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# Impact of the French COVID-19 pandemic lockdown on newly diagnosed melanoma delay and severity

*Editor*

The COVID-19 pandemic has had a profound impact on the healthcare system worldwide, which led to a decrease in the number of melanoma diagnosis,[1] but the consequences of lockdown on newly diagnosed melanomas' severity have not been widely reported. We aimed to evaluate how the first lockdown in France impacted the incidence and prognostic characteristics of new melanomas, in our skin cancer centre in the Parisian region, highly affected by the pandemic. We conducted a retrospective study including all new diagnosed melanoma referred to our centre, divided into 4 periods: P1 = 2020 lockdown period (17/03-12/05/2020), P2 = 2020 post-lockdown period (13/05-31/10/2020), P3 = 2019 equivalent lockdown period (17/03-12/05/2019), P4 = 2019 equivalent post-lockdown period (13/05-31/10/2019). We evaluated the differences in American Joint Committee on Cancer (AJCC) staging, Breslow index, ulceration and lymph node (LN) involvement, using logistical regression models, adjusted according to age, gender, performance status, lifestyle, phototype and tumour-infiltrating lymphocytes. Statistical tests were two-sided and $p$-values<5.0% was considered statistically significant. We included 493 consecutive new melanoma cases, with no difference in baseline patient characteristics

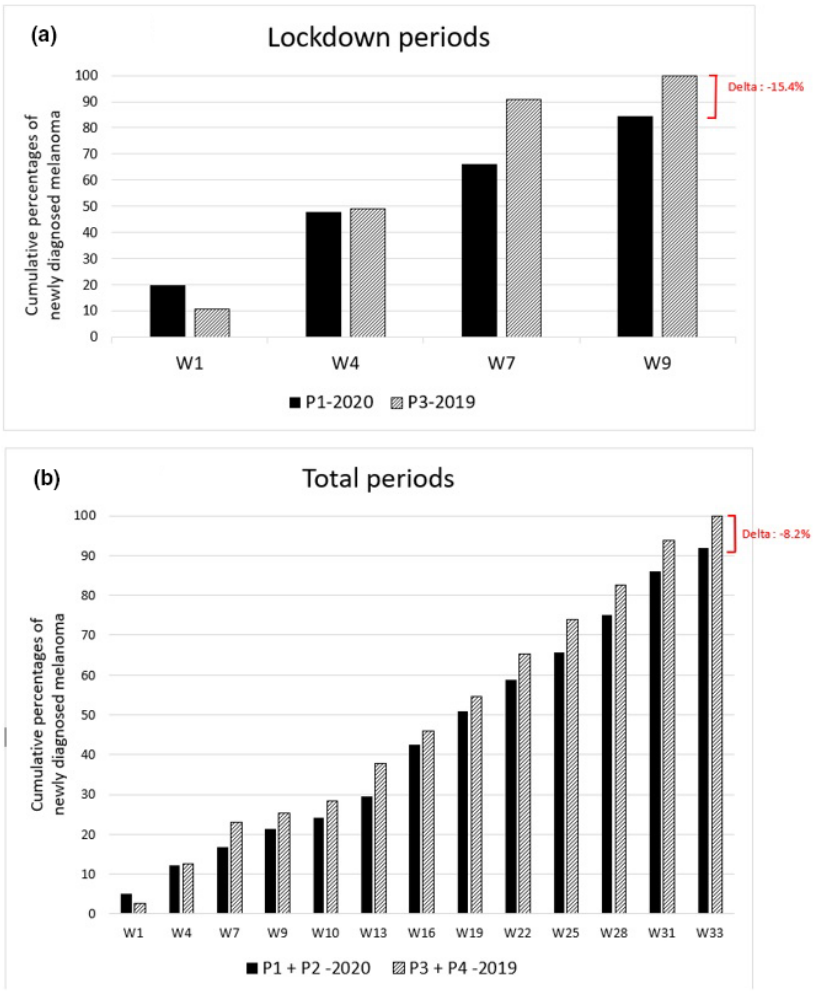


**Figure 1** Cumulative numbers of new melanoma cases in 2019 and 2020

between groups. Globally, we observed an 8.2% reduction of new cases in 2020 (P1 + P2) compared with 2019 (P3 + P4) and a 15.4% reduction during lockdown (P1) compared with P3 (Fig. 1). Melanomas diagnosed during P1 had a significantly higher mean Breslow index than during P3 (1.7 mm ± 2.1 vs. 1.5 ± 2.5, $P < 0.001$). More interestingly, P2 and P4 comparison showed significantly more severe cases at diagnosis after lockdown (P2), both on Breslow index, ulceration and neurotropism than on the AJCC stages (Table 1). Sentinel LN biopsy or LN dissection were more frequently performed (57% vs. 38.5%, $P < 0.001$); significantly less patients without regional metastasis (i.e. N0) were observed (64.4% vs. 79.7%, $P = 0.01$) and clinically occult LN involvement (i.e. Nxa) was more frequent (13.5% vs. 5.4%, $P = 0.01$), leading to more patients with an indication for adjuvant therapy (12.0% vs. 4.7%, $P = 0.01$). Patients referred during P2 had a higher risk of having melanoma with both a Breslow index 0.8 mm (OR = 1.75, 95%CI [1.19–2.63], $P = 0.006$) and ulceration (OR = 1.69, 95%CI [1.05–2.80], $P = 0.034$), than during P4; the risk of having a LN involvement also seemed to be higher (but not significantly): OR = 1.58, 95%CI [0.99–2.59], $P = 0.06$. Some similar studies worldwide focusing on the effect on the pandemic on melanoma has also reported the reduction of new cases,[1–3] with increased thickness.[3,4] To note, although this reduction was lower in our study (35%[1] to 60%[2] vs. 15.4%), which might be due to different management between countries (our dermato-oncological activity was kept at the same level throughout the pandemic), we observed significant differences in severity. Reduction in attendance observed during P1 has not been caught up during P3, (Fig. 1) suggesting a delayed impact beyond the study period, which is consistent with previous concerns about subsequent effects of delayed cancer diagnosis on morbi-mortality.[5–7] To our knowledge, our study is the first to evaluate both prognostic factors and delayed impact of lockdown on melanoma AJCC 8th staging and adjuvant therapy on a large number of patients, compared to a reference period. We also evaluated the difference in adjuvant treatments, known to be responsible for adverse events and additional health costs.[8] This highlights the challenges of diagnostic strategies in skin cancer,[7] at a time of disputed mass screenings leading to overdiagnosis,[9] with consequences in terms of health cost and patients' anxiety.[10] Prevention and early melanoma detection are still a cornerstone in melanoma management, and the future's key challenge will be to find tools, such as teledermatology, to guarantee permanent access to melanoma screening, especially for high-risk populations.

**Table 1** Comparison of pathologic melanoma characteristics and proportion of melanoma stages according to the American Joint Committee on Cancer 8th edition staging system between '2020 post-lockdown' (=P2) and '2019 reference post-lockdown' (=P4) periods

| | 2020 post-lockdown (P2) *N* = 181 | 2019 reference post-lockdown (P4) *N* = 192 | *P* value |
|---|---|---|---|
| **AJCC 8th edition staging** | | | |
| **In situ** | 34 (19) | 36 (19) | 0.99 |
| **Stage I** | **87 (48)** | **117 (61)** | **0.01** |
| IA | **64 (35)** | **93 (48)** | **0.01** |
| IB | 23 (13) | 24 (13) | 0.95 |
| **Stage II** | 34 (19) | 25 (13) | 0.13 |
| IIA | 12 (7) | 13 (7) | 0.96 |
| IIB | 8 (4) | 8 (4) | 0.90 |
| IIC | **14 (8)** | **4 (2)** | **0.01** |
| **Stage III** | **24 (13)** | **11 (6)** | **0.01** |
| IIIA | 2 (1) | 3 (2) | 0.99 |
| IIIB | 8 (4) | 2 (1) | 0.06 |
| IIIC | 14 (8) | 6 (3) | 0.06 |
| IIID | 0 (0) | 0 (0) | 0.99 |
| **Stage IV** | 2 (1) | 3 (2) | 0.99 |
| **Histological subtypes** | | | |
| SSM | 122 (67) | 133 (69) | 0.70 |
| Nodular | 23 (13) | 17 (9) | 0.23 |
| Acrolentiginous | 8 (4) | 6 (3) | 0.59 |
| LM/LMM | 24 (13) | 26 (14) | 0.94 |
| Mucosal | 0 (0) | 2 (1) | 0.50 |
| Unclassifiable | 2 (1) | 6 (3) | 0.29 |
| Unknown | 2 (1) | 2 (1) | 0.99 |
| **Breslow index mean, mm (±SD)** | **2.2 (±2.4)** | **1.6 (±2.8)** | **<0.001** |
| **Presence of ulceration** | **41 (23)** | **18 (9)** | **0.001** |
| **Presence of mitoses** | 58 (32) | 49 (26) | 0.32 |
| **Presence of regression** | 10 (6) | 11 (6) | 0.73 |
| **Presence of neurotropism** | **8 (4)** | **0 (0)** | **0.007** |
| **Presence of angiotropism** | 4 (2) | 2 (1) | 0.68 |

*P*: Student or Wilcoxon tests for quantitative/continuous variables, Chi-Square or Fisher tests for qualitative/categorical variables (R-studio Version 1.2.5033). Numbers (percentage).
AJCC, American Joint Committee on Cancer; SSM, superficial spreading melanoma; LM, lentigo maligna; LMM, lentigo maligna melanoma; SD, standard deviation.

## Conflicts of interest

All authors have declared no conflicts of interest.


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## Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.


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# Is there a POST-COVID dermatological syndrome? The integrated dermato-infectious disease experience of a single centre

*Editor*

With regard to 'long covid syndrome', an attempt was made to define possible dermatological manifestations.[1–3] Devon E McMahon *et al*., through the establishment of a registry analysis of COVID-19 dermatological duration, assessed the duration of dermatological signs and symptoms of COVID-19 and the presence of patients with persistent skin manifestations. From April 8, 2020, to October 8, 2020, 1030 total cases and 331 laboratory-confirmed or suspected COVID-19 cases with dermatological manifestations were reported. Urticarial and morbilliform eruptions were relatively ephemeral, whereas papulos-squamous eruptions, particularly pernio, were long lasting.[3] The limitation of this register is that skin manifestations have not been observed in the long term.

For this reason, an integrated dermato-infectivological outpatient clinic has been set up at our centre, Azienda Ospedaliera Universitaria Umberto I Ancona, Italy. The objective was to evaluate, in patients with previous moderate to severe infection by SARS-CoV2, the presence of a 'long covid syndrome' with a focus on dermatological symptoms.

One hundred and four patients were examined by a dermatologist and an infectivologist in the period from September 2020 to July 2021. The visits were carried out 1, 3 and 6 months after the patient's hospital discharge.

A data collection form was set up and used by the doctors during the visits and all patients gave their consent to participate.

The results are presented in Table 1. Of the 104 patients enrolled (mean age 61.6 ± 12.7), all (100%) completed observation at 1 month after discharge, 100 (96.15%) after 3 months and 89 (85.58%) after 6 months.

Analysis of dermatological symptoms 1 month after hospital discharge (T1) showed that 14/104 (13.46%) patients had presented the following symptoms: 4/104 (3.85%) had telogen effluvium, 6/104 (5.77%) had skin xerosis, 2/104 (1.92%) had CPAP ulcers, 1/104 (0.96%) had diffuse folliculitis and 1/104 (0.96%) had pityriasis versicolor.

After 3 months from hospital discharge, 30/100 (30.00%%) experienced dermatological symptoms: 24/100 (24.00%) telogen effluvium, 4/100 (4.00%) xerosis, 3/100 (3.00%) pruritus, 3/100 (3.00%) vesicular exanthema, 2/100 (2.00%) presented a relapse of seborrhoeic dermatitis, 1/100 (1.00%) relapse of psoriasis, 1/100 (1.09%) a CPAP ulcer, 1/100 (1.09%) the results of folliculitis.

After 6 months from discharge, 10/89 (11.24%) patients showed dermatological symptoms: 5/89 (5.61%) showed persistence of telogen effluvium, 1 of which was associated with pruritus, 1/89 (1.12%) presented guttate psoriasis, 1/89 (1.12%) presented purpuric capillaritis resolved in 15 days, 1/89 (1.12%) presented intertrigo.

Of the 30 patients who presented telogen effluvium (mean age 64.9 ± 11.1), all were Caucasian and the majority 27/30 (90%) were women.

Analysis of dermatological symptoms 1 month after hospital discharge (T1) showed that 4/30 (13.33%) patients had presented the following symptoms: 4/30 (13.33%) had telogen effluvium and 1/30 (3.33%) also had skin xerosis.

After 3 months from hospital discharge, 24/30 (80.00%) experienced dermatological symptoms: 24/30 (80.00%) telogen

 