

# Changes in Adrenal Steroids During Puberty Suppression and Cross Sex Hormone Treatment in Gender Dysphoric Adolescents

## Introduction

Current guidelines recommend that gender dysphoric adolescents are treated with puberty suppression using gonadotropin releasing hormone analogues (GnRHa) followed by cross sex hormones<sup>1</sup>. However limited data are available on the safety and side effects of this treatment. In adults, changes in adrenal steroids have been observed during cross sex hormone treatment<sup>2</sup>

## Results

All individuals had baseline DHEA-S within the reference range. During GnRHa treatment DHEA-S increased in FtMs, but in those aged 12–14 years at the start of treatment, DHEA-S levels after 2 years of treatment were comparable to baseline levels of those aged 14–16 at start. During cross sex hormone treatment DHEA-S levels did not change (figure 1, A and B)

In 5/67 FtMs but in none of the MtFs baseline androstenedione was above the reference range. Androstenedione decreased during GnRHa treatment in FtMs whereas levels in MtFs did not change. Testosterone treatment induced a rise in androstenedione in FtMs whereas oestradiol treatment in MtFs had no effect (figure 1, C and D)

## Aim of the study

To investigate the effect of GnRHa and cross sex hormones on adrenal steroid levels in gender dysphoric adolescents

## Methods

Fifty-four male-to-females (MtFs) and 73 female-to-males (FtMs) were treated with triptorelin i.m./4 weeks and from the age of 16 years i.m. testosterone or oral 17beta-oestradiol was added at increasing doses. Serum DHEA-S and androstenedione levels were measured every 6 months

## Conclusions

The increase of DHEA-S during GnRHa treatment in FtMs may be physiologic and unrelated to treatment or could imply stimulation of adrenal activity by GnRHa treatment. However, androstenedione levels decreased, probably due to decreased ovarian androstenedione production. The increase in androstenedione during testosterone treatment might be caused by direct conversion or alternatively through an effect on adrenal steroidogenesis although DHEA-S did not change. The clinical implications of the changes that were observed are still unclear.

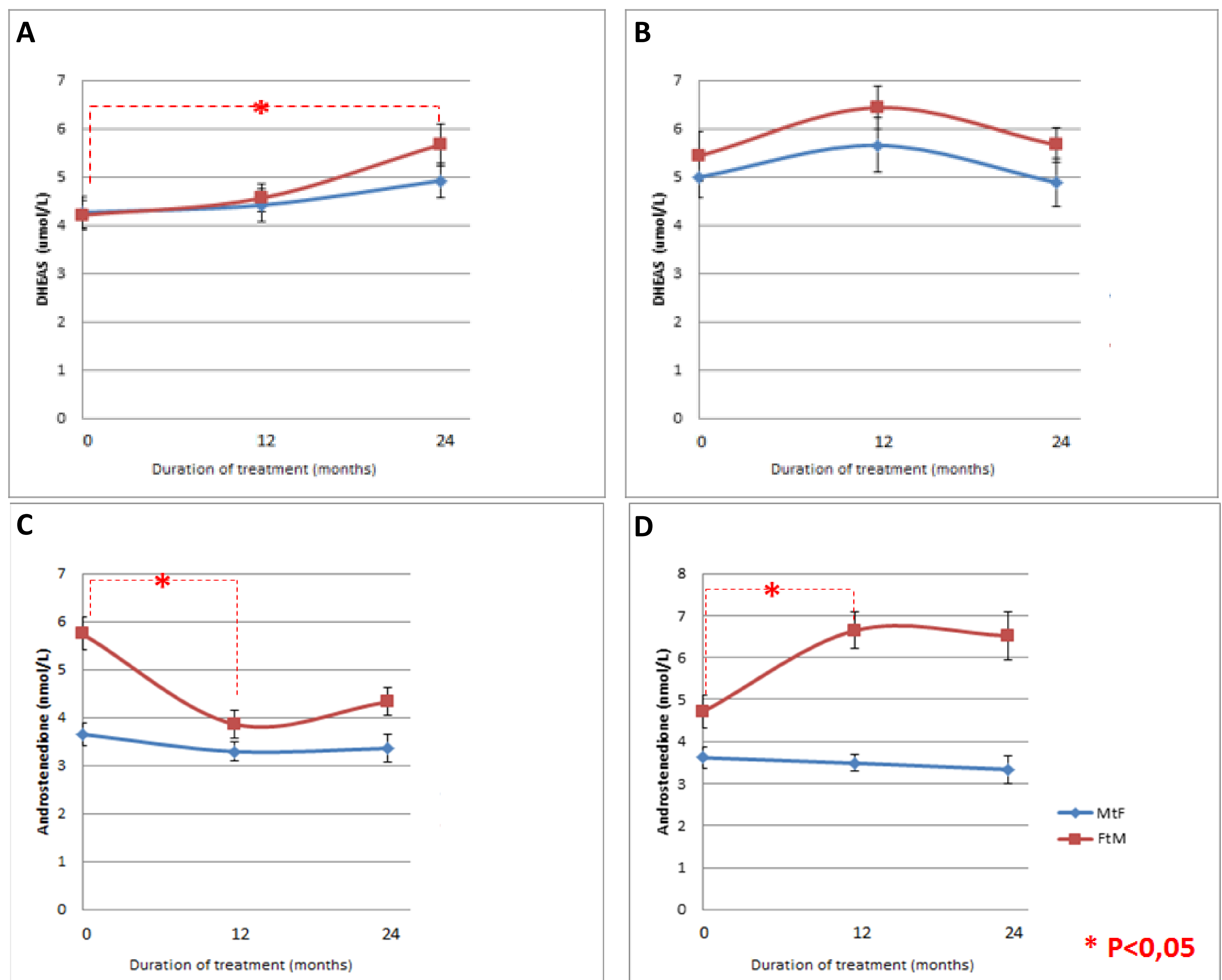


Figure 1.

Estimated Marginal Means (EMM) (± 1 SE) of DHEAS serum levels during GnRHa treatment (A); EMM of DHEAS during GnRHa + cross sex hormone treatment (testosterone in FtMs, 17beta-oestradiol in MtFs) (B); EMM of androstenedione during GnRHa (C); EMM of androstenedione during GnRHa + cross sex hormone treatment (D)

## References

- Hembree, W.C., et al. *Endocrine treatment of transsexual persons: an Endocrine Society clinical practice guideline*. J Clin Endocrinol Metab, 2009. 94(9): p. 3132-54
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