Assessment of clinical interruptions during the COVID-19 pandemic on the diagnosis of melanoma: A 30-month retrospective review

To the Editor: During the COVID-19 pandemic, health care facilities reduced or suspended their clinical services in an attempt to safeguard patients and providers from infection. These closures and scaled-back clinical hours resulted in considerable diagnostic delays for many malignancies typically detected by routine screening. Recent retrospective studies have demonstrated that COVID-19 had significant impacts on the absolute detection of melanomas at major referral centers.\textsuperscript{1-3} While absolute decreases were observed in these studies, it is unknown if the melanomas detected during COVID-19 represented proportionally more or less than would be expected when corrected for a decrease in total collections. This retrospective review examined all dermatopathology records at the Columbia University Department of Dermatopathology from January 2019 to June 2021. Cases corresponding to malignant melanoma (MM) and melanoma in situ (MiS) were identified in the pooled data set with Breslow depth recorded for each. Total collections were used to determine the frequency of melanoma diagnosis each month (see Figs 1 and 2). Statistical analysis was performed using a one-tailed Mann-Whitney $U$ test with an alpha of 0.05. The total collections for 2019, 2020, and the first half of 2021 were 128,596, 78,000, and 44,015, respectively. There was a 39% decrease in yearly collections from 2019 to 2020. In 2020, there was a respective 43.7% and 12.2% decrease in MM and MiS diagnoses compared to 2019. From 2019 to 2020, diagnosis rates of MM did not significantly change ($P = .075$). However, MMs were diagnosed with greater frequency in the first half of 2021 as compared to 2019 ($P = .048$). Proportional detection rates of MiS increased in both 2020 ($P = .041$) and 2021 ($P = .045$) as compared to 2019. Excluding MiS, the median Breslow thickness of MM for each year was 0.9 mm ($P = 1.0$). In line with other studies, we saw an absolute decrease in both the number of MM and MiS detected between 2019 and 2020, with 43.7% fewer MM and 12.2% fewer MiS detected during this time. Notably, a proportional increase in MM and MiS detection rate was observed in 2021, suggesting screening visits were identifying an expected proportional elevation in the burden of disease. However, the substantial absolute decrease in detection in 2020 points to a remaining burden of disease, which may be uncovered with increased screening, possibly

![Proportional Incidence of MiS Diagnoses](image)

**Fig 1.** The proportional incidence of MiS diagnoses from January 2019 to June 2021 adjusted for number of total collections. MiS, Melanoma in situ.
encouraged through state-wide or national health campaigns. However, the impact of delay in diagnosis remains a matter of debate. While it is tempting to assume an increase in undetected melanomas will correspond to an increase in mortality, recent epidemiologic studies have suggested considerable melanoma overdiagnosis in the United States, with an increased incidence of lower stage disease reported without a corresponding increase in mortality.\textsuperscript{4,5} Notably, median Breslow depth of invasive lesions did not substantially change in our cohort. It is possible that primarily low-risk patients are being screened, who present with lower stage disease. What seems clear based on this and related work is that a considerable number of melanomas likely did go undetected due to the pandemic. Further analysis, in broader cohorts, should be performed to ascertain the impact.

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Conflicts of interest
None disclosed.

REFERENCES

Fig 2. The proportional incidence of MM diagnoses from January 2019 to June 2021 adjusted for number of total collections. MM, Malignant melanoma.