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2.19. Indra Adi Susianto

Case Report

Mesenchymal Stem Cell Secretome-Based Therapeutic Strategies for Ovarian Rejuvenation: A Focus on FSH and Estradiol Levels

Author:

Indra Adi Susianto^{1,2,3}, Ni Komang Yeni Dhanasari^{1,4}, Agung Putra^{1,5,9}, Syarif Thaufik Hidayat⁶, Sugeng Ibrahim^{1,7,9}, Enzo Moreno Adisusianto^{1,8}, Dendi Krisna Nugraha^{1,9}, Nurul Hidayah^{1,10}

1. Stem Cell and Cancer Research (SCCR) Laboratory, Semarang, Indonesia
2. Department of Reproductive Medicine, Soegijapranata Catholic University, Semarang, Indonesia
3. Department of Obstetrics & Gynecology, Anugerah Women & Children Hospital, Semarang, Indonesia
4. Department of Aesthetic Gynecology, Feminine Health & Intimate Care Center - Health360, Jakarta, Indonesia
5. Biomedical Sciences Doctoral Program, Faculty of Medicine, Sultan Agung Islamic University, Semarang, Indonesia
6. Department of Obstetrics & Gynecology, Kariadi General Hospital, Semarang, Indonesia
7. Department of Molecular Biology, Soegijapranata Catholic University, Semarang, Indonesia.
8. Faculty of Medicine, Diponegoro University, Semarang, Indonesia
9. Department of Biomedical Sciences, Agung Putra University (APU), Semarang, Indonesia
10. Department of Biotechnology, Agung Putra University (APU), Semarang, Indonesia

Corresponding Author: Indra Adi Susianto,

Jl Kalisari Baru no 5, Semarang, Central Java, Indonesia,

indraadisusianto@unika.ac.id.

Scopus Author ID : 57946697800, Orcid Author ID : 0000-0002-5216-7131

Abstract

Background: Ovarian rejuvenation for Premature ovarian insufficiency (POI) offers a regenerative approach to restore ovarian function and microenvironment. MSC-derived secretome, rich in cytokines, growth factors, and vesicles, may promote follicle survival,

angiogenesis, tissue repair, and endocrine recovery. This study assesses MSC secretome therapy as an ovarian rejuvenation strategy for women with POI, focusing on changes in FSH and estradiol levels. **Methods:** A prospective observational study was conducted in 30 women with POI and infertility. Baseline demographic and reproductive characteristics were recorded. Serum FSH and estradiol levels were measured before treatment and at three months after intraovarian administration of the MSC secretome. Follicular development was assessed with transvaginal ultrasonography. **Results:** Participants had a mean age of 41.5 years and exhibited severely diminished ovarian reserve. Before treatment, mean serum FSH and estradiol levels were 36.17 mIU/mL and 15.17 pg/mL, respectively. Three months following MSC secretome therapy, mean FSH levels decreased markedly to 9.87 mIU/mL, while mean estradiol levels increased to 166.67 pg/mL. Ultrasonographic evaluation demonstrated improved follicular development, indicating enhanced ovarian responsiveness after treatment. **Conclusions:** MSC secretome therapy shows potential for ovarian rejuvenation, normalizing FSH, restoring estradiol, and improving follicular growth. It may recover ovarian endocrine function via regenerative and paracrine mechanisms, providing a cell-free strategy for POI-related fertility.

Keywords: premature ovarian insufficiency; ovarian rejuvenation; mesenchymal stem cell secretome; estradiol.