Abstract

According to statistics in the Czech Republic, up to 20 % of couples experience infertility, which is still rising. One of the infertility treatment options is to undergo one of the assisted reproduction methods. In vitro fertilization (IVF) is among the most commonly used methods. In order to increase the success rate of fertilization, it is preferable to have a quality oocyte with specific characteristics. Such an oocyte is then a prerequisite for a good quality embryo, a correct course of pregnancy, and proper fetal development. Meiosis, a key step in oocyte formation, is regulated by complex signalling pathways. If these pathways are dysfunctional, the chances of the oocyte developing into a competent embryo are reduced. For example, errors in segregation during meiosis lead to aneuploidy, which is a major cause of miscarriages and birth defects. Therefore, understanding the signaling pathways can help identify the origin of the errors that result in aneuploidy and thus contribute to improving women's reproductive health.

Key words:

aneuploidy, spindle, in vitro fertilization, spindle assembly checkpoint, oocyte quality, chromosome segregation