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Infertility Agents

Updated: July 19, 2017.

OVERVIEW

Infertility affects at least 10% of couples and the rate may be increasing as women in developed countries delay childbearing until later in life. The source of the infertility is primarily the woman in one-third, the man in one-third, and both in one-third of couples. Management and treatment of infertility usually begins with diagnosis of the cause. In some instances, infertility is not correctable, but in many, fertility can be corrected or improved in part by hormonal or antihormonal therapies and assisted reproductive techniques.

Anovulation in women is perhaps the single most common cause of infertility in women and can be modulated by pharmaceutical approaches. Induction of ovulation can be stimulated by antiestrogens (clomiphene, tamoxifen) or by administration or stimulation of follicle stimulating hormone (FSH) with or without luteinizing hormone (LH) and human chorionic gonadotropin (hCG). Drugs for infertility are very rare causes of drug induced liver injury, but may be associated with liver abnormalities as a part of the ovarian hyperstimulation syndrome (OHSS). The following agents are discussed in LiverTox:

- Antiestrogens
  - Clomiphene
  - Letrozole
  - Tamoxifen
- Gonadotropins
  - Human Chorionic Gonadotropin (hCG)
  - Follicle Stimulating Hormone (FSH)
  - Luteinizing Hormone (LH)
  - Gonadotropin Releasing Hormone (GnRH)

ANNOTATED BIBLIOGRAPHY

References updated: 19 July 2017

Zimmerman HJ. Hormonal derivatives and related drugs. In, Zimmerman, HJ. Hepatotoxicity: the adverse effects of drugs and other chemicals on the liver. 2nd ed. Philadelphia: Lippincott, 1999: pp. 555-88.

(Textbook of hepatotoxicity published in 1999 mentions that clomiphene has been linked unconvincingly to one case of hepatoblastoma [in a child born to a woman who received clomiphene] and one adenoma; gonadotropins and fertility agents are not discussed).

Kaplowitz N, DeLeve LD, eds. Drug-induced liver disease. 3rd ed. Amsterdam: Elsevier, 2013.

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Schimmer BP, Parker KL. Contraception and pharmacotherapy of obstetrical and gynecological disorders. In, Brunton LL, Chabner BA, Knollman BC, eds. Goodman & Gilman's the pharmacological basis of therapeutics. 12th ed. New York: McGraw-Hill, 2011, pp. 1833-52.

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Levin ER, Hammes SR. Estrogens and progestins. In, Brunton LL, Chabner BA, Knollman BC, eds. Goodman & Gilman's the pharmacological basis of therapeutics. 12th ed. New York: McGraw-Hill, 2011, pp. 1163-94.

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Drugs for ovulation induction. Med Lett Drugs Ther 2011; 53 (1376): 86-8. PubMed PMID: 22033212.

(Concise review of the efficacy and safety of drugs used for ovarian induction mentions that common side effects of clomiphene are hot flushes, gastrointestinal upset, headache, breast discomfort and uterine bleeding. Side effects of FSH, LH and hCG include injection site reactions, headache, abdominal pain and nausea; in addition, clomiphene, FSH and LH have been linked to the ovarian hyperstimulation syndrome [OHSS] which can be severe and even fatal; no mention of ALT elevations or hepatotoxicity).