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PHARMACOLOGY

Phs204

Assignment question : Discuss contraceptive with different types and detailed 5

Contraception, also known as birth control and fertility control, is a method or device used to prevent pregnancy. Birth control has been used since ancient times, but effective and safe methods of birth control only became available in the 20th century. Planning, making available, and using birth control is called family planning. Some cultures limit or discourage access to birth control because they consider it to be morally, religiously, or politically undesirable. Contraception (birth control) also prevents pregnancy by interfering with the normal process of ovulation, fertilization, and implantation.

Every month a woman's body begins the process that can potentially lead to pregnancy. An egg (ovum) matures, the mucus that is secreted by the cervix (a cylindrical-shaped organ at the lower end of the uterus) changes to be more inviting to sperm, and the lining of the uterus grows in preparation for receiving a fertilized egg. Any woman who wants to prevent pregnancy must use a reliable form of birth control. Birth control (contraception) is designed to interfere with the normal process and prevent the pregnancy that could result. There are different kinds of birth control that act at different points in the process, from ovulation through fertilization to implantation. Each method has its own side effects and risks. Some methods are more reliable than others. Although there are many different types of birth control, they can be divided into a few groups based on how they work.

The most effective methods of birth control are sterilization by means of vasectomy in males and tubal ligation in females, intrauterine devices (IUDs), and implantable birth control. This is followed by a number of hormone-based methods including oral pills, patches, vaginal rings, and injections. Less effective methods include physical barriers such as condoms, diaphragms and birth control sponges and fertility awareness methods. The least effective methods are spermicides and withdrawal by the male before ejaculation. Sterilization, while highly effective, is not usually reversible; all other methods are reversible, most immediately upon stopping them.[5] Safe sex practices, such as with the use of male or female condoms, can also help prevent sexually transmitted infections. Other methods of birth control do not protect against sexually transmitted diseases. Emergency birth control can prevent pregnancy if taken within 72 to 120 hours after unprotected sex. Some argue not having sex is also a form of birth control, but abstinence-only sex education may increase teenage pregnancies if offered without birth control education, due to non-compliance.

In teenagers, pregnancies are at greater risk of poor outcomes. Comprehensive sex education and access to birth control decreases the rate of unwanted pregnancies in this age group. While all forms of birth control can generally be used by young people, long-acting reversible birth control such as implants, IUDs, or vaginal rings are more

successful in reducing rates of teenage pregnancy. After the delivery of a child, a woman who is not exclusively breastfeeding may become pregnant again after as few as four to six weeks. Some methods of birth control can be started immediately following the birth, while others require a delay of up to six months. In women who are breastfeeding, progestin-only methods are preferred over combined oral birth control pills. In women who have reached menopause, it is recommended that birth control be continued for one year after the last period.

Examples of contraceptives

1. caps
2. combined pill
3. condoms (female)
4. condoms (male)
5. contraceptive implant
6. contraceptive injection
7. contraceptive patch
8. diaphragms
9. intrauterine device (IUD)
10. intrauterine system (IUS)
11. natural family planning
12. progestogen-only pill
13. vaginal ring

There are many different types of contraception, but not all types are appropriate for all situations. The most appropriate method of birth control depends on an individual's overall health, age, frequency of sexual activity, number of sexual partners, desire to have children in the future, and family history of certain diseases

Hormonal

Hormonal contraception is available in a number of different forms, including oral pills, implants under the skin, injections, patches, IUDs and a vaginal ring. They are currently available only for women, although hormonal contraceptives for men have been and are being clinically tested. There are two types of oral birth control pills, the combined oral contraceptive pills (which contain both estrogen and a progestin) and the progestogen-only pills (sometimes called minipills). If either is taken during pregnancy, they do not increase the risk of miscarriage nor cause birth defects. Both types of birth control pills prevent fertilization mainly by inhibiting ovulation and thickening cervical mucus. They may also change the lining of the uterus and thus decrease implantation. Their effectiveness depends on the user's adherence to taking the pills.

Combined hormonal contraceptives are associated with a slightly increased risk of venous and arterial blood clots. Venous clots, on average, increase from 2.8 to 9.8 per 10,000 women years which is still less than that associated with pregnancy. Due to this risk, they are not recommended in women over 35 years of age who continue to smoke. Due to the increased risk, they are included in decision tools such as the DASH score and PERC rule used to predict the risk of blood clots.

The effect on sexual desire is varied, with increase or decrease in some but with no effect in most. Combined oral contraceptives reduce the risk of ovarian cancer and endometrial cancer and do not change the risk of breast cancer. They often reduce menstrual bleeding and painful menstruation cramps. The lower doses of estrogen released from the vaginal ring may reduce the risk of breast tenderness, nausea, and headache associated with higher dose estrogen products.

Barrier

Barrier contraceptives are devices that attempt to prevent pregnancy by physically preventing sperm from entering the uterus. They include male condoms, female condoms, cervical caps, diaphragms, and contraceptive sponges with spermicide.

Globally, condoms are the most common method of birth control. Male condoms are put on a man's erect penis and physically block ejaculated sperm from entering the body of a sexual partner. Modern condoms are most often made from latex, but some are made from other materials such as polyurethane, or lamb's intestine. Female condoms are also available, most often made of nitrile, latex or polyurethane. Male condoms have the advantage of being inexpensive, easy to use, and have few adverse effects. Making condoms available to teenagers does not appear to affect the age of onset of sexual activity or its frequency. In Japan, about 80% of couples who are using birth control use condoms, while in Germany this number is about 25%, and in the United States it is 18%.

Male condoms and the diaphragm with spermicide have typical use first-year failure rates of 18% and 12%, respectively. With perfect use condoms are more effective with a 2% first-year failure rate versus a 6% first-year rate with the diaphragm. Condoms have the additional benefit of helping to prevent the spread of some sexually transmitted infections such as HIV/AIDS, however, condoms made from animal intestine do not.

Contraceptive sponges combine a barrier with a spermicide. Like diaphragms, they are inserted vaginally before intercourse and must be placed over the cervix to be effective. Typical failure rates during the first year depend on whether or not a woman has previously given birth, being 24% in those who have and 12% in those who have not. The sponge can be inserted up to 24 hours before intercourse and must be left in place for at least six hours afterward. Allergic reactions and more severe adverse effects such as toxic shock syndrome have been reported.

Sterilization

Surgical sterilization is available in the form of tubal ligation for women and vasectomy for men. There are no significant long term side effects, and tubal ligation decreases the risk of ovarian cancer. Short term complications are twenty times less likely from a vasectomy than a tubal ligation. After a vasectomy, there may be swelling and pain of the scrotum which usually resolves in one or two weeks. With tubal ligation, complications occur in 1 to 2 percent of procedures with serious complications usually due to the anesthesia. Neither method offers protection from sexually transmitted infections.

This decision may cause regret in some men and women. Of women aged over 30 who have undergone tubal ligation, about 5% regret their decision, as compared with 20% of women aged under 30. By contrast, less than 5% of men are likely to regret sterilization. Men who are more likely to regret sterilization are younger, have young or no children, or have an unstable marriage. In a survey of biological parents, 9% stated they would not have had children if they were able to do it over again.

Although sterilization is considered a permanent procedure, it is possible to attempt a tubal reversal to reconnect the fallopian tubes or a vasectomy reversal to reconnect the vasa deferentia. In women, the desire for a reversal is often associated with a change in spouse. Pregnancy success rates after tubal reversal are between 31 and 88 percent, with complications including an increased risk of ectopic pregnancy. The number of males who request reversal is between 2 and 6 percent. Rates of success in fathering another child after reversal are between 38 and 84 percent; with success being lower the longer the time period between the vasectomy and the reversal. Sperm extraction followed by in vitro fertilization may also be an option in men.

Emergency

Emergency contraception can be used after unprotected intercourse or if a condom breaks.

Copper IUD. The copper IUD is the most effective method of emergency contraception. The device can be inserted within 120 hours of unprotected intercourse. The method is nearly 100% effective at preventing pregnancy and has the added benefit of providing a highly effective method of contraception for as long as the device remains in place. There are very few contraindications to use of the copper IUD, and there are no issues related to weight or obesity associated with the effectiveness of the method.

Emergency contraceptive pills (ECPs) are hormonal pills, taken either as a single dose or two doses 12 hours apart, that are intended for use in the event of unprotected intercourse. If taken prior to ovulation, the pills can delay or inhibit ovulation for at least 5 days to allow the sperm to become inactive. They also cause thickening of cervical mucus and may interfere with sperm function. ECPs should be taken as soon as possible after semen exposure and should not be used as a regular contraceptive method. Pregnancy can occur if the pills are taken after ovulation or if the woman has unprotected sex in the same cycle.

Long acting reversible contraception

Intrauterine Methods

An intrauterine device (IUD), also known as an intrauterine system (IUS), is a small, T-shaped device that is inserted into the uterus to prevent pregnancy. A health care provider inserts the device. An IUD can remain in place and function effectively for many years at a time. After the recommended length of time, or when the woman no longer needs or desires contraception, a health care provider removes or replaces the device.

A hormonal IUD or IUS releases a progestin hormone (levonorgestrel) into the uterus.³ The released hormone causes thickening of the cervical mucus, inhibits sperm from reaching or fertilizing the egg, thins the uterine lining, and may prevent the ovaries from releasing eggs. The failure rate of a hormonal IUS is less than 1%; however, a small

percentage of women may experience expulsion of the device and have to have it reinserted.³ Some research also suggests that these IUDs maintain their effectiveness up to a year beyond their recommended use period.⁴ This method may also be used to treat heavy menstrual bleeding because the hormone often reduces or eliminates uterine bleeding.

A copper IUD prevents sperm from reaching and fertilizing the egg, and it may prevent the egg from attaching in the womb.³ If fertilization of the egg does occur, the physical presence of the device prevents the fertilized egg from implanting into the lining of the uterus. The failure and expulsion/reinsertion rates of a copper IUD is similar to those of a hormonal IUD.³ Copper IUDs may remain in the body for 10 years.³ A copper IUD is not recommended for women who may be pregnant, have pelvic infections, or had uterine perforations during previous IUD insertions. It also is not recommended for women who have cervical cancer or cancer of the uterus, unexplained vaginal bleeding, or pelvic tuberculosis. Currently, ParaGard® is the only FDA-approved copper IUD.

Implants

Implants are implantable rods. Each rod is matchstick-sized, flexible, and plastic. The method has a failure rate of less than 1%.³ A physician surgically inserts the rod under the skin of the woman's upper arm.

The rod releases a progestin and can remain implanted for up to 5 years. Currently, Implanon® and Nexplanon, which release etonogestrel, are the only implantable rods available in the United States. A two-rod method, Jadelle, which releases levonorgestrel, is FDA approved but not currently distributed in America. A new levonorgestrel-releasing, two-rod method, Sino-implant (II) is in clinical development.