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PHARMACOLOGY

PHS 204

•CONTRACEPTION

The deliberate use of artificial methods or other techniques to prevent pregnancy as a consequence of sexual intercourse. The major forms of artificial contraception are: barrier methods, of which the commonest is the condom or sheath; the contraceptive pill, which contains synthetic sex hormones which prevent ovulation in the female; intrauterine devices, such as the coil, which prevent the fertilized ovum from implanting in the uterus; and male or female sterilization.

The different types of contraception

- * Cap.
- * Combined pill.
- * Condoms.
- * Contraceptive implant.
- * Contraceptive injection.
- * Contraceptive patch.
- * Diaphragm.
- * Female condoms
- * Female sterilization
- * Vaginal ring

•CONTRACEPTIVES

MECHANICAL BARRIERS – PREVENTION OF ENTRY OF SPERM INTO UTERUS

Mechanical barriers are used to prevent the entry of sperm into uterine cavity. These barriers are called condoms. The male condom is a leak proof sheath, made of latex. It covers the penis and does not allow entrance of semen into the female genital tract during coitus.

In females, the commonly used condom is cervical cap or diaphragm. It covers the cervix and prevents entry of sperm into uterus.

CHEMICAL METHODS

Chemical substances, which destroy the sperms, are applied in female genital tract before coitus. Destruction of sperms is called spermicidal action. The spermicidal substances are available in the form of foam tablet, jelly, cream and paste.

ORAL CONTRACEPTIVES (PILL METHOD)

Oral contraceptives are the drugs taken by mouth (pills) to prevent pregnancy. These pills prevent pregnancy by inhibiting maturation of follicles and ovulation. This leads to alteration of normal menstrual cycle. The menstrual cycle becomes the anovulatory cycle.

This method of fertility control is called pill method and pills are called contraceptive pills or birth control pills. These pills contain synthetic estrogen and progesterone.

Contraceptive pills are of three types:

1. Classical or combined pills
2. Sequential pills

3. Minipills or micropills.

1. CLASSICAL OR COMBINED PILLS

Classical or combined pills contain a moderate dose of synthetic estrogen like ethinyl estradiol or mestranol and a mild dose of synthetic progesterone like nor- ethindrone or norgestrol.

Pills are taken daily from 5th to 25th day of menstrual cycle. The withdrawal of the pills after 25th day causes menstrual bleeding. The intake of pills is resumed again after 5th day of the next cycle.

Mechanism of Action

During the continuous intake of the pills, there is relatively large amount of estrogen and progesterone in the blood.

It suppresses the release of gonadotropins, FSH and LH from pituitary by means of feedback mechanism. Lack of FSH and LH prevents the maturation of follicle, and ovulation. In addition, progesterone increases the thickness of mucosa in cervix, which is not favorable for transport of sperm. When the pills are withdrawn after 21 days the menstrual flow starts.

2. SEQUENTIAL PILLS

Sequential pills contain a high dose of estrogen along with moderate dose of progesterone. These pills also prevent ovulation.

Sequential pills are taken in two courses:

- i. Daily for 15 days from 5th to 20th day of the menstrual cycle and then
- ii. During the last 5 days, i.e. 23rd to 28th day.

3. MINIPILLS OR MICROPILLS

Minipills contain a low dose of only progesterone and are taken throughout the menstrual cycle. It prevents pregnancy without affecting ovulation. The progesterone increases the thickness of cervical mucosa, so that the transport of sperms is inhibited. It also prevents implantation of ovum.

DISADVANTAGES AND ADVERSE EFFECTS OF ORAL CONTRACEPTIVES

About 40% of women who use contraceptive pills may have minor transient side effects. However, long term use of oral contraceptives causes some serious side effects. Some of the side effects are rare, but may be dangerous.

Following are the disadvantages and adverse effects of oral contraceptives:

1. Major practical difficulty is the regular intake of the pills
2. May not be suitable for women having disorders such as diabetes, cardiovascular diseases or liver diseases
3. Clotting tendency of blood due to suppressed production of anticoagulants in liver
4. Hypertension and heart attack
5. Increases the risk of stroke
6. Tenderness of breast and risk of breast cancer
(but may decrease the risk of ovarian and uterine cancer).

LONG-TERM CONTRACEPTIVES

To avoid taking pills daily, the long-term contraceptives are used. These contraceptives are in the form of implants containing mainly progesterone. The implants, which are inserted beneath the skin release the drug slowly and prevent fertility for 4 to 5 years. Though it seems to be effective, it may produce amenorrhea.

INTRAUTERINE CONTRACEPTIVE DEVICE (IUCD) – PREVENTION OF FERTILIZATION AND IMPLANTATION OF OVUM

Fertilization and the implantation of ovum are prevented by inserting some object made from metal or plastic into uterine cavity. Such object is called intrauterine contraceptive device (IUCD).

MECHANISM OF ACTION OF IUCD

Intrauterine contraceptive device prevents fertilization and implantation of the ovum. The IUCD with copper content has spermicidal action also. The IUCD which is loaded with synthetic progesterone slowly releases progesterone. Progesterone causes thickening of cervical mucus and prevents entry of sperm into uterus.

The common IUCDs are Lippes loop, which is 'S' shaped and made of plastic and copper T, which is made up of copper. It is inserted into the uterine cavity by using some special applicator.

DISADVANTAGES OF IUCD

IUCD has some disadvantages. It has the tendency to:

1. Cause heavy bleeding in some women
2. Promote infection
3. Come out of uterus accidentally.

MEDICAL TERMINATION

OF PREGNANCY (MTP) – ABORTION

Abortion is done during first few months of pregnancy. This method is called medical termination of pregnancy (MTP). There are three ways of doing

DILATATION AND CURETTAGE (D AND C)

In this method, the cervix is dilated and the implanted ovum or zygote is removed.

VACUUM ASPIRATION

The implanted ovum is removed by vacuum aspiration method. This is done up to 12 weeks of pregnancy.

ADMINISTRATION OF PROSTAGLANDIN

Administration of prostaglandin like PGE₂ and PGF₂ intravaginally increases uterine contractions resulting in abortion.

SURGICAL METHOD (STERILIZATION) – PERMANENT METHOD

Permanent sterility is obtained by surgical methods. It is also called sterilization.

TUBECTOMY

In tubectomy, the fallopian tubes are cut and both the cut ends are ligated. It prevents entry of ovum into uterus. The operation is done through vaginal orifice in the postpartum period. During other periods, it is done by abdominal incision. Tubectomy is done quickly (in few minutes) by using a laparoscope.

Though tubectomy causes permanent sterility, if necessary recanalization of fallopian tube can be done using plastic tube by another surgical procedure.

VASECTOMY

In vasectomy, the vas deferens is cut and the cut ends are ligated. So the sperms cannot enter the ejaculatory duct and the semen is devoid of sperms. It is done by surgical procedure with local anesthesia. If necessary, the recanalization of vas deferens can be done with plastic tub.