Endogenous and exogenous testosterone and the risk of prostate cancer and increased prostate specific antigen (PSA): a meta-analysis.

Boyle P1,2, Koechlin A1,2, Bota M1,2, d’Onofrio A2, Zaridze DG3, Perrin P4, Fitzpatrick J5, Burnett AL6, Boniol M1,2.

Abstract

OBJECTIVE: To review and quantify the association between endogenous and exogenous testosterone and prostate specific antigen (PSA) and prostate cancer.

METHODS: Literature searches were performed following the PRISMA guidelines. Prospective cohort studies that reported data on the associations between endogenous testosterone and prostate cancer, and placebo controlled randomised trials of testosterone replacement therapy (TRT) that reported data on PSA and/or prostate cancer cases were retained. Meta-analyses were performed using random-effects models with tests for publication bias and heterogeneity.

RESULTS: Twenty estimates were included in a meta-analysis which produced a summary relative risk of prostate cancer for an increase of 5 nmol/L of testosterone of 0.99 (95% CI (0.96, 1.02)) without heterogeneity ($I^2 = 0\%$). Based on 26 trials, the overall difference in PSA levels following onset of use of TRT was 0.10 ng/mL (-0.28, 0.48). Results were similar when conducting heterogeneity analyses by mode of administration, region, age at baseline, baseline testosterone, trial duration, type of patients and type of testosterone replacement therapy. The summary relative risk of prostate cancer as an adverse effect from 11 TRT trials was 0.87 (0.30; 2.50). Results were consistent across studies.

CONCLUSIONS: Prostate cancer appears to be unrelated to endogenous testosterone levels. Testosterone replacement therapy for symptomatic hypogonadism does not appear to increase PSA levels nor the risk of prostate cancer development. The current data are reassuring although some care is essential until multiple studies with longer follow-up are available. This article is protected by copyright. All rights reserved.

This article is protected by copyright. All rights reserved.

KEYWORDS: PSA; meta-analysis; prostate cancer; testosterone

PMID: 26779889 [PubMed - as supplied by publisher]