Outcomes after Primary Treatment for Non-Metastasized Prostate Cancer in the European Randomized Screening Trial for Prostate Cancer (ERSPC)

Introduction and Objectives: To evaluate the effect of primary treatment for prostate cancer and possible differences by trial arm on disease-specific survival within a prostate cancer screening trial.
Materials and Methods: Five centers in the European Randomized Study of Screening for Prostate Cancer (ERSPC) provided the study population; Belgium, Finland, Sweden, Switzerland and the Netherlands. To compare the outcome by center, given treatment and randomization arm (screening vs. control arm), a Cox regression model was used to estimate hazard ratio of prostate cancer death by randomization arm adjusted for age, serum PSA, screening center, treatment and treatment year. The primary treatments evaluated included radical prostatectomy (RP), radiotherapy (RT), surveillance (SU) and hormonal therapy (HRM). Patients were classified as having low-, intermediate- or high-risk cancers but patients with metastatic prostate cancer and/or PSA > 100 were excluded from the analysis.
Results: The study population encompassed 10,888 men (6,519 in the screening arm and 4,369 in the control arm) diagnosed with prostate cancer. Among them, 328 men (167/6518 in the screening and 161/4367 in the control arm) died of the disease during a median follow-up of 5.0 years from treatment (IQR 2.7-8.1). In the high-risk group, 231/2492 (9.2%) men died of prostate cancer compared with only 36/5404 (0.7%) men in the low-risk group. In the regression analysis, no significant differences in HR were seen between the five centers, except for Belgium. The adjusted HR for death from prostate cancer for men in the high-risk group was significantly higher in the control group as compared to the screening group (HR 1.59, 95% CI 1.18 – 2.13, p=0.002). No clear differences were seen between the trial arms among the low or intermediate risk groups, however a significant difference between the arms were seen among patients in the high-risk groups prognosis (HR 1.89, 95% CI 1.20 – 2.97, p=0.006) which seems to be explained by a skewness in risk-factors and heterogeneity between screen-detected and clinically diagnosed high-risk disease. For men in the high-risk group, a significantly increased risk of prostate cancer death was noted in men treated with radiotherapy (HR 1.84, 95% CI 1.22 – 2.78, p=0.004), and men receiving hormonal treatment (HR 3.64, 95% CI 2.25 – 5.90, p<0.001) relative to prostatectomy.
Conclusion: A large proportion of men with high-risk cancers die from PC, despite the disease being detected by screening. The choice of treatment will in both arms influence the outcome in a randomized screening study.