

불임남성에서 방향화효소 억제제의 치료 효과

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The Effectiveness of Aromatase Inhibitor in Infertile Male

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Objective: We investigated whether serum testosterone to estradiol ratio was decreased in infertile men and whether this condition can be corrected with oral aromatase inhibitor.

Method: The serum testosterone to estradiol ratio of 26 men with testicular failure were compared with those of normal semen analysis parameter, 89 control reference group. All of 26 testicular failure group were diagnosed with the previous testicular biopsy. Then 46 men with oligospermia and/or asthenospermia were selected and treated with 1 mg of the aromatase inhibitor anastrozole (Arimidex[®]) orally once daily for 3 months. Testosterone to estradiol ratio and semen analyses were evaluated during anastrozole therapy.

Results: The testosterone level of testicular failure group was significantly lower and the testosterone to estradiol ratio was more decreased than normal semen parameter group. Forty six on-anastrozole group had significantly lower testosterone (4.6 versus 5.7 ng/ml, $p < 0.01$) and higher estradiol (15.9 versus 23.4 pg/ml, $p < 0.01$) than pre-anastrozole group, resulting in a decreased testosterone to estradiol ratio (0.21 ± 0.07 versus 0.39 ± 0.15 , $p < 0.01$). Semen analyses before and during anastrozole treatment revealed significant increases in sperm count (35.5 versus 52.2 million sperm per ml, $p < 0.01$) and motility (22.9% versus 29.3%, $p < 0.01$).

Conclusions: We identified infertile men with testicular failure had hormonal changes characterized by a decreased serum testosterone to estradiol ratio. The ratio can be corrected with aromatase inhibitor, resulting in a significant improvement in semen parameters.

Key Words: Infertility, Aromatase inhibitor, Testosterone, Estradiol

(testicular failure) 가 . 가
10% 가 ,¹ 가 (estradiol) 가
(testosterone) 가 .
(follicular stimulating hormone) (nonobstructive azoosper-

mia) 가 가) 2 .
 2-4 89 26
 (Leydig cell) (androgens) (T/E2)
 (peripheral aromatization)
 , P-450 (cy- (oligospermia)
 tochrome P-450) , (asthenospermia) 46 T/
 , E2 .
 20% .⁵ anastrozole (Arimidex[®], Astrazeneca, Swe-
 (aromatase activity) , 가 den) 1 1 1 mg 3 . Ana-
 (luteinizing hormone) (strozole 3
 , T/E2)
 8 10
 6-8 .¹²⁵I radioimmu-
 (aromatase inhibitor) noassay DPC's Coat-A-Count Total Testosterone kit
 (androstenedione) , intraas-
 (estro- say interassay coefficient 17% 11% .
 ne) .⁹ ADALTIS' Estradiol Maia kit
 (idiopathic oligo- intraas-
 spermia) . say interassay coefficient 4.31% 8.56%
 testolactone 가 Biochem Immunosystems' FSH MAIAclone kit
 .¹⁰⁻¹² ADALTIS' LH MAIAclone kit
 . intraassay interassay coef-
 ficient 5.4% 3.5% ,
 intraassay interassay coefficient 9.6%
 3.4% . Paired t test anastrozole
 p<0.01
 가 .
 4.8±2.1 ng/
 ml, 3.5±0.8 ng/ml (p<0.01),
 2002 6 2003 1 1 17.99±5.26 pg/ml, 19.7±5.7 pg/ml (p>0.05)
 (J.T.S) T/E2 0.28±0.10, 0.19±0.05
 , , ((p<0.01) (Figure 1).

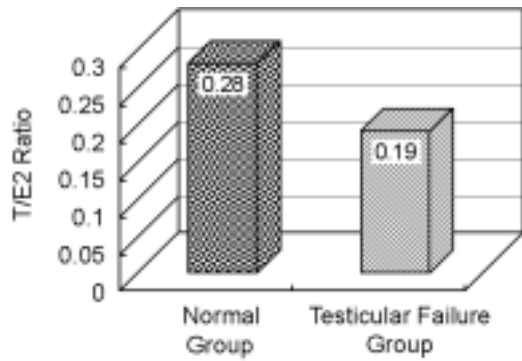


Figure 1. Testosterone-to-estradiol ratios are higher in normal group than in testicular failure group ($p < 0.01$).

Table 1. Testosterone, estradiol and testosterone-to-estradiol ratios before and during anastrozole treatment ($p < 0.01$)

	Testosterone (ng/ml)	Estradiol (pg/ml)	T/E2
Pre-anastrozole	4.6±1.4	23.4±9.5	0.21±0.07
On anastrozole	5.7±1.6	15.9±4.9	0.39±0.15

Table 2. Sperm count and motility before and during anastrozole treatment ($p < 0.01$)

	Sperm count ($\times 10^6$)	Motility (%)
Pre-anastrozole	35.5±36.6	22.9±15.3
On anastrozole	52.2±42.1	29.3±20.1

46 anastrozole, T/E2
 4.6±1.4 ng/ml 5.7±1.6 ng/ml, 23.4±9.5 pg/ml
 15.9±4.9 pg/ml, 0.21±0.07 0.39±0.15
 가 ($p < 0.01$)
 (Table 1).
 (35.5±36.6 vs. 52.2±42.1, $p < 0.01$)
 (22.9±15.3 vs. 29.3±20.1, $p < 0.01$)
 (Table 2). Anastrozole

P450
 (specific cytochrome P450 aromatase) NADPH
 P450 (NADPH-cytochrome P450
 reductase)
 (microsomal enzymatic complex)
 P450
 가¹⁶ (in vitro study)

6,16,17
 30~50%
 1
 18 1995
 tamoxifen
 FDA
 19,20
 Turner
 anastrozole
 ana-
 strozole
 가
 가
 가
 가
 13-15
 (estrogen)
 가 (fertility)
 (estrogen receptor)
 14
 가 knockout

Akiyama .²¹
 가가
 .²² anastrozole
 가
 가
 Turner anastro-
 zole 가
 가
 가 (fertility) 가
 가
 가 .¹ 가
 가 T/E2 가
 . Pavlovich
 T/E2 가
 (eja-
 culatory sperm) 가
 가
 anastrozole
 가,
 E2 가가 T/
 가
 가
 .
 tone
 anastrozole

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