



5. GENETIC FACTORS RESPONSIBLE FOR OVARIAN RESERVE

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Introduction. The number of primordial follicles at birth, their quality, and the rate of germ cell depletion are the factors that define reproductive lifespan in women. In some women, oocyte depletion occurs during the fetal stages of oogenesis, leaving them with a relatively small reserve until puberty. In others, there is an accelerated loss of oocytes after the reserve of primordial follicles is established. In addition, oocyte shedding is accelerated with age and is linked to deterioration of oocyte quality.

Aim of study. The evaluation of the genes that control different stages of follicle development that can open new approaches in the treatment of infertility.

Methods and materials. The study is based on the analysis of bibliographic sources published on PubMed, NCBI, ResearchGate and Medline, in the period 2013-2023.

Results. Ovarian reserve is influenced by a series of physiological, environmental, hormonal, iatrogenic and genetic factors. Recently, genetic defects have been directly associated with a significant reduction in ovarian reserve at different ontogenetic stages. A key role is attributed to the genes FMR1, EIF4ENIF1, BRCA1/2, H19, HMGB2, ADR- α 1, 2, ADR- β 2, NR5A1, ATG7, ATG9A, KHDRBS1, FIGLA, 22q11.2, SPO11, HFM1, GDF9, TP53 ce are involved in a cascade of regulatory processes that direct granulosa cell proliferation, steroidogenesis, cumulus expansion and apoptosis, stimulating follicle maturation and survival. Multiple oocyte-specific transcription factors, including FIGLA, NOBOX, LHX8, SOHLH1, and SOHLH2 control follicular development. Thus, in cases of infertility, it is recommended to carry out a genetic screening to assess the extent and management possibilities of existing defects on female fertility. Assessment of ovarian reserve has become a standard parameter in infertility evaluation as well as treatment.

Conclusion. Existing data show an abundant amount of research on the genetic and epigenetic profiles that can influence the formation and consistency of the ovarian reserve. Identification of genetic predisposition to early depletion of ovarian reserve may be beneficial in family planning.