

## Clinical Letter

### Impact of the COVID-19 pandemic on the care of patients with malignant melanoma

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Dear Editors,

the COVID-19 pandemic led to numerous limitations in medical care. In patients with malignant melanoma, early detection is critical for prognosis.

To clarify whether the pandemic had an impact on tumor thickness at initial diagnosis, we conducted a survey of melanoma patients undergoing sentinel lymphonectomies at 105 German dermatology clinics. We thereby considered January 2021 (during the lockdown) as well as corresponding periods before the pandemic in January 2020 and January 2019.

The query included age, sex, tumor thickness, ulceration, and TNM stage (according to AJCC 2017). Tumor thickness at initial diagnosis in January 2021 was compared with corresponding values from the two previous years using a t-test. Due to the right-skewed distribution of tumor thickness, the data were first transformed (logarithmized). The significance level of 5% was adjusted after Bonferroni correction, with a  $P$  value  $< 0.025$  assumed to be statistically significant. The survey was approved by the Ethics Committee of the Hannover Medical School (No. 9570\_BO\_K\_2021).

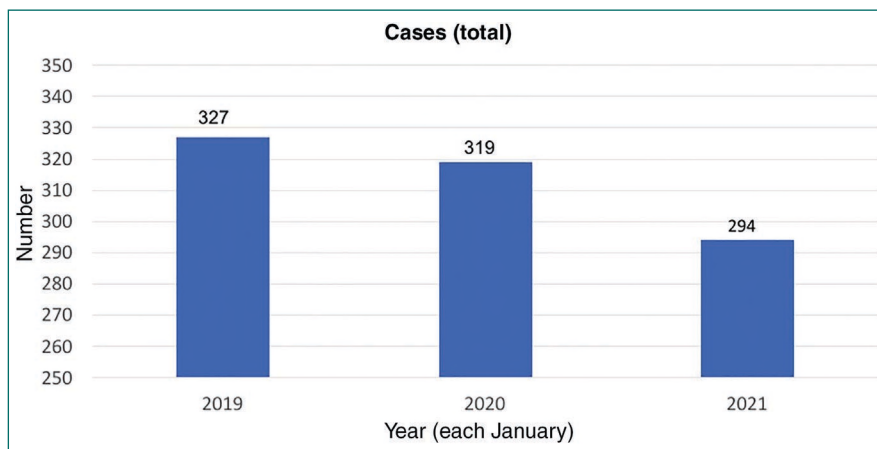
Forty-nine dermatology hospitals reported complete data sets. The total sum of all sentinel lymph node surgeries was 295 in 2021, 319 in 2020, and 327 in 2019 (Figure 1). Tumor thickness of malignant melanomas varied from 0.6 mm to 38 mm in January 2021 (mean 2.6 mm, median 1.8 mm), from 0.2 mm to 21 mm in January 2020 (mean 2.3 mm, median 1.6 mm), and from 0.6 mm to 20 mm in January 2019 (mean

2.5 mm, median 1.7 mm). It was significantly higher in 2021 compared to 2020 ( $P = 0.02$ ), while the difference between 2019 and 2021 was not significant (Figure 2)

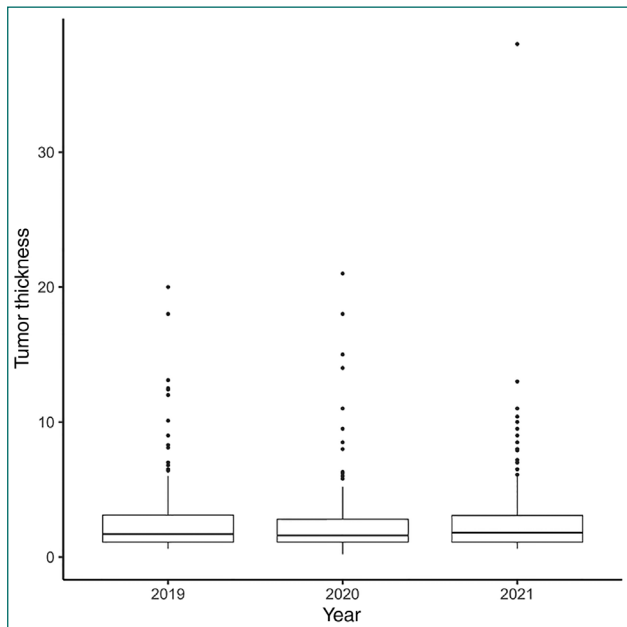
The proportion of thick melanomas (pT4a or pT4b) was highest in 2021 at 19 % compared with 12 % in 2020 and 17 % in 2019. Ulcerated melanomas were present in 33 % in January 2021, 28 % in January 2020, and 39 % in January 2019.

Only limited data are currently available on medical care in Germany during the pandemic. The German Central Research Institute of Ambulatory Health Care (*Zentralinstitut für die kassenärztliche Versorgung*) has published trend reports on the first wave of infections in spring 2020 [1]. Here, it was shown that the number of skin cancer screenings decreased by 70 % in the last week of March 2020. Wang et al. investigated the impact of the pandemic on the frequentation of the university outpatient clinic of the Department of Dermatology at the Technical University in Munich [2]. The caseload of outpatients decreased significantly during the lockdown because patients did not attend appointments, including those diagnosed with malignant melanoma. Data from a pathology registry from the first half of 2020 are available from Italy [3]. Here, a significant increase in tumor thickness of excised primary malignant melanomas was seen after the first lockdown. Jacob et al. examined cancer diagnoses from German specialist and general practices from January to May 2020 compared to the previous year [4] and found a decrease for all entities, which was most pronounced for skin cancer (−42.9 % in April 2020).

Our study with a decline in the number of cases and an increase in tumor thickness suggests that there were limitations in the care of melanoma patients during the pandemic. On the one hand, these may be due to the fact that hospital resources were limited by bed reductions, staff absences, or reduced surgical capacity [5]. On the other hand, it is also possible and overall more likely that patients with suspicious pigimentary lesions sought medical attention later on



**Figure 1** Number of cases of melanoma patients with sentinel lymphonectomy in the reporting 49 dermatology clinics, each in January. The decrease in the number of cases in January 2020 compared with January 2021 was due in particular to nine hospitals (two university and seven non-university hospitals) with a decrease of at least four cases.



**Figure 2** Tumor thickness of malignant melanomas in mm, each January. 2019: 0.6 to 20.0 mm (median 1.7 mm). 2020: 0.2 to 21.0 mm (median 1.6 mm). 2021: 0.6 to 38.0 mm (median 1.8 mm).

their own due to contact restrictions and fear of infection. Tejera-Vaquero et al. simulated courses of squamous cell carcinoma and malignant melanoma for which the diagnosis was delayed by one to three months and notably postulated an increase in ultra-thick tumors due to the pandemic [6]. The same group calculated a possible stage increase in 45% of melanomas with a three-month delay [7].

Dermatology practices and dermatology clinics should prioritize screening and care of melanoma patients when resources are limited, as well as use telemedicine and app-based diagnostic capabilities; the latter have seen a significant surge during the pandemic [2, 8, 9].

Limitations of our studies are the limited time frame for data collection of only one month each and that only melanoma cases were considered. Other tumor entities such as squamous cell carcinoma or Merkel cell carcinoma might also have been diagnosed at higher stages and thus have a worse prognosis. Further insights into the impact of the pandemic on skin cancer patients in Germany could come from evaluations of cancer registries, health insurance data, and from large histology practices analyzing primary outpatient tumor cases. There is a need for further research in this area.

In summary, it remains unclear whether we are at the beginning of a trend that will intensify in the coming months, and whether a wave of patients with significantly advanced skin tumors will be descending on practices and dermatology clinics. Ultimately, only in retrospect will we know whether

the mortality of skin tumor patients has increased due to the limitations of the corona pandemic.

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## Conflict of interest

None.

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