Corticosteroids Lower Sex Hormones in Men with Lupus

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Study findings highlight the need for physicians to heed the symptoms of testosterone deficiency.

Corticosteroids and cyclophosphamide adversely affect sex hormone levels in men who have systemic lupus erythematosus, a new study found.

Researchers evaluated various types of sex hormones in patients who had systemic lupus erythematosus or systemic sclerosis, compared with aged-matched controls from the population. The study was published online May 4 in *Arthritis & Rheumatology*.

Led by Laurent Arnaud, M.D, Ph.D, of the University of Strasbourg in France, the investigators had the following goals: (1) evaluate the levels of sex hormones in patients and controls and (2) assess patterns of hormone levels in relationship to corticosteroids or cyclophosphamide, disease activity, and damage.

Systemic lupus erythematosus and systemic sclerosis affect more women than men. The reasons for greater female predominance in autoimmune diseases are not fully understood, but hormonal and genetic factors have been reported. For example, both genetics and disease activity have been shown to affect how hormones are circulated in the body.

Negative effects of corticosteroids on free testosterone levels have also been reported in chronic inflammatory disease and respiratory disease. Specific to cyclophosphamide, negative effects have also been shown on the gonads and reproductive system in women with systemic lupus erythematosus and systemic sclerosis. To date, very few investigations on autoimmune disease have been conducted in men.

**The study**

This cross-sectional study included 71 male patients with systemic lupus erythematosus being followed at Karolinska University Hospital in Stockholm, Sweden, and 29 male patients with systemic sclerosis from the population-based cohort at the hospital. All patients with systemic lupus erythematosus met the 1982 revised classification criteria for systemic lupus erythematosus or the Systemic Lupus International Collaborating Clinics 2012 criteria. Patients with systemic sclerosis met the 2013 American College of Rheumatology/European League Against Rheumatism Classification Criteria for Systemic Sclerosis. Randomly selected age-matched men from the Swedish Population Registry served as controls for the patients.

Recorded at the time of study inclusion were disease activity, organ damage, use of prednisolone, and previous or current use of cyclophosphamide. The evaluated sex hormones included total testosterone, bioactive testosterone, sex hormone–binding globulin, and prolactin. Levels of follicle-stimulating hormone and luteinizing hormone were also measured.

Significantly higher levels of luteinizing hormone in patients with systemic lupus erythematosus than in matched controls (P=0.0001) was a key finding. Compared with controls, bioactive testosterone deficiency was significantly more frequent in patients with systemic lupus erythematosus than in controls (P=0.02). In addition, the current dosage of prednisolone was inversely correlated with the levels of bioactive testosterone (r= -0.36, P=0.03).

In patients with systemic sclerosis, levels of testosterone (P=0.03) and bioactive testosterone (P=0.02) were significantly lower compared with matched controls.

For both systemic lupus erythematosus and systemic lupus patients, the use of cyclophosphamide during the prior year was associated with lower bioactive testosterone levels.

“With this knowledge, physicians should be more aware of the possibility of hypogonadism in male patients with autoimmune diseases treated with CS or CYC, and thus be more attentive to the various symptoms of testosterone deficiency,” wrote Arnaud and colleagues. “The need for hormonal supplementation remains to be formally evaluated in SLE patients with critically low levels of bioactive testosterone.”

**References:**

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