

Cellular Technologies in Urology

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Abstract : Male infertility affects about 15% of couples of reproductive age. Approximately 10-15% have azoospermia who have previously been diagnosed with male infertility. Azoospermia is regarded as the absence of spermatozoa in the ejaculate and is found in 10-15% of infertile men. Non-obstructive azoospermia is considered a cause of male infertility that is not amenable to drug therapy. Patients with non-obstructive azoospermia are unable to have their "own" children and have only options for adoption or use of donor sperm. Advances in assisted reproductive technologies such as intracytoplasmic sperm injection in vitro fertilization have significantly changed the management of patients with non-obstructive azoospermia. Advances in biotechnology have increased the options for treating patients with non-obstructive azoospermia. Mesenchymal stem cell therapy has been recognized as a new option for infertility treatment. Material and methods of the study: After obtaining informed consent, 5 patients diagnosed with non-obstructive azoospermia were included in an open, non-randomized study. The age of the patients ranged from 24 to 35 years. The examination was carried out before the start of treatment, which included biochemical blood tests, hormonal profile levels (luteinizing hormone, follicle-stimulating hormone, testosterone, prolactin, inhibin B); tests for tumor markers; genetic research. All studies were carried out in compliance with the requirements of Protocol No. 8 dated 06/09/20, approved by the Local Ethical Commission of NJSC "Astana Medical University". The control examination of patients was carried out after 6 months, by re-taking the program and hormonal profile (testosterone, luteinizing hormone, follicle-stimulating hormone, prolactin, inhibin B). Before micro-TESE of the testis, all 5 patients underwent myeloexfusion in the operating room. During the micro-TESE, autotransplantation of mesenchymal stem cells into the testicular network, previously cultured in a cell technology laboratory for 2 weeks, was performed. Results of the study: in all patients, the levels of total testosterone increased, the level of follicle-stimulating hormone decreased, the levels of luteinizing hormone returned to normal, the level of inhibin B increased. IVF with a positive result; another patient (20%) had spermatogenesis cells. Non-obstructive azoospermia and mesenchymal stem cells Conclusions: The positive results of this work serve as the basis for the application of a new cellular therapeutic approach for the treatment of non-obstructive azoospermia using mesenchymal stem cells.

Keywords : cell therapy, regenerative medicine, male infertility, mesenchymal stem cells

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