ABSTRACT

Background: Transgender individuals undergo gender-affirming hormone therapy (GAHT) to achieve physical changes consistent with their gender identity. Few studies are available on the long-term safety and efficacy of GAHT.

Objectives: To investigate the long-term physical effects and the safety of testosterone therapy for trans men and to assess the impact of differential hormone dose.

Materials and Methods: Trans men who initiated GAHT between May 2000 and December 2021 were included in this retrospective analysis. Physical findings (body mass index, body fat percentage (BFP), lean body mass (LBM), and grip strength), blood testing results (hemoglobin, hematocrit, uric acid, creatinine, total cholesterol, triglycerides, and total testosterone), and menstrual cessation were recorded. We assessed the effects of testosterone on body composition changes and laboratory parameters, comparing a low-dose group ($\leq 62.5 \text{ mg/wk}$) to a high-dose group (> 62.5 mg/wk).

Results: Of 291 participants, 188 patients (64.6%) were in the low-dose group and 103 (35.4%) in the high-dose group. Cumulative menstrual cessation rates up to 12 months were not significantly different between groups. Both groups showed a decrease in BFP and an increase in LBM during the first year of therapy, followed by a slight increase in both over the long term. The high-dose group exhibited greater LBM gains during the

first year. Higher hormone doses and lower initial LBM values were associated with LBM increases at 3 and 6 months (3 mo, P = 0.006, P < 0.001; 6 mo, P = 0.015, P < 0.001). There were no long-term, dose-dependent side effects such as polycythemia or dyslipidemia.

Conclusion: Long-term GAHT for trans men is safe and effective. Low-dose testosterone administration is sufficient to increase LBM in trans men. Higher testosterone doses can lead to an earlier increase in muscle mass.