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Androgen deprivation therapy elevates Alzheimer's risk

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By Shreeya Nanda, Senior medwireNews Reporter

US researchers find that androgen deprivation therapy (ADT) increases the risk of Alzheimer's disease in men with prostate cancer, with the risk rising with greater duration of therapy.

Of 16,888 prostate cancer patients identified from a review of electronic medical records at two US institutions, 14.2% had received ADT treatment during a median follow-up of 2.7 years. A total of 125 new cases of Alzheimer's disease were diagnosed in this period.

ADT users compared with nonusers had a significant 1.88-fold elevated risk of developing Alzheimer's disease as estimated by propensity score-matched analysis and a 1.66-fold elevated risk as assessed by traditional multivariable analysis. Both analyses were adjusted for a variety of potential confounders, such as age at prostate cancer diagnosis, ethnicity and smoking status.

The risk of Alzheimer's disease rose significantly with increasing duration of ADT treatment, such that men who had received ADT for less than 12 months had a 1.62-fold elevated risk relative to nonusers while for those treated with ADT for 12 months or longer the risk was increased 2.12 times.

Researcher Kevin Nead (University of Pennsylvania Perelman School of Medicine, Philadelphia) and study co-authors note that this finding is important "given that length of ADT use is associated with a longer period of testosterone suppression."

Highlighting the role of androgens in neuron growth, axonal regeneration and β-amyloid protein accumulation, they write in the *Journal of Clinical Oncology*: "There are a number of plausible mechanisms to explain a neuropathic effect of androgen deficiency in the etiology of Alzheimer's disease."

Moreover, low testosterone levels and ADT have been linked to cardiometabolic disorders, which have been shown to increase the risk of developing Alzheimer's disease, say Nead et al, adding that further research in prospective cohorts is needed to confirm their results.

The study's senior author, Nigam Shah (Stanford University, California) said in a press release: "The association found in this study should be evaluated in the context of the overall treatment choices available to any specific patient. This study demonstrates the value of using existing [electronic medical records] data to quantify the trade-offs that various treatments offer."