Review Article

Adjuvant gonadotropin releasing hormone analog in gonadotoxic chemotherapy for preservation of fertility

K. V. S. Hari Kumar, Altamash Shaikh[1]

Department of Endocrinology, Command Hospital, Lucknow, Uttar Pradesh, [1]Saifee Hospital, Girgaon, Mumbai, Maharashtra, India

ABSTRACT

Chemotherapy induced infertility is a problem which is growing and often neglected. Fertility preservation strategy is an important component of the management in young patients with cancer. Gonadotropin releasing hormone analog therapy helps in ovarian suppression and the evidence is inconclusive for its benefit in fertility preservation. Other medical benefits with these drugs include reduction of vaginal bleeding in patients with thrombocytopenia.

Key words: Cancer, fertility, gonadotropin

Introduction

The incidence of cancer in women's of reproductive age group is increasing. The common malignancies in this age group involve the breast, cervix, blood and brain. The long-term survival of all cancer patients has improved with the therapeutic advances in the oncology. Many of these patients will eventually show interest in childbearing, putting the burden of fertility preservation on the managing team. The options available for fertility preservation include retrieval and cryopreservation of oocytes, ovarian tissue or embryo and ovarian suppression by the use of gonadotropin releasing hormone analogs (GnRHa).[1]

Physiological Basis

Primordial follicles at birth consistently reduce in life from closer to two million follicles at birth to 200,000 in reproductive age group. Female germ cells are incapable of regeneration after injury and hence it is important to preserve the available cells for future fertility. Initial studies revealed that the gonadotoxic chemotherapy had less damaging effects on ovarian function in prepubertal females. This leads to the concept of using GnRH therapy for fertility preservation. The GnRHa act by suppressing the pituitary ovarian axis decreased ovarian perfusion and prevents germ cell apoptosis. Other collateral benefits include suppression of menses and resulting prevention of anemia and bleeding in hematological malignancy.

Fertility Issues

Parenting biologic children is dependent on factors like age of the patient, type of gonadotoxic therapy used (radiation vs. chemotherapy), available time, specific disease and the fertility potential of the partner. There are conflicting data on ovarian responsiveness to gonadotropins before administration of gonadotoxic treatment. GnRHa treatment is of doubtful efficacy for fertility. In women who have their normal menses and suffer from menorrhagia due to hematologic malignancies and the consequent bleeding tendency may benefit from taking GnRH agonists.[2] Apart from this women in child

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Corresponding Author: Dr. K. V. S. Hari Kumar, Department of Endocrinology, Command Hospital, Lucknow - 226 002, Uttar Pradesh, India. E-mail: hariendo@rediffmail.com

bearing age do not have a positive effect on ovarian function. In one of the largest meta-analysis and systematic reviews, use of GnRHa, was associated with spontaneous resumption of menses and ovulation, but no improvement in the rates of pregnancy.

Concerns

Several cancers express GnRH receptors. Since these receptors mediate functions like induction of cell cycle arrest, apoptosis inhibition and proliferation inhibition, it is possible that they may interfere with the action of chemotherapeutic drugs and thus reduce the efficacy of cancer treatment. Thus, co treatment is not safe for hormone receptor positive cancers. In addition, the efficacy of the use of GnRH agonist is not well established in clinical trials.[3] Presently data is available for only resumption of menses and not for fertility so large data is required before prescribing this drug as adjuvant therapy for fertility preservation. Fertility rates are low with the use of GnRH treatment compared to other methods of ovarian function preservation. This was due to small sample size, shorter study period, inadequate analyzable data and methodological weakness and also varied injection protocols in different studies.

References

1. Blumenfeld Z. Fertility preservation and GnRH-a for chemotherapy: Debate. Arch Gynecol Obstet 2010;282:585-6.
2. Lee SJ, Schover LR, Partridge AH, Patrizio P, Wallace WH, Hagerty K, *et al*. American society of clinical oncology recommendations on fertility preservation in cancer patients. J Clin Oncol 2006;24:2917-31.
3. ISFP Practice Committee, Kim SS, Donnez J, Barri P, Pellicer A, Patrizio P, *et al*. Recommendations for fertility preservation in patients with lymphoma, leukemia, and breast cancer. J Assist Reprod Genet 2012;29:465-8.

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