



Karolinska Institutet

**Institutionen för klinisk vetenskap, intervention och teknik
Enheten för Öron-, Näs- och Halssjukdomar**

Clinical implications of HPV in oropharyngeal cancer

AKADEMISK AVHANDLING

som för avläggande av medicine doktorexamen vid Karolinska
Institutet offentligen försvaras i ÖNH-kliniken föreläsningssal,
Karolinska Universitetssjukhuset Solna, A602, plan 2 i
huvudbyggnaden

Onsdagen den 16 maj 2012, kl. 9.00

av

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Stockholm 2012

ABSTRACT

Tonsillar cancer incidence has been increasing in Sweden and many other western countries in the last decades despite that other head and neck cancers are decreasing. It is now established that Human Papillomavirus (HPV) can be accredited part of that increase.

The aims of this thesis were to investigate any change in incidence of base of tongue cancer, any further increase of tonsillar cancer incidence, what role HPV may have, the prognostic value of HPV as well as the outcome of different treatment regimes on tonsillar cancer.

Using the Swedish Cancer Registry, we found that the incidence for both tonsillar and base of tongue cancer has increased from 1970 to 2006-2007, for tonsillar cancer from 0.74/100000 person-years 1970-1979 to 1.65/100000 person-years 2000-2006 in Stockholm County and for base of tongue cancer from 0.15/100000 person-years 1970-1974 to 0.47/100000 person-years 2005-2007 in Sweden. We analyzed pre-treatment, paraffin-embedded diagnostic tumor biopsies for HPV using PCR technique and found that the proportion of HPV in both tonsillar and base of tongue cancer has increased during the last decade, reaching 93% positivity in tonsillar cancer and 83% positivity in base of tongue cancer in 2006-2007. To evaluate if HPV was transcriptionally active in these biopsies, we also tested for HPV E6 and E7 mRNA, which was positive in the vast majority of cases. For base of tongue cancer, HPV was found to be a significant prognostic factor, with improved overall as well as disease free survival compared to patients with HPV-negative tumors, irrespective of patient age, sex and tumor stage. It has been suggested that patients with HPV positive tumors possibly could be cured by less intense treatment and thus reducing side effects. When analyzing all HPV positive tonsillar cancer patients in Stockholm County, Sweden between 2000 and 2007, we compared survival and development of distant metastasis between groups that had received three different treatment regimes. No significant difference in overall or disease free survival was found between the treatment groups, but a trend of improved survival for intensified treatment was seen that needs to be studied further.

The vast majority of HPV positive tonsillar- and base of tongue cancers are HPV16, which means that the commercially available vaccines would protect against it. This highlights the discussion if boys/men should be included in the HPV vaccination program.