Advances in Oral Contraceptive Pills

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Oral contraceptive pills (OCPs) contain two synthetic steroid hormones, namely ethinyl estradiol (EE) and progestins. EE dosages have decreased with first generation OCPs containing 50 µg EE, second generation 20 µg to 35 µg EE and third generation 25 µg to 35 µg EE. Older progestins are derived from 19-nortestosterone (*i.e.*, norethindrone, norethindrone acetate, ethynodiol diacetate, norethynodrel, levonorgestrel) while newer progestins (*i.e.*, norgestimate, desogestrel, drospirenone) have less androgenic properties. This aspect has been particularly emphasized by marketers. Unfortunately, there is a lack of clinical evidence to guide the clinician in selecting OCPs. A large French study of OCP users reported no difference in effectiveness or side-effects between low EE dose or second or third generation progestin OCPs.[1]

Jill's case

Jill,19, presents requesting contraception. She has no contra-indications to hormonal contraceptives and prefers the OCP to any other form of family planning. Six months ago she had a therapeutic abortion for an unplanned pregnancy. Her gynecologic history reveals that in the past year she has been hospitalised twice for functional ovarian cysts, one of which required a laparoscopy. This article highlights a few considerations in advising Jill on effective contraception.

Read on to learn what to do for Jill...

How OCPs work

Progestins are responsible for the "desirable effects" of OCPs, namely ovarian and pituitary inhibition, cervical mucus thickening and endometrial atrophy, resulting in effective birth control. Oestrogens are responsible for controlling the undesirable progestin symptoms of spotting and unscheduled bleeding. Together, both steroid hormones act synergistically to inhibit ovulation through pituitary and ovarian inhibition.[2]

Side-effects

Side-effects are similar to placebo, but can be categorized as either oestrogenic or progestogenic.[3]

Oestrogenic effects include:

- nausea,
- breast tenderness,
- water retention,
- skin discolouration (melasma),
- headache,
- vaginal discharge and
- decreased libido.

Progestogenic effects are:

- acne or oily skin,
- hirsutism,
- depression,
- fatigue,
- increased appetite,
- bloating and
- constipation.

Most side-effects are transient and occur within the first two to three months of initiation.[4]

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Regimens

Traditional Sunday OCP starts have the advantage of avoiding menstruation on weekends. Unfortunately, studies show that up to 24% of women never start OCPs due to confusion over starting instructions and waning motivation.[5] In many rural areas, problems with refills over weekends arise. An equally effective and safe approach using a "Quick Start" method requires the first pill to be taken under supervision in the clinic. Concerns of an undiagnosed pregnancy are negated by the knowledge that OCPs are not teratogenic.[6] If this is a big concern condoms can be used concurrently in the first week. Bleeding patterns are no different to Sunday starts with second pack continuation rates significantly higher (odds ratio = 2.8).[7] This multicentre study of 1,716 women found pregnancy rates to be 10% less without a difference in adverse events.

Although no official regimen definitions exist, "cyclic" implies OCP use for 21-days with seven-days of hormone-free interval (HFI).[8] "Extended" implies two or more contiguous OCP cycles with a planned HFI. "Continuous" means uninterrupted OCP usage without a HFI. Although any cycle length could have been chosen, the 21/7 cyclic regimen was selected to simulate the normal 28-day menstrual cycle. Drawbacks of cyclic use includes frequent menstruation and hormone withdrawal symptoms (*e.g.*, migraines).[9,10] Other associated health risks include:

- anemia,
- dysmenorrhea,
- ovarian cysts,
- premenstrual syndrome and
- endometriosis.[11,12]

I advise using a cyclic regimen for three to four months before moving to an extended regimen which decreases the number of menstruations from 13 per year. Extended regimens can be used for 30 to 120 days or until uterine bleeding ensues. This should be followed by a hormone-free interval of four to seven days.[13] Although no single regimen has been found to have an advantage, studies have used multiples of 21-days (namely 42, 63, 84, 126, *etc.*) with a seven-day HFI.[14] A variety of OCPs, patches and vaginal rings have been studied with only a few using triphasics.[15,16] Pregnancy rates are similar to cyclic regimens although extended regimens are potentially more forgiving if pills are forgotten. Other benefits include a reduction in:

- menstrual headaches,
- genital itch,
- bloating,
- dysmenorrhea and
- premenstrual syndrome.[12,16-18]

During the HFI, follicle-stimulating hormone (FSH) begins to rise on cycle day three or four

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resulting in follicular development and increasing estradiol production.[9,19-20] When OCPs are started on cycle day seven, follicles must degenerate and estradiol levels drop, which can result in hormone withdrawal symptoms.[21,22] Shortening the HFI to three or four days will ensure sufficient hormone levels to suppress ovarian response and inhibit follicular development.[23] As a consequence of better ovarian suppression, a lower incidence of ovarian cysts has been reported with shorter HFI.[24]

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Conclusion

In summary, the "Quick Start" approach has better OCP compliance, comparable or lower pregnancy rates with a high patient acceptability and a similar adverse event rate. Extended OCP regimens have high patient satisfaction rates, lower discontinuation rates with both clinical and personal advantages. Reducing the HFI to four days ensures ovarian suppression, inhibits follicle development and decreases hormone withdrawal symptoms.

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