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SHORT COMMUNICATION

A melanoma trend forecast from 2002 – What happened then?

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ABSTRACT

In 2002, a paper was published that highlighted the strong correlation noticed between melanoma incidence and the number of surrounding frequency modulation (FM) transmitters in the Nordic countries since 1955. In the report the development of future numbers of melanoma cases in Estonia were estimated since they got the FM broadcasting system rolled out not until 1992. Here, we report what happened since then in Estonia regarding melanoma cases per year. We also comment on the recent development in the Nordic countries, which is not very reassuring from a public health point of view. The last 10 years of melanoma incidence trends, increasing at an exponential rate, suggest that responsible authorities now need to consider possible influences also from other radiation sources in addition to UV radiation from the sun.

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Body-resonant; DNA repair; high-frequency FM-transmitter; incidence; melanoma; model; melanoma increase; radiation

Introduction

The largest organ of the human body is the skin. It is also placed closest to the surrounding environment, thus making it a very sensitive instrument to detect dangerous environmental changes. By the invention of broadcasting radio transmitters, radio waves also became a general part of our surrounding environment, 24 h/7 d (continuous exposure). In Nordic countries a special bandwidth was introduced from 1955 and onwards. It was the FM-band that is around 100 MHz having a wavelength of 3 m, and thus a half wave length close to the height of the adolescent and adult human body. WHO explain in their Fact Sheet #304 (World Health Organization, 2006) that, radiation at this frequency is absorbed up to five times more efficiently by the human body than at other frequencies "… *because a person's height makes the body an efficient receiving antenna*".

Hallberg and Johansson (2002) reported about the strong correlation between the incidence of skin melanoma and the number of FM transmitters covering an area in the Nordic countries. By detailed analysis of incidence data over time, it was possible to extract a characteristic function that could be used to estimate the response in number of melanoma cases over time from a sudden increase in the number of people covered by an FM transmitter.

This characteristic function was also used to estimate future numbers of melanoma cases to be expected in Estonia, where the 100 MHz FM broadcasting was introduced not until 1992, right after the fall of the Eastern Wall.

The aim of this short communication is to report what actually happened in Estonia regarding the development of annual melanoma cases, and to discuss some related findings from more recent studies.

Results and discussion

Figure 1 shows the development of annual melanoma cases as well as the number of melanoma prevalence-based deaths in Estonia before and after the roll-out of the FM radio broadcasting at the 100 MHz band. Data reported after 1997 were provided by the Estonian Cancer Registry, Tallinn, Estonia.

The predicted trend according to the calculations presented in 2002, to be compared with the reported outcome, appears to be somewhat less than initially projected. The data represent the total number of new cases per year, and the projections do not account for possibly changing age distributions over time. It appears that the reported increase since 1997 is about 70% of the originally calculated one. Since that time (2002), much more of melanoma trend modeling (Hallberg, 2013) and correlation analysis have been performed. The influence on our immune and cell repair systems from body-resonant broadcasting waves is very much affected by sleeping habits, and the use of reflecting metal spring mattresses. It

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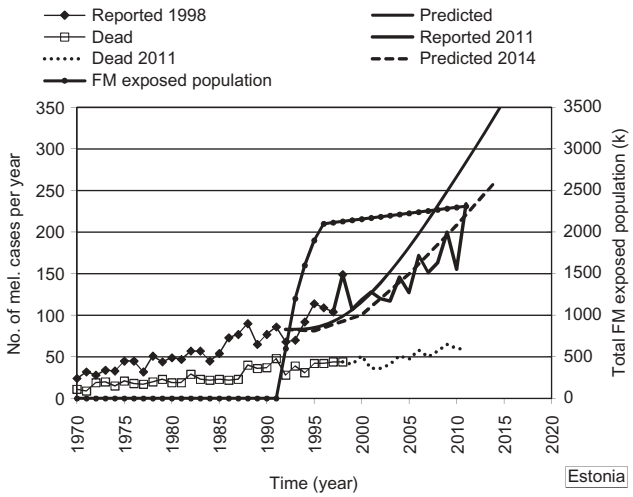


Figure 1. Calculated and reported numbers of annual new melanoma cases as well as number of new melanoma prevalence-based deaths in Estonia. Actually reported data since 1997 are around 70% of originally predicted numbers.

has been shown that melanoma and breast cancer incidences are correlated with the use of spring mattresses in different parts of the world (Hallberg, 2010).

During recent years, the melanoma incidence has increased at very fast pace and in an exponential way. It has earlier been noticed that, e.g. melanoma in the face region is rapidly increasing (Hallberg and Johansson, 2011). The Swedish expert Professor Yvonne Brandberg blames this increase to the "persistent sun tanning by the Swedes" (TT-METRO, 2014). This explanation is, however, not supported by the results of this study. Even in the 1980s the increasing trend of melanoma was known, and there have been doubts about the causal effects from the sun (Braun-Falco et al., 1984).

Furthermore, until now it has been difficult to explain to medical students, why the most common forms of melanoma show a distribution pattern, which does not follow the most sun-exposed parts of the skin. In 60% men we find an affection of the torso, especially in the back; in 45% women the occurrence is in the lower limbs (Bertz, 2001).

The melanoma trend was increasing linearly up to 1992 ($r^2 = 0.82$) and exponentially thereafter ($r^2 = 0.78$). The lower numbers of annual melanoma cases in Estonia compared with the estimates from 2002 would be completely explained if the use of spring mattresses in Estonia is less than the Swedish level, which is around 70%. This means that Figure 1 suggests that the use of spring mattresses in Estonia is around 50%. According to Hallberg (2010), the average use of spring mattresses in Eastern European countries was estimated to 50%, so this might also be the case for Estonia.

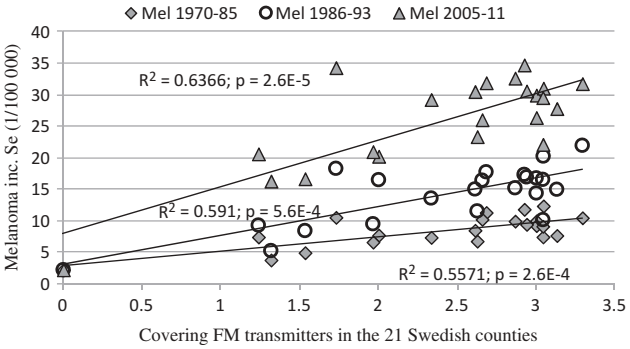


Figure 2. Melanoma incidence in the 21 Swedish counties vs. average numbers of FM transmitters covering each county for time periods 1970–1985, 1986–1993 and 2005–2011. The data point at zero transmitters represents all of Sweden before 1955.

In the original report from Hallberg and Johansson (2002), the strong correlation between melanoma incidence and the number of surrounding FM transmitters was highlighted. This correlation was based on melanoma incidence data reported from each one of the 289 Swedish municipalities during the time period 1986–1993. In order to see if this correlation still prevails, we collected averaged data of whole body melanoma incidence from all 21 Swedish counties for the time periods 1970–1985, 1986–1993 and 2005–2011. Figure 2 shows that the correlation to surrounding FM transmitters still is very strong, although the incidence numbers have doubled since 1986–1993.

Conclusions

This follow-up of melanoma data reported in 2002 strongly supports the hypothesis that body-resonant radiation is a main factor to explain the steadily increasing rates of skin melanoma, and that the sun screen campaigns unfortunately may have drawn focus from other important factors. It is now high time to address this possible additional cause to increasing rates of melanoma, breast cancer, lung cancer and other cancers in Western countries. Since the specialized cancer agency of the World Health Organization, the International Agency for Research on Cancer (IARC), in its run-up to World Cancer Day 2014, is pointing to that treatment alone cannot win the battle against cancer, but rather that the key priorities should be given to cancer prevention and control measures, our current report comes very timely.

A long-term FM-transmitter shut-down study, as performed in Switzerland 1998, might be used to evaluate our hypothesis (Altpeter et al., 2006).

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Declaration of interest

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