Interval Cancers in Prostate Cancer Screening: Comparing 2- and 4-Year Screening Intervals in the European Randomized Study of Screening for Prostate Cancer, Gothenburg and Rotterdam


Abstract (Summary)
Background: The incidence of prostate cancer has increased substantially since it became common practice to screen asymptomatic men for the disease. The European Randomized Study of Screening for Prostate Cancer (ERSPC) was initiated in 1993 to determine how prostate-specific antigen (PSA) screening affects prostate cancer mortality. Variations in the screening algorithm, such as the interval between screening rounds, likely influence the morbidity, mortality, and quality of life of the screened population. Methods: We compared the number and characteristics of interval cancers, defined as those diagnosed during the screening interval but not detected by screening, in men in the screening arm of the ERSPC who were aged 55-65 years at the time of the first screening and were participating through two centers of the ERSPC: Gothenburg (2-year screening interval, n = 4202) and Rotterdam (4-year screening interval, n = 13301). All participants who were diagnosed with prostate cancer through December 31, 2005, but at most 10 years after the initial screening were ascertained by linkage with the national cancer registries. A potentially life-threatening (aggressive) interval cancer was defined as one with at least one of the following characteristics at diagnosis: stage M1 or N1, plasma PSA concentration greater than 20.0 ng/mL, or Gleason score greater than 7. We used Mantel Cox regression to assess differences between rates of interval cancers and aggressive interval cancers at the two centers. All statistical tests were two-sided. Results: The 10-year cumulative incidence of all prostate cancers in Rotterdam versus Gothenburg was 1118 (8.41%) versus 552 (13.14%) (P<.001), the cumulative incidence of interval cancer was 57 (0.43%) versus 31 (0.74%) (P = .51), and the cumulative incidence of aggressive interval cancer was 15 (0.11%) versus 5 (0.12%) (P = .72). Conclusion: The rate of interval cancer, especially aggressive interval cancer, was low in this study. The 2-year screening interval had higher detection rates than the 4-year interval but did not lead to lower rates of interval and aggressive interval prostate cancers. [PUBLICATION ABSTRACT]