Borderline ovarian tumors (BTOs) are low-grade ovarian malignancies with far less aggressive behavior than invasive ovarian cancer. In view of the assumed role of incessant ovulation and increased gonadotropin levels in ovarian cancer pathogenesis, concerns have been raised that ovarian stimulation may increase the risk of ovarian malignancies. Adverse effects have been related to ovarian stimulation: it may increase the risk of ovarian malignancies, especially BTOs. Epidemiological data evidenced an increased risk for BTOs in infertile women treated with IVF and about two thirds of serous borderline ovarian tumors are characterized by kras mutations that determines a significant increase of cyclin D1 expression. To understand if repeated cycles of gonadotropin stimulation could modulate intracellular localization and content of proteins controlling cell cycle progression in mouse ovaries and fallopian tubes (FT), ovaries and FT of naturally-ovulating mice and of mice undergoing 2-4 rounds of gonadotropin stimulations were analyzed to detect localization and expression levels of ß-catenin, pAKT and cyclin D1. Ovulated oocytes were analyzed to detect meiotic spindles and chromosome alignment. After round 4, ovaries and FT of control and treatment groups showed no differences in ß-catenin intracellular localization nor in ß-catenin and pAKT contents. By contrast, cyclin D1 level increased significantly in FT of treated mice. Number and quality of oocytes decreased meanwhile frequency of abnormal meiotic spindles increased with treatments. Repetitive gonadotropin stimulations did not induce changes in a set of proteins directly involved in cell cycle progression and usually altered in ovarian cancer. The significant increase of cyclin D1 detected in the FT needs to be further investigated. Decreased quality of oocytes is a consequence of ovarian hyperstimulation.