Comparison of Gonadotropin-Releasing Hormone Agonists and Orchiectomy: Effects of Androgen-Deprivation Therapy.


Abstract

Androgen-deprivation therapy (ADT) through surgical castration is equally effective as medical castration in controlling prostate cancer (PCa). However, the adverse effect profiles of both ADT groups have never been compared.

OBJECTIVE: To provide a comparative effectiveness analysis of the adverse effects of gonadotropin-releasing hormone agonists (GnRHa) vs bilateral orchiectomy in a homogeneous population.

DESIGN, SETTING, AND PARTICIPANTS: A population-based cohort of 3295 men with metastatic PCa between January 1995 and December 2009 66 years or older was selected from the Surveillance, Epidemiology, and End Results (SEER) Medicare-linked database.

EXPOSURES: Orchiectomy or GnRHa.

MAIN OUTCOMES AND MEASURES: Any fractures, peripheral arterial disease, venous thromboembolism, cardiac-related complications, diabetes mellitus, and cognitive disorders. To minimize treatment group biases, the inverse probability of treatment was weighted using the propensity score. Multivariable competing risk regression models were performed with the adjustment of all-cause mortality. Secondary analyses examined the effect of increasing duration of GnRHa treatment. Multivariable logistic regression models examined expenditures.

RESULTS: Overall, 3295 men with a primary diagnosis of metastatic PCa treated with GnRHa or orchiectomy were identified between years 1995 and 2009, and in adjusted analyses, patients who received a bilateral orchiectomy had significantly lower risks of experiencing any fractures (hazard ratio [HR], 0.77; 95% CI, 0.62-0.94; P = .01), peripheral arterial disease (HR, 0.65; 95% CI, 0.49-0.87; P = .004), and cardiac-related complications (HR, 0.74; 0.58-0.94; P = .01) compared with those treated with GnRHa. No statistically significant difference was noted between orchiectomy and GnRHa for diabetes and cognitive disorders. In individuals treated with GnRHa for 35 months or more, the increased risk for GnRHa compared with orchiectomy was noted for fractures (HR, 1.80), peripheral arterial disease (HR, 2.25), venous thromboembolism (HR, 1.52), cardiac-related complications (HR, 1.69), and diabetes mellitus (HR, 1.88) (P ≤ .01 for all). At 12 months after PCa diagnosis, the median total expenditures was not significantly different between GnRHa and orchiectomy.

CONCLUSIONS AND RELEVANCE: Gonadotropin-releasing hormone agonist therapy is associated with higher risks of several clinically relevant adverse effects compared with orchiectomy.

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