ORAL CONTRACEPTIVES

Background

1. Available since 1960
    - Initial estrogen dose 150 mcg
    - Current estrogen dose 20-50 mcg (<35 mcg of ethinyl estradiol is standard)
2. Most commonly used birth control in the United States

Contraindications

1. Relative
    - Gallbladder disease
    - Interacting drugs (anticonvulsants, medications that increase potassium (ACEI, ARBs, K+ sparing diuretics) if using drospirenone containing pills like Yaz, Yasmin)
    - Obese women >35 y/o
    - Pregnancy or lactation <6 weeks postpartum[4]
2. Absolute
    - Previous thromboembolism or stroke[4]
    - Cardiac or vascular disease[4]
    - Uncontrolled HTN[4]
    - Liver Disease
    - History of estrogen-dependent tumor (breast, endometrial)
    - Undiagnosed abnormal uterine bleeding
    - Smokers >35 y/o[4]
    - Migraine headaches with aura[4]
    - Known thrombogenic mutations

Types

1. Combined OCP
    - Estrogen is ethinyl estradiol
    - Several types of progestins
        - Levonorgestrel
        - Norethindrone
        - Drospirenone
        - Ethynodiol diacetate
        - Newer progestins:
            - Norgestimate and Desogestrel
            - Appear to have least androgen activity
            - Less side effects and metabolic complications
    - Monophasic (Loestrin, Lo-Ovral, Ortho-cept, Ortho-Novum, Modicon, Demulen)[6]
        - Same dose of estrogen and progestin for 21 days
    - Multiphasic (Ortho-Novum 7/7/7, Ortho Tri-Cyclen, Ortho Tri-Cyclen Lo Triphasil) [6]
        - Varying dose of estrogen, progestin or both
    - Continuous (Seasonale) [6]
        - Active pills for 3 months with one pill-free week
    - Low dose (Loestrin, Ortho Tri-Cylcen Lo) [6]

        - 20-25 mcg ethinyl estradiol
    - Moderate dose [6]
        - 30-35 mcg ethinyl estradiol
    - High dose (Demulen 1/50) [6]
        - 50 mcg ethinyl estradiol
2. Progestin only pills (Micronor, Nor-QD)
    - 35mg Norrthindone

Mechanism of Action

1. Inhibition of ovulation and decreased receptivity to implantation
    - Estrogen
        - Inhibits FSH, regulates bleeding to occur at scheduled intervals[5].
    - Progestins
        - Inhibit LH and FSH, thicken cervical mucus, inhibit implantation via endometrial thinning and atrophy.
2. Approximately 2% of cycles with spontaneous ovulation on low dose pills

Effectiveness

1. Effectiveness of over 99% if taken correctly
    - Typical use: 3-5% failure rate
2. Noncompliance with daily pill taking compromises efficacy
3. Effectiveness of OCPs reduced by
    - Anticonvulsants
        - Barbiturates, carbamazepine, phenytoin, primidone
    - Antibiotics
        - Rifampin, tetracycline, griseofulvin
4. Effectiveness of medications reduced by OCPs
    - Anticonvulsants
    - Imipramine
    - Insulin
    - Theophylline

Method of Use

1. Starting pills
    - No pelvic exam necessary before prescribing. Effective counseling about efficacy, appropriate use, expected side effects and risk required[5].
    - Quick start
        - Take first pill the day they are prescribed
    - Sunday start
        - Take first pill the Sunday after next menses
2. Use back-up form of contraception for at least seven days after first starting pill[5]
3. Follow-up visits not necessary unless co-morbid condition such as HTN[5].
4. Missed pills
    - Use back-up contraception for at least 7 days if >2 missed pills
    - Take missed pill as soon as possible and then resume pills as prescribed
5. Progestin only pill
    - Need to be taken at the same time every day
6. Hormonal emergency contraception: take within 12 hours after intercourse

- Plan B
- Combined OCP
  - 4 pills of OCPs containing 30-35mcg ethinyl estradiol, repeat in 12 hours
  - 5 pills of OCPs containing 20mcg ethinyl estradiol, repeat in 12 hours

Side Effects

1. Serious- Uncommon
   - Venous thromboembolism (DVT, PE)
     - Increasing estrogen dose related to higher risk
     - 3-6x increase in incidence (SOR:B)[4]
   - Ischemic stroke
     - 1.5x higher in women who smoke and take OCPs
     - 2-6x higher among women with Hx of migraine with aura (SOR:B)[4]
     - Increasing estrogen dose related to higher risk
   - Hypertension
   - Myocardial Infarction
   - Clotting disorders
   - Gallbladder disease
   - Liver Adenoma
   - Changes in lipid and glucose metabolism
   - Increased risk of cervical cancer risk after 5 yrs of combination contraceptive use with adjustment for HPV infection. (SOR:B)[4]
2. Common
   - Nausea
   - Breast tenderness
   - Headache
     - Low-dose pill (<20 mcg) can improve above symptoms
   - Breakthrough bleeding/ spotting
     - Common in first three months on the pill
       1. Avoid changing pills until after 3 months
       2. Decreases with increasing estrogen dose Consider increasing to 30 or 35 mcg pill if on 20 mcg pill
     - May try different type of progestin
   - Depression/other mood disturbance
   - Decreased sexual desire

Benefits

1. Decreased acne (Ortho Tri-Cyclen, Ortho Tri-Cyclen Lo, Ortho-cept) (SOR:A)[4]
2. Decreased benign breast disease (fibrocystic and fibroadenomatous)
3. Decreased iron-deficient anemia
4. Potentially decreased incidence of PID, ectopic pregnancy
5. Endometriosis
   - Pills decrease symptoms by inhibiting ovulation
6. PCOS
   - OCPs introduce cycle control
   - Decrease incidence of cysts

- Decrease androgens
- Caution due to possible worsening of insulin resistance

7. Dysmenorrhea (SOR:B)[4]
    - Combination contraceptives decrease menstrual cramping
8. Cancer prevention
    - Ovarian cancer
        - 50% decrease with use >5 years
    - Endometrial cancer
        - 70% decrease with 12 years of use
    - Colorectal cancer
        - Lower incidence, without regard to duration of combination contraceptive use (SOR:B)[4]

Alternatives

1. Transvaginal contraceptive ring
    - Recommend to women who want fewer days of menstrual bleeding and have trouble remembering to, or prefer not to, take daily pill
2. IUD
    - Levonorgestrel-releasing intrauterine device (IUD). Effective for 5 years[5].
    - May cause abnormal bleeding for 3-6 months after insertion followed by possible amenorrhea. Beneficial for menorrhagia, dysmenorrheal, endometriosis and adenomyosis related pain[5].
3. Implantable contraception
    - Releases etonogestrel (active metabolite of desogestrel). Effective for 3 years[5].
    - May cause abnormal bleeding patterns[5].
4. Depo-Provera
    - Progestin-only. Requires injection every 3 months[5].
    - Common side effects include abnormal bleeding patterns and weight gain[5].
    - Contraceptive of choice for women with seizure disorders and sickle cell disease[5].
        - The level appears to raise seizure threshold[5]
        - Depo-provera stabilizes RBC membrane[5]
    - May be of benefit for patients with iron deficiency anemia, dysmennorhea and ovarian cysts[5].
    - Decreases endometrial carcinoma incidence by 80%[5].

References

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3. Ellertson, C, Webb A, Blanchard K, et al. Modifying the Yuzpe regimen of emergency contraception: a multicenter randomized controlled trial. Obstet Gynecol 2003: 101:1160-7

4. Roederer MW, Blackwell JC, Blenning C. Risks and Benefits of Combination Contraceptives. American Family Physician, FPIN's Clinical Inquiries. 2006: 1;74(11): 1915-1916.
5. Blumenthal PD, Edelman A. Hormonal Contraception. Obstetrics and Gynecology 2008; 112:670-84.
6. Frye CA. An Overview of Oral Contraceptives, Mechanism of action and clinical use. Neurology 2006: 66 (Suppl 3):S29-S36.

Evidence-Based Inquiry

1. What are the risks of oral contraceptives for patients with cardiovascular disease risk factors?
2. Do antibiotics interfere with the efficacy of oral contraceptives?
3. What are the relative risks and benefits of progestin-only contraceptives?
4. What is the risk of adverse outcomes in a woman who develops mild hypertension from OCs?
5. What are the relative risks and benefits of combination contraceptives?
6. What hormonal contraception is most effective for obese women?
7. How does VTE risk for the patch and vaginal ring compare with oral contraceptives?
8. What is the risk of breast cancer in women who take oral contraceptives?

PURLs

1. When to suggest this OC alternative

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