Missing melanomas in England during the COVID-19 pandemic: 2485 fewer melanoma diagnoses in 2020 than in 2019

https://doi.org/10.1093/bjd/ljad117

Dear Editor, A delayed diagnosis of malignant melanoma (MM) increases mortality. There were three lockdown periods in England during the COVID-19 pandemic, beginning 23 March 2020, 5 November 2020 and 6 January 2021, respectively, and concerns regarding delayed cancer diagnoses were widely reported. Therefore, we reviewed the incidence of MM by stage in England during the first 2 years of the pandemic.

Data from the Rapid Cancer Registration Dataset (RCRD) were analysed from January 2019 to December 2021.[1] MM staging was performed according to the *TNM Classification of Malignant Tumours*, 8th edition. Mid-year population estimates published by the Office of National Statistics were used to report the crude incidence with Poisson 95% confidence intervals (CIs). Incidence rate ratios (IRR) and *P*-values were derived using the Poisson exact method.[2] The data underlying this article are available in the RCRD (https://www.cancerdata.nhs.uk/covid-19/rcrd).

In total, 14 001 cases of MM were diagnosed in 2019 vs. 11 516 in 2020 and 14 443 in 2021 (Figure 1a). There were 2485 fewer cases of MM in 2020 than in 2019, with
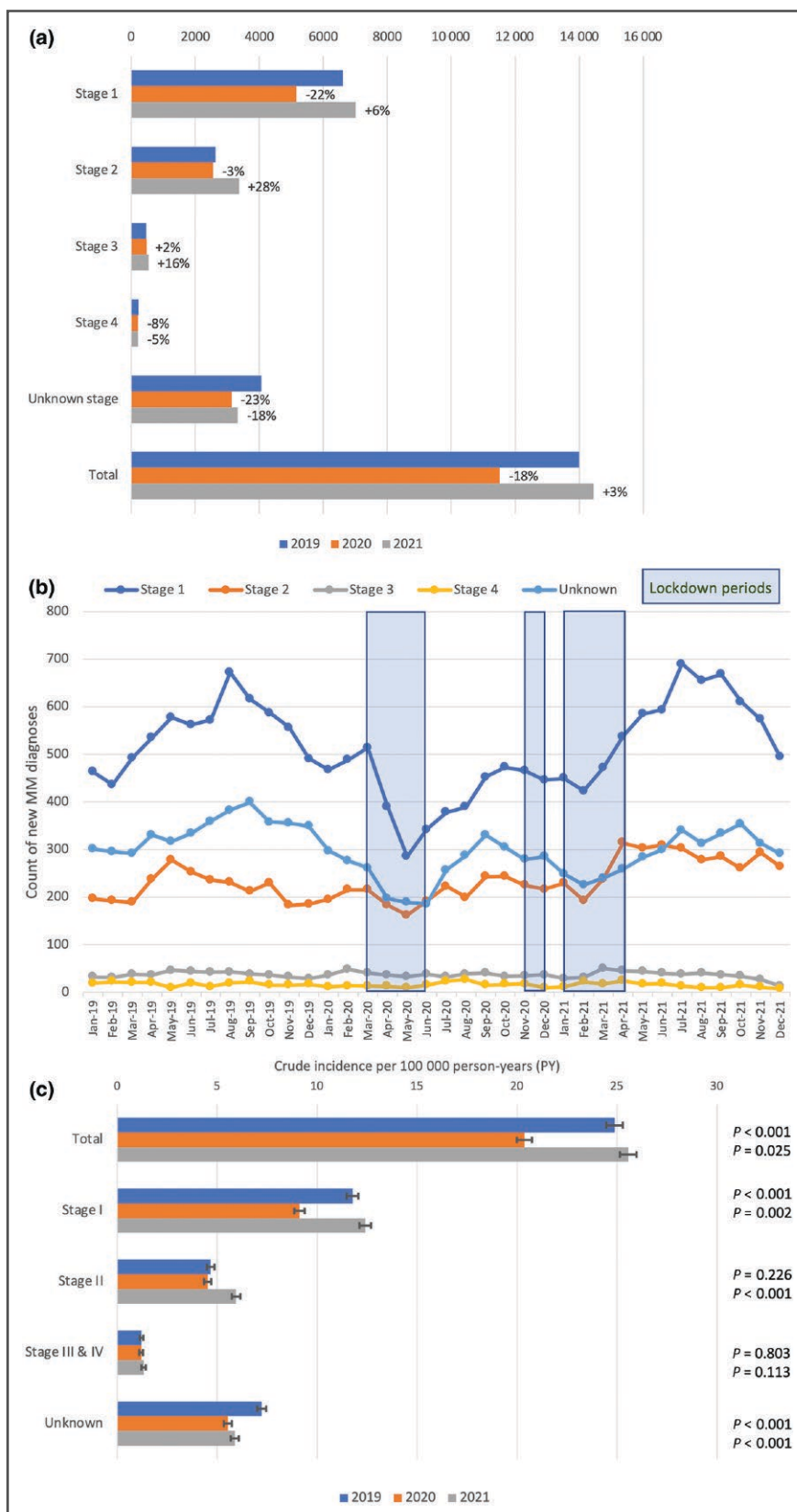
Figure 1 (a) Number of malignant melanoma (MM) diagnoses over the course of the COVID-19 pandemic in 2019, 2020 and 2021, with associated percentage change in 2019 value. (b) Comparison of MM diagnoses according to stage across three national lockdowns in England, 2019–21. (c) Crude incidence rate per 100 000 person-years for MM diagnoses in 2019–21; each bar represents 95% confidence intervals and *P*-values represent the incidence rate ratios vs. 2019 values.

the greatest difference seen in stage I (–1463 cases) and unknown stage MM (–941 cases). Diagnoses increased in 2021, particularly for stage II MM, representing 128% of the total number of cases reported for 2019. The greatest reduction in diagnoses occurred during the first lockdown, with smaller reductions in the second and third lockdowns. In April 2020, diagnoses were reduced compared with April 2019 for the total number of MM cases (71%), stage I (73%), stage II (77%), stage III and IV MM (86%) and MM of unknown stage (60%; Figure 1b). During the second and third lockdowns, the total number of MM diagnoses and stage I diagnoses remained above 90% of the 2019 data.

The crude incidence rate (Figure 1c) of MM reduced between 2019 and 2020 from 24.87 (95% CI 24.46–25.29) to 20.36 per 100 000 person-years [PY; 95% CI 19.99–20.74 (IRR 0.82, 95% CI 0.80–0.84; $P < 0.001$)]. The largest differences were seen in stage I MM, which reduced from 11.76 PY (95% CI 11.48–12.05) to 9.12 PY [95% CI 8.87–9.37 (IRR 0.78, 95% CI 0.75–0.80; $P < 0.001$)], and in unknown stage MM, which reduced from 7.23 PY (95% CI 7.01–7.46) to 5.54 PY [95% CI 5.34–5.73 (IRR 0.77, 95% CI 0.73–0.80; $P < 0.001$)]. In 2021, the crude incidence rates showed a significant rise compared with 2019 for total diagnoses, and for stage I and stage II MM, with the greatest IRR seen in stage II diagnoses: from 4.67 (95% CI 4.49–4.85) to 5.94 PY [95% CI 5.74–6.15 (IRR 1.27, 95% CI 1.21–1.34; $P < 0.001$)]. There was a significant reduction in unknown stage MM in 2019 compared with 2021 to 5.8 PY [95% CI 5.68–6.10 (IRR 0.81, 95% CI 0.78–0.85; $P < 0.001$)]. No statistically significant differences were found in stage II MM diagnoses in 2020, or in stage III and IV MM in 2020 or 2021. Total MM diagnoses reduced in 2020, with a lack of the typical summer increase in MM incidence. Early-stage MM was affected most during the first wave, in parallel with the reduction in dermatology services.[3]

Limitations of the RCRD include the lack of manual interpretation and follow-up of gold-standard registry data, which is reflected in the high proportion of unknown-stage tumours and low proportion of late-stage MM. RCRD are sourced from the Cancer Outcomes and Services Dataset (COSD). COSD data-completion improvements may have reduced the number of tumours of unknown stage recorded over the study period.

International responses to the pandemic varied, as did reported changes in MM epidemiology. A Dutch national cohort study ($n = 20\,434$) found no significant difference in MM Breslow thickness before, during or after lockdown periods between January 2018 and July 2021.[4] However, as our data showed, the increase in stage II MM diagnoses emerged in 2021; future analyses may make this more apparent. A retrospective US analysis showed a decrease in stage I MM diagnoses postpandemic vs. prepandemic (28.5% vs. 40.7%; $P = 0.006$) and an increase in stage III diagnoses (30.5% vs. 21.1%; $P = 0.02$).[5] A systematic review of data from Europe and North America observed a significant increase in MM of TNM stage II or greater (36.2% vs. 25.9%) and Breslow thickness (1.86 vs. 1.59 mm) in 2020–21 compared with the prepandemic period.[6]

Possible causes for reduced MM diagnoses include patient anxiety, reduced face-to-face appointments, medical staff sickness and isolation, and the redeployment of staff and facilities in primary and secondary care.

MM cases, primarily of stage I, reduced over the first year of the pandemic. In 2021, there was a 28% increase in stage II MM diagnoses. Overdiagnosis, together with a genuine rise in the incidence of melanoma, has been attributed to the historical increase in early-stage diagnoses.[7] However, this study has shown that the pandemic may have delayed diagnoses, contributing to melanoma progression. It is concerning if a diagnostic hiatus worsens MM-related prognosis, with the 5-year net survival of stage I MM being 98% vs. 83% for stage II.[8] Raising awareness of the importance of early diagnosis is essential to improving long-term outcomes.

Lena S. Ibrahim,[1] Zoe C. Venables,[1,2,3] Sean McPhail[3] and Nick J. Levell [1,2]

[1]Norfolk and Norwich University Hospital, Norwich; [2]Norwich Medical School, University of East Anglia, Norwich; and [3]National Disease Registration Service, NHS Digital, Leeds, UK
Email: lena.ibrahim@nnuh.nhs.uk

References

1 CancerData. COVID-19 rapid cancer registration and treatment data. Available from: https://www.cancerdata.nhs.uk/covid-19/rcrd (last accessed 19 June 2022).

2 Schoonjans F. MedCalc's Comparison of two rates. MedCalc. Available from: https://www.medcalc.org/calc/rate_comparison.php (last accessed 19 June 2022).

3 Ibrahim L, Venables Z, Levell N. The impact of COVID-19 on dermatology outpatient services in England in 2020. *Clin Exp Dermatol* 2021; **46**:377–8.

4 Sangers T, Wakkee M, Kramer-Noels E *et al.* Limited impact of COVID-19-related diagnostic delay on cutaneous melanoma and squamous cell carcinoma tumour characteristics: a nationwide pathology registry analysis. *Br J Dermatol* 2022; **187**:196–202.

5 Shaikh S, Yang X, Fortman D *et al.* A retrospective analysis of the impact of the COVID-19 pandemic on staging at presentation of patients with invasive melanoma. *J Am Acad Dermatol* 2022; **87**:906–8.

6 Toma A-O, Prodan M, Reddyreddy AR *et al.* The epidemiology of malignant melanoma during the first two years of the COVID-19 pandemic: a systematic review. *Int J Environ Res Public Health* 2022; **20**:305.

7 Herbert A, Koo M, Barclay M *et al.* Stage-specific incidence trends of melanoma in an English region, 1996–2015: longitudinal analyses of population-based data. *Melanoma Res* 2020; **30**:279–85.

8 CancerData. Cancer survival in England: adult, stage at diagnosis, childhood and geographical patterns. Available from: https://www.cancerdata.nhs.uk/survival/cancersurvivalengland (last accessed 19 June 2022).