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## Clomiphene citrate effects on testosterone/estrogen ratio in male hypogonadism.

Shabsigh A, et al. J Sex Med. 2005.

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### Abstract

**AIM:** Symptomatic late-onset hypogonadism is associated not only with a decline in serum testosterone, but also with a rise in serum estradiol. These endocrine changes negatively affect libido, sexual function, mood, behavior, lean body mass, and bone density.

Currently, the most common treatment is exogenous testosterone therapy. This treatment can be associated with skin irritation, gynecomastia, nipple tenderness, testicular atrophy, and decline in sperm counts. In this study we investigated the efficacy of clomiphene citrate in the treatment of hypogonadism with the objectives of raising endogenous serum testosterone (T) and improving the testosterone/estrogen (T/E) ratio.

**METHODS:** Our cohort consisted of 36 Caucasian men with hypogonadism defined as serum testosterone level less than 300 ng/dL. Each patient was treated with a daily dose of 25 mg clomiphene citrate and followed prospectively. Analysis of baseline and follow-up serum levels of testosterone and estradiol levels were performed.

**RESULTS:** The mean age was 39 years, and the mean pretreatment testosterone and estrogen levels were 247.6 +/- 39.8 ng/dL and 32.3 +/- 10.9, respectively. By the first follow-up visit (4-6 weeks), the mean testosterone level rose to 610.0 +/- 178.6 ng/dL ( $P < 0.00001$ ). Moreover, the T/E ratio improved from 8.7 to 14.2 ( $P < 0.001$ ). There were no side effects reported by the patients.

**CONCLUSIONS:** Low dose clomiphene citrate is effective in elevating serum testosterone levels and improving the testosterone/estradiol ratio in men with hypogonadism. This therapy represents an alternative to testosterone therapy by stimulating the endogenous androgen production pathway.

PMID: 16422830 [PubMed - indexed for MEDLINE]

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