PHARMACOTHERAPY OF ECTOPIC PREGNANCY - METHOTREXAT

A drug which is used as a treatment modality for ectopic pregnancy.

About Pharmacotherapy of ectopic pregnancy - Methotrexat

Methotrexate (MTX) is a drug, which is used as a treatment of ectopic pregnancy (EP; Pic. 1, 2) with low serum human chorionic gonadotropin (hCG) concentrations, also in women with a pregnancy of unknown location (PUL) and plateauing serum hCG levels.

Methotrexate is currently used in gynaecology to treat disorders arising from trophoblastic tissue (cells forming the outer layer of an embryo, which provide nutrients to the embryo and develop into a large part of the placenta), namely, ectopic pregnancy and gestational trophoblastic disease (a term used for a group of pregnancy-related tumours). Whilst the incidences of these conditions in pregnancy are relatively rare, their impact on the lives of young women of reproductive age, both in terms of mortality and morbidity (especially loss of reproductive potential), are significant.

MTX works as an antimetabolite. This means that when the cells are divided and growing, they need new DNA to provide material. Antimetabolite is a drug which stops creation of DNA, which leads to cessation of embryo development. Once the embryo stops development, it became the foreign tissue for body and will be expelled as a bleeding. The bleeding may be a little bit heavier than normal menstruation, also sometimes more painful. This bleeding can last between a few days and up to 6 weeks.

MTX is given by injection/s. MTX can be administered systemically in a multiple dose regimen or in a single dose regimen. A single dose regimen was introduced to minimize side effects, to improve patients' compliance and to reduce overall costs.

After the application it is necessary to visit doctor several times to make sure, the levels of hCG are decreased. The levels are checked every 3-7 days. If they are not lower, the application may be repeated. Sometimes the condition require surgery.

The use of methotrexate to treat early unruptured EP has been shown to be a safe and effective alternative to surgery in properly selected cases. Methotrexate has contributed to alleviating some of the disease burden of ectopic pregnancy, where it affords approximately 25% of women a nonsurgical and fertility-preserving treatment option.

Success or failure factors

Methotrexate therapy is suitable for women with hemodynamic stability (the stable blood flow) and no evidence of ectopic rupture. It is used in cases that there is no heart beat and gestation sac is smaller than 4cm, in case of presence of heart beat the gestational sac must be smaller than 3,5cm. Also the level of hCG must be less than 5000 mIU/mL, because there is higher possibility, that the treatment will not work.

If these conditions are not achieved, the methotrexate therapy is contraindicated. Other contraindications include low blood cell count, breastfeeding, immunodeficiency (a state in which the immune system's ability to fight infectious disease), high level of creatinin and low platelet count.
Complications

Non-surgical treatment modalities may have a negative impact on the patients’ health related quality of life.

Side effects of methotrexate include excessive flatulence, abdominal pain, stomatitis (an inflammation of the mouth and lips), sometimes it can cause the elevation of liver enzymes. It is necessary to avoid sexual intercourse, gas-producing foods and alcohol, because all of them can increase the risk of rupture.

If there is any increase in abdominal pain, or new symptoms such as dizziness or lightheadedness occur, woman must immediately visit doctor due to risk of rupture of ectopic pregnancy.

Prognosis

The success of MTX is comparable to surgery, but the indications are slightly different. Not every ectopic pregnancy can be treated pharmacologically.

The disadvantage of surgery is that it is an invasive procedure which may cause dome scarring around the tube. The formation of adhesions due to scarring may be the cause of infertility in future life. MTX has been shown to be safe with virtually no adverse effects reported on reproductive outcome.

Sources

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“Failure Rate of Single Dose Methotrexate in Management of Ectopic Pregnancy (https://www.hindawi.com/journals/ogi/2015/902426/)” — by Sendy et al. licensed under CC BY 3.0

“The METEX study: Methotrexate versus expectant management in women with ectopic pregnancy: A randomised controlled trial (https://bmcwomenshealth.biomedcentral.com/articles/10.1186/1472-6874-8-10)” — by Mello et al. licensed under CC BY 2.0

Gallery

Pic
Laparoscopic view, looking in the peritoneal cavity visualize the uterus (marked by blue arrows). On the left Fallopian tube there is an ectopic pregnancy and hematosalpinx (marked by red arrows). The right tube is normal.

Pic
A different places of wrong embryo implantation.
“The Evolution of Methotrexate as a Treatment for Ectopic Pregnancy and Gestational Trophoblastic Neoplasia: A Review” — by Skubisz and Tong licensed under CC BY 3.0

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