BENEFITS OF GONADOTROPINS OVER TESTOSTERONE FOR PUBERTAL INDUCTION IN MALES WITH HYPOGONADOTROPIC HYPOGONADISM

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Background: Testosterone (T) has long been used for pubertal induction in males with hypogonadotropic hypogonadism (HH). It causes a decline in spermatogenesis and testicular volume, which was thought to reverse within a few months after discontinuation. However, it was recently suggested that prolonged androgen use was independently associated with a reduced likelihood of achieving sperm output thresholds and conception. Although not typically used by pediatric endocrinologists, gonadotropins are an alternate treatment for pubertal induction in males with HH. We aimed to compare human chorionic gonadotropin (hCG) with T therapy in pubertal induction. We assessed mean testicular volume (MTV), penile length, growth velocity, and T levels in adolescent males with HH.

Materials/Methods: This retrospective review focused on pre-pubertal males with HH, who were treated for pubertal induction. We compared the effects of hCG and T therapy on MTV, penile length, growth velocity, and T levels in these patients. Descriptive statistics were compared between males who received T versus hCG therapy using the chi-squared test or t-test for categorical and continuous variables, respectively. We also surveyed pediatric endocrinologists to evaluate current practices.

Results: The study included 52 patients (hCG, n= 4; T, n= 48), treated for a mean duration of 13.4 months (T group) and 13.8 months (hCG group; p=0.79). The hCG group had a significantly higher final MTV (8.25 mL) than the T group (3.44 mL; $p<0.001$). The groups showed no significant differences in penile length, growth velocity, or T levels. The significant preponderance of T therapy among the study patients and the apparent benefit of testicular growth with hCG therapy led us to survey pediatric endocrinologists at our center to evaluate the barriers to using hCG therapy. About 52% of providers were aware of the potential benefits of gonadotropins, but 91% were not comfortable prescribing hCG. The most common barriers to prescribing hCG therapy were a lack of experience (62%) and insurance coverage issues (52%).

Conclusions: This study showed that hCG therapy promoted testicular growth better than T therapy. Testicular size is known to positively predict faster induction of spermatogenesis. These results, therefore, suggested that using hCG therapy could improve future fertility outcomes. We also highlighted the discrepancy between knowledge and current practice among endocrinologists and the barriers to prescribing gonadotropins in the adolescent population.