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Aromatase inhibitors in infertile patients: effects on seminal parameters, serum and seminal plasma testosterone levels, and estradiol levels during short-term follow-up

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Abstract: Aim: To evaluate the effects of an aromatase inhibitor (anastrozole) on seminal parameters, and on serum and seminal plasma testosterone/estradiol ratios in infertile patients, as well as to clarify its place among empirical infertility treatment modalities. Patients and Methods: The study included 32 patients with spermatozoa numbering > 5 million/mL in ejaculate and a serum testosterone/estradiol ratio < 0.14. Anastrozole, an aromatase-inhibiting agent, was given (1 mg b.i.d.) and patients were re-evaluated 2 months later based on semen analysis, and measurements of serum and seminal plasma testosterone and estradiol levels. Results: Semen analysis parameters before and after treatment, respectively, were as follows: number of spermatozoa: 12.4 ± 4.1 million/mL and 22.3 ± 5.7 million/mL; motility: 33.4 ± 4.2% and 47.6 ± 7.4%; normal morphology: 5.4 ± 1.3% and 8.9 ± 2.7%. Differences between the values before and after treatment were statistically significant ($P < 0.05$). Serum testosterone level was 4.1 ± 1.2 ng/mL, estradiol level was 52.1 ± 9.4 pg/mL, and testosterone/estradiol ratio was 0.13 ± 0.03 at the beginning of treatment. These values were 3.2 ± 0.6 ng/mL, 68.4 ± 7.3 pg/mL, and 0.05 ± 0.001, respectively, in seminal plasma. Following 2 months of anastrozole treatment, testosterone and estradiol levels, and the testosterone/estradiol ratio showed statistically significant changes in serum and seminal plasma. While testosterone levels significantly increased, estradiol levels decreased (serum $P_T = 0.001$, $P_{E2} = 0.001$; seminal plasma $P_T = 0.001$, $P_{E2} = 0.001$). Conclusion: Aromatase inhibitors are a potential treatment method for infertile male patients with increased plasma estradiol levels and decreased plasma testosterone/estradiol ratios.

Key Words: Male infertility, estradiol, testosterone, aromatase inhibitors

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