

Introduction

- Obesity is one of many modifiable factors known to have an effect on male fertility
- Increased adipose tissue harbors aromatase, which converts testosterone to estradiol and estrone
- Men with increased aromatase activity may experience hypogonadism in addition to hyperestrogenemia
- Elevated estradiol inhibits the hypothalamus-pituitary-gonadal axis, resulting in decreased LH and FSH secretion, and ultimately impaired steroidogenesis and spermatogenesis
- We investigated the effects of anastrozole, an aromatase inhibitor, on the semen profile of eugonatotrophic infertile men with hyperestrogenemia and no other male factor (varicocele, genetic abnormalities, exogenous hormone use).

Methods

- Inclusion criteria:
 - Abnormal semen analysis
 - Absolute (42pg/mL) or relatively (T:E2 < 10) elevated estradiol level
- Exclusion criteria:
 - Palpable varicocele
 - Hypergonatotrophic hypogonadism
 - Hormonally active pharmaceutical
 - Abnormal karyotype
 - Y chromosome microdeletion
- Data gathered:
 - Average testicular volume
 - BMI
 - Serum FSH, LH, T, E2
 - Semen parameters
- Aromatase Inhibitor (anastrozole) dosing:
 - 1mg three times/week

Results

| | Mean | Range |
|------------------------------|------|-----------|
| Age | 35.2 | 29-49 |
| Years attempting to conceive | 2.8 | 0.2-9 |
| BMI (kg/m ²) | 42.2 | 26.6-56.5 |
| Testicular volume (cc) | 16.9 | 10-22 |

| Lab | Pre Tx | Post Tx | p Value |
|--|--------|---------|---------|
| FSH (mIU/mL) | 5.05 | | |
| LH (mIU/mL) | 5.07 | | |
| Testosterone (ng/dL) | 258.8 | 505.5 | <0.01 |
| Estradiol 17B (pg/mL) | 39.27 | 17 | <0.01 |
| Testosterone:Estrogen | 6.81 | 41.63 | <0.01 |
| SA Volume (ml) | 3.95 | 2.93 | 0.98 |
| SA Sperm Concentration (10 ⁶ /mL) | 12.49 | 15.3 | 0.07 |
| SA Motility (%) | 44.67 | 37.56 | 0.36 |
| SA Progressive Motility (%) | 28.35 | 27.28 | 0.12 |
| SA Sperm Count (x10 ⁶) | 31.28 | 39.91 | 0.04 |
| SA TPMS Count (x10 ⁶) | 7.74 | 13.38 | 0.02 |

Results

- There were 23 men who met inclusion criteria and had adequate post treatment follow up.
- Pre-treatment total testosterone, estradiol, and T:E ratio were all abnormal.
- Post treatment, all of these values increased in a statistically significant fashion.
- There was a statistically significant improvement in total sperm count and total progressively motile sperm count.

Discussion

- Hyperestrogenemia (either absolute or relative) impacts gonadotrophin and/or sperm production typically due to increased aromatase activity; thus, aromatase inhibitors often effective
- Decreased estradiol production allows for increased LH/FSH secretion and results in increased total testosterone, as well as sperm production
- Our experience has demonstrated the potential improvement in testosterone and total sperm count based on this premise.

Conclusions

- Men with abnormal semen parameters and low testosterone should be evaluated for hyperestrogenemia
- Anastrozole can significantly improve total testosterone serum levels, T:E ratio, and semen quality (sperm count, total motile sperm count).

References

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