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Mifepriston fore safe pregnancy termination in 2nd trimester

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Abstract

Mifepristone has been developed to antagonize the action of progesterone, and has a recognized role in the medical termination of pregnancy. Its medical effects reflect not only on pregnancy termination during the first weeks, but successfully may be used for induction of abortion in the second trimester of pregnancy and for labor induction. Additionally, Mifepristone may be effective as pain arrest medicine during labor. Determining the role of Mifepristone in cervix ripening in the second-trimester pregnancy termination and evaluating its efficacy as pain killer medicine. The research included 19-41 years old 195 women with the need for pregnancy termination in the second trimester. The groups we divided into mifepristone and Folly balloon groups, used as a control. Mifepristone was used in an attempt at cervical ripening. The efficacy of Mifepristone was assessed using the degree of cervical ripening and by the scale of pain severity (APS). In the Mifepristone group the patients stay in the hospital was reduced compared to the folly balloon group. The pain score was significantly low in patients using Mifepristone as a painkiller medicine. In main group the pain level with mi was 4,5-5 and with a folly balloon – 7,9-9. Mifepristone is effective in maturing the cervix for late abortion and for labor. Considering the lack of cases, the studies must be continued in this connection.

KEYWORDS: mifepristone; induction of abortion; fFoley balloon; cervix ripening; pain arrest effect

Introduction

Maternal and child wellbeing are one of the main priorities of public health.

A maternal death is defined by the World Health Organization as “the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes” [1]. Every day in 2020, almost 800 women died from preventable causes related to pregnancy and childbirth.

Maternal mortality is unacceptably high. About 287 000 women died during and following pregnancy and childbirth in 2020.

Reducing these indicators is one of the main tasks of the state and the healthcare system

One of the areas of this activity that has yielded significant results is to reduce the number of abortions in Georgia.

Our research and development team is involved in these successes. In the course of our daily work, we had a main global goal, which was to support the reduction of the number of abortions in our country.

One of achievements of our team include the reduction of maternal mortality rate associated with abortion. Our approach was next.

A significant reduction in the level of abortions was achieved not due to the prohibition of abortions, but due to the spread of contraceptive education. And also, the drug mifepristone was put into use, which became a serious alternative to surgical abortion [2,3].

About Medical termination of pregnancy

Medical termination of pregnancy is carried out until 63 days of amenorrhea (with 1 day of the last menstruation). Termination of pregnancy is carried out no earlier than 48 hours from the moment of the woman’s referral to the medical organization when the pregnancy is 4–7 weeks old and not earlier than 7 days — when the pregnancy is 8–10 weeks old. Benefits of medical abortion have a number of advantages. High efficiency (95-98%), safety and acceptability; lack of risk associated with anesthesia; lack of risk of complications associated with surgical intervention: mechanical damage to the endometrium, myometrium, uterine vessels, cervical canal trauma; reducing the risk of ascending infection and complications associated with it; the non-invasive-

ness of the method excludes the risk of infection with HIV, hepatitis B, C and others; absence of psycho-emotional trauma caused by surgical abortion; bsence of adverse influence on further reproductive function, which is especially important for first-time pregnant women; high satisfaction of patients with the quality of medical care with this method of abortion.

During medical termination of pregnancy, the cervix and mucous membrane of the uterus are not injured by surgical instruments, which preserves the reproductive. The woman's function significantly reduces the percentage of possible complications. From a psychological point of view, there are a number of advantages against instrumental abortion.

About Mifepristone

Implementation of mifepristone into daily practice has significantly reduced maternal mortality rate in Georgia.

Mifepristone, also known as RU-486 was developed in 1980 and came into use in France in 1987 for termination of uterine pregnancy.

World Health Organization's put it to List of Essential Medicines.

Termination of uterine pregnancy in the early stages (up to 42 days of amenorrhea); induc-tion of labor at full-term pregnancy; emergency postcoital contraception (after unprotected inter-course or if the method of contraception used cannot be considered reliable); uterine leiomyoma (up to 12 weeks of gestation).

Experiments and study of mefipristone have come a long way: starts from 1970 and and 1980. It was in Romanville Research Center (Roussel Uclaf, France) research program on steroids with antihormonal action, culminating in the creation of mifepristone (RU 486).

In 1982 atart first pashe clinical trials in Geneva at 1982 and after 5 years the beginning of the use of mifepristone in France.

Medication abortion is regarded as very safe, and uses mifepristone, followed by misoprostol. The drugs were introduced in 2000. By 2016, more than 3 million American women had taken the drug with 19 deaths reported, an effective mortality rate of 0,00063% [4,5,6,7].

But mifepristone has a lot of other benefits of use. Its medical effects reflect not only for pregnancy termination during first weeks but effectively may be used in induction of abortion in second trimester of pregnancy and successfully may be used for induction of labor, also for treatment of leiomyoma and for post-coital, post-delivery, monophasic and, hypothetically, combined contraception in females and males, treatment of hyperglycemia in patients with Cushing's syndrome [8].

Mifepristone steroid hormones agonist with anti-pregestational, anti-androgenic, anti-glucocorticoid activ-ity. It is observed in plasma during pregnancy and significant increase concentration of corticotropin, beta lipotropin and cortisol.

The effect of mifepristone in the early stages of pregnancy begins with the occupation of progesterone re-ceptors of the endometrium, and in the late stages it also involves the myometrium [6].

We can see effects of mifepristone on the structure of human decidua and chorion during pregnancy [7].

Apoptosis is actively regulated and programmed cell death, during the development of the placenta, trophoblast cells undergo massive proliferation, during which some of these cells undergo differentiation into syncytiotrophoblast, some syncytiotrophoblast cells undergo apoptosis.

When mifepristone is used, the number of apoptotic cells in the decidua and chorion villus increases sig-nificantly, which is the initiation of pregnancy termination.

Beta endorfin endorphin is an endogenous opioid neuropeptide and peptide hormone that is produced in certain neurons within the central nervous system and peripheral nervous system. It is one of three endorphins that are produced in humans, the others of which include α-endorphin and γ-endorphin [8,9,10].

Generation of β-endorphin from proopiomelanocortin. Proopiomelanocortin is a protein that is a precur-sor of neuropeptides and hormones-adrenocorticotropic and β-lipotropin. It is an opioid receptor agonist and binds to μ-opioid receptors. Has the strongest opioid and analgesic effect (similar to morphine).

The ripening is a process derivative of enzymatic breakdown and inflammatory response. Therefore, it is apparent that cervical remodeling is a derivative of the reactions mediated by multiple factors such as hor-mones, prostaglandins, nitric oxide, and inflammatory cytokines [11].

Progesterone receptor blockade with mifepristone is temporary and reversible Unpleasant events are not noted later, related to: Menstrual cycles and reproductive function [12,13,14].

If we talk about the pharmacokinetics of mifepristone [6] we must remember that Mifepristone has more tropism for progesterone receptor than progesterone.Breakdown products of it have more with high tropism for progesterone receptors than progesterone by itself.

Mifepristone has fast absorption by the gastrointestinal tract [14,16].

The peak concentration of the drug (1.98 mg/l) after a single dose is reached in 1 hour and 30 minutes. Absolute bioavailability – 69% The half-life is 18 hours.

Materials and Results

Development of noninvasive antenatal screening and other methods of investigations of abnormalities of fetus make increase need of termination of pregnancy in the second trimester.

We get results of two ways of induction of late abortion with Mifepristone (Trade name Mirepristone) and Misoprostole (Trade name Mirolut) combination and folly balloon and misoprostol together. In our study we include 195 women with abnormalities of development of fetus and late missed abortion. All of patients with abnormalities of development of fetus contact us with statement about wish of termination of pregnancy, we discuss all this cases on special commission meeting, check all results of investigation and after getting decision about need of termination of pregnancy start procedures.

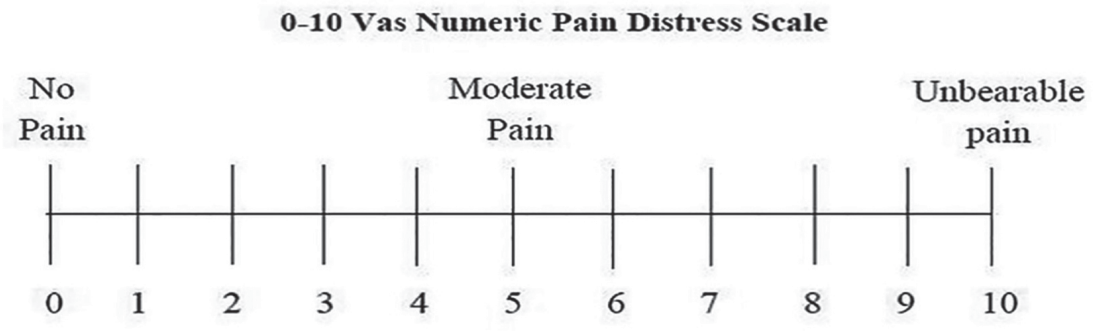
Age of patient was from 19 to 41 years old, age of pregnancy from 14 to 21 6/7 weeks of gestation. 11 patients were with twin gestation. Criteria of exclusion was c-section in anamnesis, non-compensative extragenital diseases, individual idiosyncrasy.

98 cases (main group) we gave 200 mg Meripristone and 200 mg Mirolut and get expulsion of fetus after 6-11 hours of hospitalization. Maximal doses of mirolut was 200-400 mg.

From 97 patients, combination of cervix ballooning and Mirolut (control group) – expulsion of fetus we get in 18-28 hours. Patients stay in hospital all this time Doses of Mirolut was from 400to 1200 mg.

During our work we used visual analogue scale of pain It have a lot of Advantages. Easy to evaluate, high reliability, quick determination of the result, easy to use [16].

Table 1. *Visual analogue scale of pain*



Patients have only signed their sensations of pain. Patients from main group sign pain at 4.5-5 in control group 7.5-9. You can see Tab.1.

The unique properties of mifepristone are associated with increased contractile activity of the uterus, increased sensitivity of the myometrium to endogenous and exogenous prostaglandins,

The ability to soften and open the cervix.

They require serious analysis and wide implementation in our practice.

Conclusion

Abortion is not the optimal means of birth control. However, due to socio-economic circumstances, as well as in some cases related to somatic and mental health, it is necessary to terminate the pregnancy. The prepsrate we are considering in this report has shown itself to be the best for abortion. The decrease in the number of instrumental abortions in our country is associated with the use of Mifepriston.

Note

The article cannot be used for advertising of pharmaceuticals or for any other type of marketing and advertising.

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