

ABSTRACT

Although letrozole, primarily a breast cancer drug, has evolved as a promising ovulation inducing agent in infertility management in recent years, sufficient evidence is still lacking to recommend this drug for routine use in ovulation induction. To explore the efficacy of letrozole in inducing ovulation in anovulatory women, one of the largest-ever randomized clinical trials was conducted on 1387 infertile women with polycystic ovarian syndrome (PCOS) who failed to conceive with 6 cycles of clomiphene citrate (CC) treatment. Letrozole appears to be a suitable ovulation inducing agent in PCOS women with CC failure and is found to be most effective when baseline estradiol level >60 pg/ml. Further, the effectiveness of letrozole on 'apparently' normal endometrium was compared with CC. Normal ovulatory women undergoing intrauterine insemination with donor semen were enrolled for this purpose. A higher pregnancy rate and a lower cycle cancellation rate were observed in women stimulated with letrozole than with CC. There is lack of information regarding the adverse effect of letrozole, if any, on oocyte and embryo quality. Meiotic spindle (MS) is considered to be an indicator of oocyte health, fertilization rate, embryo formation rate and pregnancy rate. The effect of letrozole on mouse oocyte quality and subsequent embryo development is reported. Robust birefringent spindles were obtained in mice on superovulation with letrozole. Letrozole does not appear to increase the risk of spindle assembly and preimplantation developmental arrest in mouse oocytes. The effect of letrozole on endometrial receptivity is still not clear. Expression of $\alpha_v\beta_3$ integrin, LIF and pinopodes during the implantation window in infertile women stimulated with letrozole was studied and compared with women treated with CC and spontaneous cycles. Letrozole and CC appear to enhance endometrial receptivity in women with unexplained infertility while both the drugs did not show any significant effect on the expression of the receptivity markers in women with apparently normal endometrium.

Key words: Clomiphene citrate, Endometrial receptivity, Gonadotropins, Letrozole, Meiotic spindle, Oocyte quality, Polscope, Polycystic ovarian syndrome (PCOS), Infertility