

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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