

EFFECT OF OBESITY ON ICSI OUTCOME IN IRAQI INFERTILE FEMALES

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ABSTRACT : Obesity is the main cause of ovulatory disorders that is firmly associated with the ovulatory problem. The risk of sub-fertility and infertility is increased in obese females even in the presence of normal ovulatory function. Many metabolic changes occur on obese and overweight females such as increased cholesterol level and the storage amount of non-esterified fatty acid in addition to hyperglycemia and insulin resistance. This prospective comparative study aimed to assess obesity effect on various ICSI outcome parameters. Sixty-six infertile females were divided into three groups according to their body mass index. These females were subjected to intracytoplasmic sperm injection programs, using two types of ovarian stimulation protocols: antagonist and sandwich protocol. Obesity has a significant negative effect on some ICSI parameter such as number of total oocyte, number of MII oocyte and embryo G1 percent. Obesity has adverse impacts on some ICSI parameter.

Key words : Obesity, BMI, controlled ovarian hyperstimulation, ICSI.

INTRODUCTION

Obesity is considered as the commonest issue in middle age females that result from an abnormal and extreme fat accumulation that adversely affected general woman health. Diet contained excess fatty acid leads to increase triglycerides deposited in adipose tissue cells, which are incapable to make cell destruction in this storing level. However, this capability is overcome when extra nutrition continued with limited physical activity leads to fat store in further soft tissue and produce lethal condition identified as lipotoxicity (Norman and Mol, 2018). While, other cells are damaged by accumulative effect of reactive oxygen species. Lipotoxicity is considered as a possible method for destruction the oocyte organelle in obesity. Obese women have higher intensities of circulating free fatty acids, and this in turn, has a destructing influence on Endoplasmic Reticulum and mitochondria resulting to apoptosis of oocytes and other cell types (Gambineri *et al*, 2019).

According to WHO, BMI ≥ 30 kg/m² is categorized as obesity and overweight are those individual who have BMI range between 25 and 29.9 kg/m², while normal are those who have BMI (18.5–24.9) kg/m² (Organization, 2018).

The influence of obesity on the physiology of

reproductive system, specially ovulatory disorders, are mostly result from alteration in endocrine mechanisms that inhibit ovarian functions. Obese females often have high insulin levels that is caused raised androgen production by the ovary. This leads to increase peripheral aromatization of androgens to estrogens, which caused an adverse influence on the HPO axis and affecting gonadotropin production. Whereas, hyperandrogenemia result from insulin resistance and hyperinsulinemia. Obesity has another effect on endocrine function like decreased secretion of sex hormone-binding globulin, growth hormone, and insulin-like growth factor binding proteins while increased leptin levels (Broughton and Moley, 2017).

Obese females have about three times increased risk of infertility than other females, and numerous analyses have established that women obesity lead to delay pregnancy. There are inverse relationships between fecundity and BMI and this relation increased with obesity (Haikin Herzberger *et al*, 2019). Obese female has negative results when submit to IVF process owing to the bad quality oocyte, impaired implantation rate and endometrial, receptivity. Therefore, weight loss is obligatory in obese females to improve fertility functions. Obesity caused qualitative and quantitative impairment of ovarian follicle's development, deficiency of oocyte