

Tenth World Congress of Melanoma in Conjunction with 17th EADO Congress

April 15-17, 2021

06 March 2021

Title: Long-term trends in melanoma tumour thickness in Norway

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Categories: Melanoma

Topics: Epidemiology

Preference: Poster Presentation

Background

Norway has the second-highest mortality rate of cutaneous melanoma worldwide and ranks fifth in incidence. Tumour (Breslow) thickness at diagnosis is the primary determinant of the T category in the tumour, nodes, metastasis staging system, and the most important prognostic factor for survival after localized melanoma. This ongoing study investigates long-term trends in tumour thickness, and the corresponding T categories, overall and in important subgroups, in a nationwide case series over a 40-year time period.

Methods

The population-based Cancer Registry of Norway (CRN) provided all first primary invasive melanoma cases for 1980-2019. Tumour thickness was available from the Norwegian Melanoma Registry (within the CRN) for all cases diagnosed in 2008-2019 and was manually extracted from the paper notifications archived in the CRN for the cases diagnosed in 1980-2007. Covariates include sex, age, residential geographical region, anatomic site, histopathological subtype, clinical stage, and ulceration.

Descriptive summaries are presented as frequencies (numbers, %) and medians with interquartile ranges (IQR).

Results

In total, 47,439 morphologically verified first primary invasive melanoma cases were diagnosed in Norway in 1980-2019. In both men and women, median age at diagnosis increased from 1980-2000 to 2008-2019 (Table 1). Trunk was the most common anatomic

Table 1: Age and tumour thickness in Norwegian melanoma cases¹, 1980-2019.

Characteristic	Female			Male		
	1980-1999 N = 7293	2000-2007 N = 4149	2008-2019 N = 11475	1980-1999 N = 8627	2000-2007 N = 4631	2008-2019 N = 11264
Age at diagnosis	59 (46 – 70)	63 (52 – 75)	67 (56 – 76)	56 (42 – 71)	60 (46 – 75)	63 (50 – 75)
Tumour thickness	1.40 (0.75 – 3.00)	1.30 (0.70 – 3.00)	1.00 (0.60 – 2.30)	1.00 (0.60 – 2.00)	1.00 (0.60 – 2.00)	0.90 (0.50 – 1.80)
Unspecified	2,116	616	1,009	2,559	602	764
T category						
T1	2,228 (43)	1,496 (42)	5,269 (50)	3,179 (52)	2,106 (52)	6,092 (58)
T2	1,180 (23)	847 (24)	2,265 (22)	1,388 (23)	955 (24)	2,221 (21)
T3	1,029 (20)	706 (20)	1,646 (16)	948 (16)	563 (14)	1,222 (12)
T4	740 (14)	484 (14)	1,286 (12)	553 (9.1)	405 (10)	965 (9.2)

¹ Median (IQR); n (%)

site in men (59.5%), and trunk (32.3%) and lower extremities (35.9%) the most common sites in women. The dominant subtype was superficial spreading melanoma (54.8%), followed by nodular melanoma (18.4%). In total, 90.0% of the cases were diagnosed in a local stage, whereas 5.6% had regional metastases and 4.4% had distant metastases.

Women were diagnosed at a thinner stage than men. In men, median (IQR) tumour thickness decreased from 1.4 mm (0.75–3) in 1980-1999 to 1 mm (0.6–2.3) in 2008-2019, and in women from 1 mm (0.6–2) to 0.9 mm (0.5–1.8) (Table 1).

Tumour thickness was missing in the pathology reports for more than 25% of the cases until 1990. Reporting of ulceration started in 2000, but with a large proportion of missing values. After the Norwegian Melanoma Registry was established in 2008, the proportions of missing ulceration decreased dramatically.

Analysis of incidence rates in relation to tumour thickness is in the process, and will be presented at the conference.

Conclusions

This unique time series of national melanoma tumour thickness data will identify trends in tumour thickness, overall and in subgroups of the population, as well as identify potential effects of changing exposure patterns and earlier detection.