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Serum androgen profiles in women with premature ovarian insufficiency: a systematic review and meta-analysis

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Abstract

Objective:

This meta-analysis aims to investigate serum androgen profiles (testosterone, dehydroepiandrosterone sulfate, androstenedione, and sex hormone-binding globulin) in women with premature ovarian failure and to establish if there is evidence of diminished androgen levels in these women.

Methods:

Various Internet sources of PubMed, Cochrane library, and Medline were searched systematically until February, 2018. Out of a pool of 2,461 studies, after applying the inclusion/exclusion criterion, 14, 8, 10, and 9 studies were chosen for testosterone, dehydroepiandrosterone sulfate, androstenedione, and sex hormone-binding globulin, respectively, for this meta-analysis. The effect measure was the standardized mean difference with 95% confidence interval (95% CI) in a random-effects model.

Results:

The testosterone concentrations in premature ovarian insufficiency were compared with fertile controls: standard mean difference (IV, random, 95% CI) -0.73 $[-0.99, -0.46]$, P value <0.05 . The dehydroepiandrosterone sulfate concentrations in premature ovarian insufficiency compared to fertile controls: standard mean difference (IV, random, 95% CI) -0.65 $[-0.92, -0.37]$, P value <0.05 . Androstenedione in premature ovarian insufficiency were compared with fertile controls: standard mean difference (IV, random, 95% CI) -1.09 $[-1.71, -0.48]$, P value <0.05 . Sex hormone-binding globulin levels did not show statistical significance. The dehydroepiandrosterone

sulfate levels were reduced in premature ovarian insufficiency cases, but still showed a higher level than in postmenopausal women.

Conclusions:

Women with premature ovarian insufficiency are at risk for decreased concentrations of testosterone, dehydroepiandrosterone sulfate, and androstenedione. Dehydroepiandrosterone sulfate levels were more reduced in postmenopausal controls when compared with premature ovarian insufficiency cases.