



Editorial

Increasing rates of head melanoma in Nordic countries

Keywords: Melanoma; Head; Face; Incidence; Immune; Repair; Radiation; Mobile

Dear Editor,

Prior to 1955, melanoma was not a major health problem in Sweden. Since then, the incidence of melanoma occurring on the sun exposed head region has increased approximately 2-fold while the incidence of melanoma on non sun exposed skin has increased by almost 20-fold [1]. Our previous studies highlighted immune disturbing body-resonant radio waves as having a potential etiologic role in the increased incidence of melanoma [2]. Since that time all people who today are younger than 60 have been living in this new environment for all their lives and are now expected to show stable incidents for each age cohort, which also turns out to be the case [3].

Man-made electromagnetic fields, i.e. microwaves from wireless telecommunication, may also play a role in the development of brain cancer. Since the mid 1990s the use of mobile phones has increased considerably and its potential role in brain tumor risk has been debated. It is known that brain tumors generally have a long latency, with 20–30 years required for development. Thus any wireless communication-associated increase in brain cancer frequency would not be expected to occur for at least yet another decade.

In a review of brain cancer trends in the Nordic countries, Deltour et al. in 2009 presented incidence data up to 2003 and concluded that no adverse trend could be seen [4]. However, since 2003 more data have become available and Norway is now showing increasing rates of brain cancer, as are parts of Sweden. If the immune system is sensitive to weak electromagnetic fields as suggested in earlier studies [3], it is logical to study skin melanoma occurring in mobile phone-exposed areas of the body, i.e. the face, ears, eyes, head, and neck. Since the power density of radiation emitted from a mobile phone declines by the square of the distance the ear and face would be expected to be the most affected parts of the body per unit area.

The national cancer registries of Sweden, Norway, Finland, and Denmark were asked to provide cancer incidence rates for melanoma in the head region including data

as far back as was available. The ICD codes were 190.1–190.4 (eye, ear, face, and neck/scalp). Both age-standardized rates (world) and age-specific rates were provided. We also searched for available data on laterality, i.e. grouping of reported cases into left or right side of the head.

Fig. 1 shows the development of age-standardized rates of melanoma in men and women in Finland, Denmark, and Sweden up to year 2009 and for Norway up to 2008. We noticed an increasing melanoma incidence among Swedish men aged 10–34 years but not so clear for Swedish women and young people from other Nordic countries in the same age-group.

Fig. 2 shows the mean values reported from all four countries. Also included are data showing the increasing usage of mobile phones in Sweden since 1982. This increase in mobile phone usage in Sweden is assumed to mirror the trends in the other Nordic countries. It should be made clear that trend similarities by no means are a proof of causality of the association. If, however, there is a connection, long term effects could be considerable.

The incidence of melanoma has been quite stable over the years for younger age cohorts while increasing for older groups [3]. The age-standardized rates of head melanoma has been stable for people younger than 60 years up to 2000, increasing thereafter as reported by Hallberg and Johansson [5] and Logan and Hallberg [6].

The increase is seen for all age groups, indicating the presence of a promoting factor that has been active since approximately 2000. The fact that the incidence of melanoma of the head is increasing in all four countries simultaneously indicates a common underlying cause, and should stimulate further research on potential etiological factors. The Swedish Radiation Safety Authority explains the increases by changing sun tanning habits. "... one cause to the continuously increasing incidence of all types of skin tumors is probably our changing habits regarding our exposure to UV radiation" [7]. A detailed study of Swedish data for men shows that the incidence per 100 cm² of body area has increased by

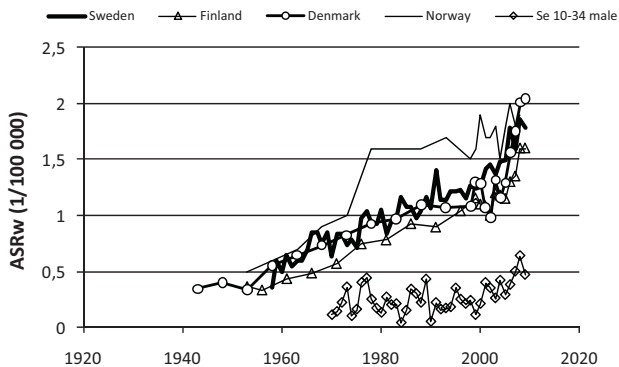


Fig. 1. Increasing age-standardized rates (ASR) of head melanoma in Nordic countries.

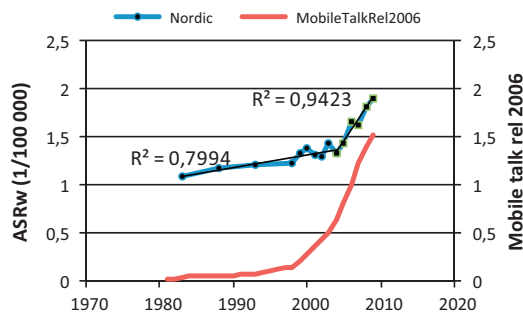


Fig. 2. Age-standardized rates as mean values from all four Nordic countries. Also given is the increasing annual use of mobile phones in Sweden relative to the annual talk-time in 2006 (44,142 talk years).

0.37/100 000 for the ears, 0.12 for the face/eyes and by 0.05 for the scalp and neck areas when comparing the time periods 1986–1989 with 2006–2009. See Fig. 3. Apparently the ears seem to have had the largest increase of melanoma incidence per unit area.

Melanoma and breast cancer both demonstrate a left laterality of approximately 10% [8]. Several reports have recently shown an excess of melanoma on the left side of the whole body [9,10] or of the face [11]. These reports are based on time series up to 2003, or on (Butler) data from the year 2004. It is interesting to note that the laterality of head melanoma is

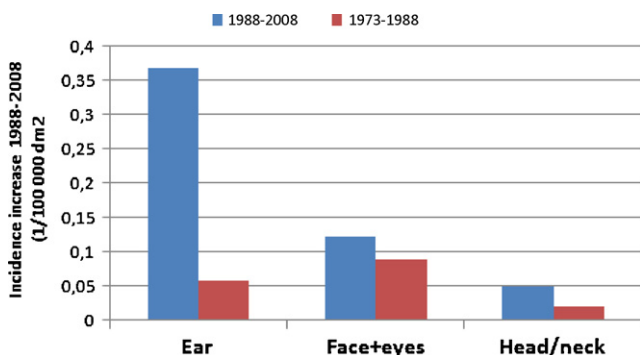


Fig. 3. The incidence increase per 100 cm² skin area between the averages reported incidences in periods 1986–1989 and 2006–2009. The corresponding changes between periods 1970–1975 and 1986–1989 are also given.

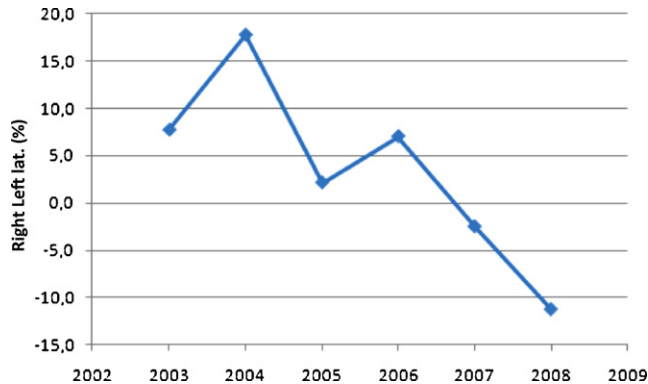


Fig. 4. Left (+)/right (–) laterality of head melanoma reported in Sweden since 2003.

now changing from the left to the right side as the number of head melanoma cases is increasing. According to the Swedish Cancer Registry the reported laterality predominance since 2003 were changing from left to right in 2008, see Fig. 4. One might speculate if this is related to right handedness.

The main conclusions from this study are:

1. Head melanoma rates started to increase after 2005 in all Nordic countries.
2. This report should be seen as a warning of possible future increases in the rate of head and face melanoma. Other cancer trends, such as brain tumor trends, should also be closely monitored over time.

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Conflict of interest statement

The authors have no conflict of interest to declare.

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