours that were eventually treated; some models predicted that tumours would be larger after the confinement period,<sup>5</sup> but overall this does not seem to have been the case.

The age and sex of the patients could have had some bearing on the present results; COVID-19 affects men and older people more seriously, which led these groups to avoid medical centres for fear of infection. However, patients with skin cancer (BCC, SCC and MM) appear to be at no greater risk of contracting severe COVID-19, and COVID-19 mortality seems to be

**Table 1** Characteristics of the groups compared (age, sex, tumour type).

	Confinement		P
	Before	After	
Age, years; median	77.8	77.6	0.30
Sex, M/F; %	56/44	52/48	0.48
Tumour type, n (%)			
BCC	118 (78.7)	100 (66.7)	0.12
SCC	25 (16.7)	37 (24.7)	
MM	7 (4.7)	8 (5.3)	
Other		2 (1.3)	

BCC, basal cell carcinoma; MM, malignant melanoma; SCC, squamous cell carcinoma.

no greater for this group. Indeed, patients with skin cancer seem a little less likely to die of the infection and to have less need of ventilation or even hospitalization if they became infected.<sup>10</sup> In the present work, the short delay in receiving surgical treatment (11 days, up from a previous mean of 4 days) probably avoided any serious growth in the tumours eventually treated. This happened even though there was a huge difference in the number of patients treated before and during the lockdown. It is possible that including all BCCs in the study (independent of the growth ratio) contributed to the global absence in size differences.

In conclusion, the short delay in surgical treatment at the examined Spanish hospital would appear to have prevented any serious increase in the size of the malignant skin tumours removed, although this may not have been the case for male patients. Further investigations with larger samples, and from other centres, are needed to confirm these findings.

### Learning points

- The COVID-19 pandemic required people to be confined to their homes and disrupted normal hospital activities.
- The fear of becoming infected and a perception that hospitals were overwhelmed meant that the general population delayed or even avoided seeking medical assistance at health centres.
- A clear reduction in the number of skin tumours diagnosed during the pandemic has been reported.
- Controversy exists over the influence that the reduction in diagnosed tumours might have had on the tumours eventually treated, with some models predicting that tumours would be larger after the confinement period.
- The rapid recovery of surgical activity and the use of triage prioritizing treatment for higher-risk lesions seems to have avoided relevant differences in the size of the removed tumours.

- Male patients were at risk of larger tumours after confinement.

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