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Progestrone uses in obstetrics and gynecology

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Introduction

Progesterone

Progesterone is a steroid hormone produced by the ovary (corpus luteum) in the secretory phase it is a natural hormone with very small half life about 5minutes. It support the endometrium that is primed by estrogen till the end of the cycle the when it withdrawal. Then the bleeding happens. Its absorption is very poor orally for that different forms have been produced other than oral forms. Including variety of injectable and implantable synthetic analogs, called "progestins," have been produced. Pro gestational agents have many important clinical functions, including regulation of the menstrual cycle, prevention of endometrial hyperplasia, treatment of abnormal uterine bleeding and contraception. Progesterone plays an important role in the secretory regulation of the menstrual cycle. Under the effects of luteinizing hormone, corpus luteum produce progesterone, this stimulates the endometrium to develop secretory cells and glands. The corpus luteum produces progesterone for approximately 10 to 12 days of the cycle which support the endometrium in order to receive the fertilized ovum if pregnancy happens. If no pregnancy happens the progesterone and estrogen levels decline sharply, resulting in menstrual bleeding and shedding all the content through the days of menstrual cycle. If fertilization occurs, progesterone supports implantation of the ovum in the receiving endometrial and maintains the pregnancy as it relaxes the uterus for the ongoing pregnancy. Progesterone controls the endometrium which is primed by estrogen hormone by decreasing the number of its receptors, thus preventing endometrial hyperplasia and endometrial cancer by antagonizing the effect of estrogen. It known that mild and moderate endometrial lesions including that with atypical and early well-differentiated endometrial cancer can be reversed with progestin treatment in women of reproductive age Figure 1.

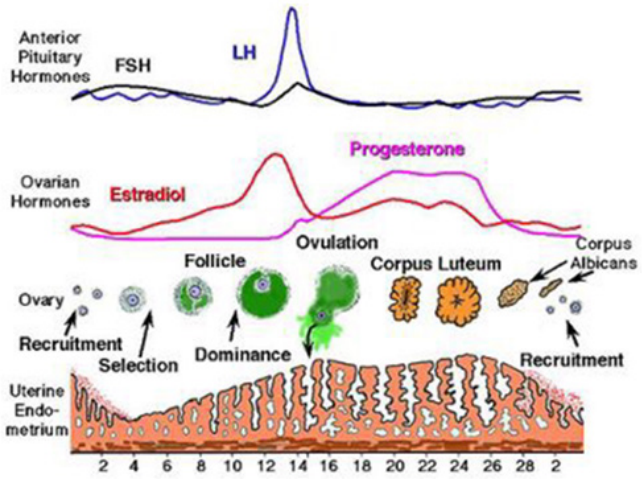

Figure 1 Progestin treatment in women of reproductive age.

Side effects of progesterone uses

Progesterone cause water retention and antagonize the effect of estrogen it can cause Fatigue, Edema, Abdominal bloating, Anxiety, Irritability, mood changes and depression and back pain.

Clinical uses in obstetrics and gynecology

Treatment of dysfunctional uterine bleeding

"Dysfunctional uterine bleeding" is defined as bleeding of unknown etiology no pregnancy no malignancy. This bleeding usually results from an ovulation and occurs at the extremes of life the diagnosis is usually by exclusion of other causes by investigation with hormonal FSH, LH, prolactin, TSH and pelvic ultrasound dysfunctional uterine bleeding can be managed with medical treatment or surgical if medical treatment fails. Pro gestational agents, alone or in combination with estrogen, are often used to correct the bleeding. Although progesterone treatment cannot eliminate the cause of anovulatory cycles, they are effective in reducing the consequences on a monthly basis. If hormone administration does not correct the bleeding, then further investigation to find the cause or management with minimally invasive like or surgical treatment.

Adolescents: Immaturity of the hypothalamic-pituitary-ovarian axis predisposes up to 30% of adolescents to dysfunctional uterine bleeding. The bleeding can be controlled with cyclic progestin's (medroxyprogesterone acetate, 5 to 10mg per day for 10 to 12days of the month) like northistrone or dydrogestrone or low-dose oral contraceptive pills It is important to use the treatment for short periods (three to six months) and then revaluate the patient.

Perimenopausal women: Dysfunctional uterine bleeding in perimenopausal women is generally related to reduce Estradiol levels. In this age group, it is particularly important to rule out endometrial hyperplasia, atypical and endometrial cancer before starting the therapy. However, patient age is not as the duration of exposure to unopposed estrogen which usually associated with obesity, an ovulation and infertility. Although endometrial hyperplasia is a benign condition, atypical endometrial hyperplasia is a predisposing to endometrial cancer and has a significant tendency to progress to endometrial cancer if it is not treated with pro gestational agents. The potential for progression to endometrial cancer in women with atypical endometrial hyperplasia ranges from 8 to 30 percent. Diagnosis must be obtained by endometrial sampling which can be done in the office or in a day surgery in difficult cases. Because the majority of hyperplasia's in women of reproductive age result from exposure unopposed estrogen, chronic an ovulation, most benign hyperplasia

regress without progestin treatment if spontaneous ovulation occurs. If an ovulation recurs on a regular basis, progestins are generally administered for one week (minimum duration for the prevention of hyperplasia) to three weeks of each cycle.

Postmenopausal women: Endometrial hyper-stimulation resulting from unopposed estrogen administration can be reduced by adding a progestin in postmenopausal women. Therapy with a progestin for two weeks each month can reduce the risk of endometrial carcinoma. Mirena which is hormonal intrauterine device is barrier and hormonal contraception but it is no used not only to be contraception but as treatment of Menorrhagia it can be used even postmenopausal to treat endometrial hyperplasia after investigation with at least ultrasound to sure the endometrial cavity doesn't contain polyp or fibroid.

Secondary amenorrhea

Progesterone agents have been used successfully to induce withdrawal bleeding in women with Oligomenorrhea or secondary amenorrhea. The progestins most commonly used for this purpose has been northestrone (Provera). This agent produces predictable withdrawal bleeding of an estrogen-primed endometrium. Short courses of orally administered (5 mg twice, three times daily for five days) have produced withdrawal bleeding in more than 80 percent of amenorrheic women dydrogestrone also produced the same effect.

Progesterone as a contraception

Progesterone suppresses GNRH which is produced by the hypothalamus to control anterior pituitary hormone, thus inhibiting the release of follicle-stimulating hormone and luteinizing hormone. This action prevents ovulation. The atrophic endometrium that results from prolonged exposure to progestins minimizes the likelihood of implantation. It also makes the cervical mucous thick, which make sperm penetration unlikely. The spotting and breakthrough bleeding that happen early will be minimized after three to four months of treatment. Adding estrogen in case of chronic bleeding can stop bleeding

Long-acting progestin contraception

Injectable medroxyprogesterone acetate (Depo-Provera) is a highly effective contraceptive that can be administered at any time as long as there is verification of a negative pregnancy test. The standard dose of 150 mg is injected intramuscularly every three months or up to 14weeks Women who are breast-feeding can receive injectable medroxyprogesterone acetate postpartum once lactation has been started in a situation where patient is difficult to come it can be giving post delivery directly especially how is not rubella immune after vaccination to sure no pregnancy will happen soon. Menstrual disturbance, Amenorrhea or spotting and delayed return to fertility is the main side effects and these side effects should be informed to the patient in the counseling before the start of contraception. The sub dermal contraceptive implant system implant on consists of one flexible capsule, slow release of levonorgestrel. These implants are inserted surgically in the upper arm p and can be left in place as long as three years. Mirena is intrauterine contraceptive device used also as contraception and as a treatment for Menorrhagia because it releases levenoregestril hormone and it can be used up 5years.

Progestin-only oral contraceptive pills

The currently available progestin-only oral contraceptive pills ("mini-pills") include norethindrone (Micronor, with each pill containing 0.35mg of norethindrone), norgestrel (Ovrette, with each pill containing 0.075mg of norgestrel) and cerrazete (desogestrel 0.075mg). Lactating women are good candidates for this contraceptive method. And progesterone is used in all types of combined contraceptive pills.

Progesterone in obstetrics

Progesterone stabilized the pregnancy and in the first three months the corpus luteum continue to secret it till the placenta take over. Progesterone can be used to treat threatened abortion and to prevent preterm labour. And it is used to prevent abortion for high pregnancy orders or in previous recurrent abortions or extreme preterm labour. It can be used as oral like natural progesterone (prometrium).

i. Or dydrogestron 10mg bid or tid

ii. Or suppository like prgestrone (cyclogest) 400mg

iii. Or gel like crinone 8% gel

Conclusion

Progesterone can be used in most of obstetrics and gynecology conditions including amenorrhea, Menorrhagia, contraception, and to treat threatened abortions and preterm labour. It can be used oral, suppository, sub dermal, injection, or in IUCD. It's main action to antagonize the effect of estrogen and support of endometrium.

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None.

Conflict of interest

The author declares no conflict of interest.