

HIGH ESTROGEN AFTER INJECTABLE TESTOSTERONE IS RELATED TO AGE

Robert S Tan MD, Kelly R Cook PA, William G Reilly MD

Objective: To describe our experience of treating 35,711 hypogonadal men with injectable testosterone and the effects on estrogen levels.

Methods: Data was extracted from our electronic health record (Advance MD) of the multi site Low T Centers across the United States. Altogether 35 Centers were examined.

Results: 7,215 (20.2%) out of the 35,711 patients had estradiol levels > 42.6 pg/ml. Estradiol was measured using Electro-chemiluminescence immunoassay (ECLIA) through Lab Corp. The results: 132/989 (13.4%) of > 65 years; 3753/16955 (22.1%) 45-65 years; 2,968/15,857 (18.7%) 25-45 years; 7/215 (3.3%) of < 25 years patients had high estradiol levels. The difference between extreme age groups (< 25 and > 65) was statistically significant using a chi square test ($p=0.013$) with a chi statistic of 6.105.

Discussion: It is known that injectable testosterone can lead to higher estradiol and dihydrotestosterone (DHT) levels through peripheral conversion. Estradiol is converted from testosterone through aromatization in adipose tissue. Aromatase is localized in the endoplasmic reticulum where it is regulated by tissue-specific promoters that are in turn controlled by hormones, and cytokines. In general, as men age, there is a higher proportion of body fat compared to lean muscle mass. This may imply greater conversion to estradiol and does explain the higher levels in the middle aged men. As anticipated, because of less body fat, young men < 25 years had the lowest amount of conversion to estradiol. Paradoxically, after 65 years there appears to be a leveling of conversion, and this may be related to lower treated testosterone levels in this age group.

Conclusion: Presently, it is unclear as how to manage high estrogen in men, but our data suggest a high prevalence of conversion to estrogen and is correlated with age. Further research is needed; but we suggest that the activity of aromatase is affected with aging, leading to the changes observed.