Inflammation from ADT may cause fatigue in prostate cancer patients

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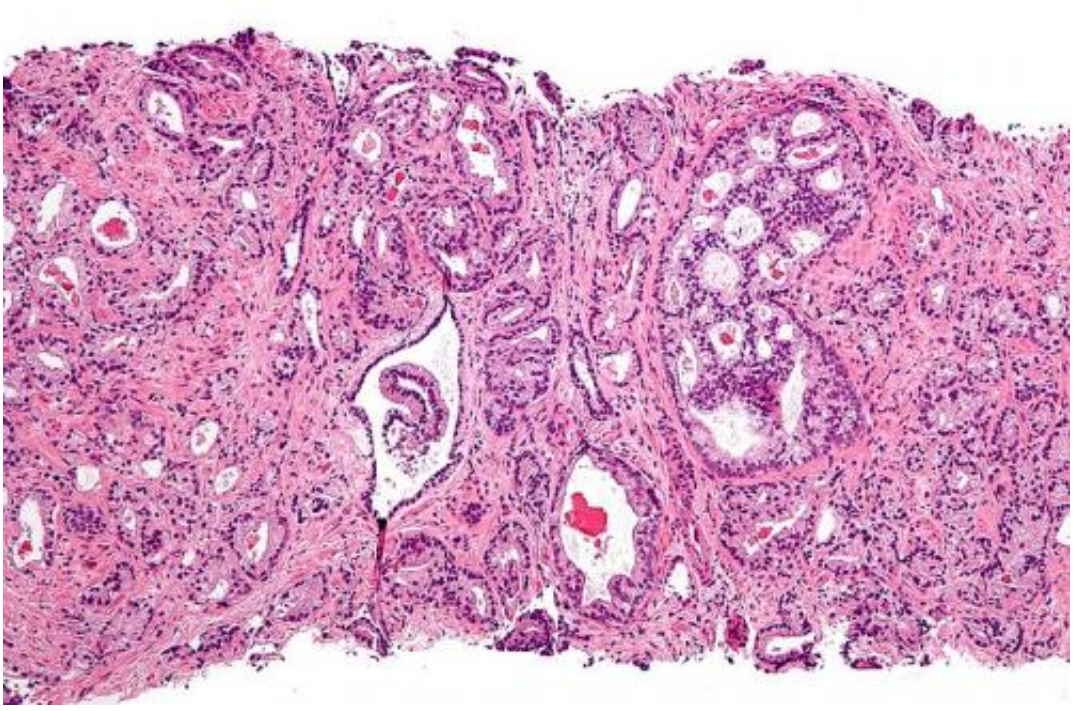

Micrograph showing prostatic acinar adenocarcinoma (the most common form of prostate cancer) Credit: Wikipedia, CC BY-SA 3.0

Prostate cancer is one of the most common cancers among men in the U.S. For many patients, hormone therapy is a treatment option. This type of therapy, also called androgen deprivation therapy (ADT), reduces the level of testosterone and other androgens in the body. Lowering androgen levels can make prostate cancer cells grow more slowly or shrink tumors over time. However, patients receiving ADT often

experience higher levels of fatigue, depression and cognitive impairment.

Moffitt Cancer Center researchers are investigating whether inflammation in the body, a side effect of ADT, contributes to these symptoms in prostate cancer patients. In a new study published in the journal *Cancer*, they pinpoint a specific inflammation marker that is associated with increased fatigue in this group of patients.

"This is the first study that we know of that examines the association between inflammation and symptoms of fatigue, depression or cognitive impairment in prostate cancer patients receiving ADT," said Heather Jim, Ph.D., corresponding author and co-leader of the Health Outcomes & Behavior Program at Moffitt. "Because the blocking of testosterone can increase inflammation in the body, we believe that inflammation may also be contributing to these symptoms."

For the study, the research team evaluated two groups of men: prostate cancer patients beginning ADT and a control group of healthy men the same age. The men were assessed at the start of the study and again at six and 12 months. Assessments included fatigue, depression and other neuropsychological tests and a blood draw. The bloodwork was to check for circulating markers of inflammation, specifically interleukin-1 receptor antagonist (IL-1RA), interleukin-6 (IL-6), soluble tumor necrosis factor receptor-2 (sTNF-R2) and C-reactive protein (CRP).

While the groups did not differ at baseline, researchers noticed a significant increase in fatigue and depressive symptoms in the ADT patients over the 12-month period. They also saw an increase in one inflammation marker, IL-6, in this group of patients.

"Interleukin-6 is a pro-inflammatory cytokine that is often associated with disruption of sleep and therefore fatigue," said Aasha Hoogland,

Ph.D., lead study author and an applied research scientist in the Health Outcomes & Behavior Program at Moffitt. "Studies have shown testosterone can suppress the effects of IL-6, but ADT limits testosterone production in the body, which is why we may be seeing increased levels in this patient group."

The researchers say additional studies are needed to see if interventions, such as anti-inflammatory medications and exercise, can help alleviate fatigue and depressive symptoms in ADT patients.

More information: Aasha I. Hoogland et al, Systemic inflammation and symptomatology in patients with prostate cancer treated with androgen deprivation therapy: Preliminary findings, *Cancer* (2020). DOI: 10.1002/cncr.33397

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