Five-Year Survival is Not a Useful Measure for Cancer Control in the Population: an Analysis Based on UK Data

Li SQ, Pan XF, Kashaf MS, Xue QP, Luo HJ, Wang YY, Wen Y, Yang ChX.

Abstract

Background: Five-year survival is an important metric for progress in cancer control broadly used both in the cancer literature and by the public. In order to assess its validity and relation to other common metrics, we analyzed the relationship between 5-year survival, incidence and mortality using publicly available cancer registry data from England and Wales. Methods: Five-year survival, incidence and mortality data were obtained from the online database of a registered charity, Cancer Research UK. We extracted sex-specific age-standardized mortality, incidence, and 5-year survival for 16 types of cancer over the period from 1976 to 1995. The relationships between 5-year survival, incidence and mortality were estimated using both Pearson and Spearman correlation coefficients. Results: All 16 cancer types showed an increase in 5-year survival for both genders from 1976 to 1995, ranging from 0.2% (pancreas and lung cancer) to 16.6% (prostate cancer) for males and 0.2% (pancreas cancer) to 16.6% (leukemia) for females. From 1976 to 1995, there was no significant correlation between changes in 5-year survival and cancer mortality for either sex (males, Pearson r=0.16, Spearman r=-0.06; females, Pearson r=-0.33, Spearman r=-0.43). A positive relationship between 5-year survival and incidence was noted among males, but not among females (males, Pearson r=0.61, Spearman r=0.53; females, Pearson r=0.03, Spearman r=0.11). However, after excluding breast and prostate cancer, the positive association became weaker and became statistically non-significant for males (Pearson r=0.47; Spearman r=0.41). Conclusions: Our findings suggest that there are no reliable relationships between changes in 5-year survival and cancer incidence or mortality. Increases in 5-year survival might therefore represent poor indicators of progress in cancer control at the population level. In the absence of over-diagnosis, 5-year survival might only indicate improved diagnosis and treatment in clinical practice.

Creative Commons Attribution License

KEYWORDS: Cancer control; surveillance; incidence; mortality; 5-year survival

PMID: 28345847 DOI: 10.22034/APJCP.2017.18.2.571