Cure of cancer in the Flanders region of Belgium

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Abstract

Background
For many cancers, a variable fraction of cancer patients will not die due to the cancer and can in terms of life expectancy be regarded as statistically cured. This so called cured proportion will experience the same death hazard as the general population. The remaining proportion of the cancer patients, the fatal cases, experiences an excess death hazard rate with respect to the general population. The cure of cancer within a population can therefore be quantified by the proportion cured and the mean survival time of the fatal cases.

Methods
Parametric cure models were applied to seven cancer sites (cervix, colon, corpus uteri, malignant melanoma of the skin, pancreas, stomach and oesophagus), based on the relative survival data from the Belgian Cancer Registry at the Flemish Regional level for the incidence period 1999 to 2011. Cure results were further stratified by gender or age group. PROC NLIN was used to estimate the cure model. Gender differences were assessed by adding age, stage and gender to the parametric cure model.

Results
Statistical cure was observed for the examined cancer sites except for oesophagus. Cured proportions decreased with increasing age group; e.g. for cervix cancer more than 80% for the youngest age group (15-44 year) while only 35% for women older than 65 year. Higher stratified cured proportions were observed for females compared to males for colon cancer, stomach cancer, pancreas cancer and melanoma of the skin, which can mainly be attributed to differences in stage and age distribution between both sexes.

Discussion
A follow-up period of 14 years was sufficient to estimate cure of cancer in the Flemish Region for six cancer sites (cervix, colon, corpus uteri, malignant melanoma of the skin, pancreas and stomach) diagnosed from 1999 to 2011 using parametric mixture cure models applied to grouped relative survival curves.

References