Pediatric Pearls

Emergency contraceptive options available for adolescents

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ABSTRACT

QUESTION A 16-year-old female patient came into a clinic seeking consultation after unprotected coitus. What treatments are available if this patient does not want to continue with a pregnancy?

ANSWER Teen pregnancy is a substantial problem. Several emergency contraceptives exist, including the combined pill, the progesterone-only pill, and copper-bearing intrauterine devices. While many teenagers are unaware of these options, this armamentarium is very effective if used early after coitus and when further sexual activity is avoided for a few days.

RÉSUMÉ

QUESTION Une patiente de 16 ans m'a consulté à la clinique après avoir eu des relations sexuelles non protégées. Quelles sont les méthodes à la disposition de cette patiente si elle ne souhaite pas de grossesse?

RÉPONSE La grossesse chez les adolescentes est un problème important. Il existe divers contraceptifs d'urgence, comme la pilule combinée, la pilule à progestérone seulement et les dispositifs intra-utérins recouverts de cuivre. De nombreuses adolescentes ne sont pas au courant de ces options, mais cet arsenal thérapeutique se révèle très efficace s'il est utilisé peu après le coït et si on s'abstient d'autres activités sexuelles pendant quelques jours.

Nearly half of all pregnancies are unplanned,[1] and unintentional pregnancy during adolescence is troubling. In the United States, there are approximately 850 000 teen pregnancies yearly,[2] 78% of which are unintended.[3] Although teen pregnancies have steadily decreased through the 1990s, 35% of female patients become pregnant before they reach the age of 20.[2] Canada, in comparison, has far fewer teen pregnancies, with just over 42 000 in 1997.[4]

While many teens are sexually active, studies show that they are unaware of emergency contraceptive pills (ECPs). In 1 study, only 15% of girls aged 12 to 14 had heard of ECPs, compared with 44% of girls aged 15 to 16 and 51% of girls aged 17 to 18. Over 70% underestimated how long after intercourse ECPs could be initiated.[5] After being informed about ECPs, however, 64% of teenagers said they would likely use them[5]. ECPs were prescription only at the time of the study.

Emergency contraceptives

Three types of emergency contraceptives are available in Canada: the combined pill, the progesterone-only pill, and copper-bearing intrauterine devices. The combined pill, commonly known as the "morning-after pill" contains ethinyl estradiol (estrogen) and levonorgestrel (progesterone). It should be taken as soon as possible after unprotected intercourse and again 12 hours later.[1,6] This regimen is known as the Yuzpe method, named after the Canadian gynecologist Albert Yuzpe, who first demonstrated the use of the combined pill for postcoital contraception.[1] Using the combined pill will not disrupt an established pregnancy, and it is not considered teratogenic.[1,6] While some studies recommend that women with a history of migraine headaches or thromboembolism choose an alternate ECP, hormonal exposure with the combined pill is relatively short and can be considered safe for this population.[1]

The progesterone-only pill contains levonorgestrel and is marketed as Plan B. It should be taken as soon as possible after unprotected intercourse and again 12 hours later.[1,6] If a patient vomits within 2 hours of taking either the combined pill or the progesterone-only pill, some clinicians recommend the pill be taken again.[1] To reduce nausea and vomiting that are frequently induced by these pills, the nonprescription antinausea medicine meclizine is recommended and has been shown to reduce nausea and vomiting by 27% and 64%, respectively.[1]

Copper-bearing intrauterine devices can be inserted 5 to 7 days after ovulation and have been shown to be very effective (99%) at preventing pregnancy. They are not commonly inserted in adolescents, however,

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because many adolescents run the concurrent risk of contracting sexually transmitted diseases leading to pelvic infections and possibly infertility.[1,6,7]

Mifepristone (RU-486), an abortifacient not approved for use in Canada, has been shown to have tremendous potential as an emergency contraceptive in lower doses. It works by a competitive interaction with progesterone at receptor sites.[6]

Efficacy studies

Many studies have been conducted on each of the 3 ECPs to document efficacy and likelihood of side effects. One large study of more than 1900 women done by the World Health Organization,[8] and another study involving more than 800 women[9] compared effectiveness of the Yuzpe method and treatment with levonorgestrel within 72 hours of unprotected sex. In the larger study the pregnancy rate was 3.2% (95% confidence interval [CI] 2.2-4.5) in the group using the Yuzpe method and 1.1% (95% CI 0.6-2.0) in the group using levonorgestrel, giving a crude relative risk of 0.36 (95% CI 0.18-0.70) for pregnancy.[8] In the smaller study pregnancy rates were 2.6% and 2.4% for the Yuzpe and levonorgestrel groups, respectively.[9] The proportion of pregnancies prevented in the larger study was 57% and 85% in the Yuzpe and levonorgestrel groups respectively.[8] In a subgroup analysis of 1157 women who met criteria for correct use of the assigned regimen, pregnancy rates were 1.9% (95% CI 1.0-3.4) for the Yuzpe group and 0.9% (95% CI 0.3-2.0, $P=.22$) for the levonorgestrel group, giving a crude relative risk of pregnancy of 0.46 (95% CI 0.16-1.32). In this subgroup, the proportion of prevented pregnancies was 76% in the Yuzpe group and 89% in the levonorgestrel group.[8]

Women who had intercourse again within a few days of treatment were found to have higher pregnancy rates (5.3% vs 1.9% in the Yuzpe group and 1.6% vs 0.9% in the levonorgestrel goup).[8] The study found that, for both drugs, treatment within 24 hours of intercourse was more effective than treatment within 49 to 72 hours ($P=.01$).[8] Other studies show, however, that efficacy does not immediately fall to 0% after 72 hours, and the drugs can still be given.[1] Thus the "morning-after pill" is a misnomer and is misleading to many adolescents and adults.[1,5]

The US Food and Drug Administration approved mifepristone (RU-486) in 2000, but it is not yet approved in Canada. Two studies with a combined sample of 4700 women found that the percentage of pregnancies was 1.1% to 1.3% depending on the dose of mifepristone and whether the women had further intercourse within a few days of treatment (which increased the likelihood of pregnancy).[10,11] Women who received treatment more than 72 hours after intercourse and who did not engage in sexual activity within a few days had a risk of pregnancy similar to that among women who received treatment within 72 hours (relative risk 1.3, 95% CI 0.1-11.4).[10]

Adverse effects

Adverse effects were seen for all 3 drugs; they were most common among patients using the Yuzpe method. In a comparison of the Yuzpe method and levonorgestrel treatment, such symptoms as nausea, vomiting, dizziness, fatigue, headache, breast tenderness, and lower abdominal pain were all seen more frequently in the Yuzpe group.[8] Resumption of menses was comparable, however, between the 2 groups ($P=.67$), with 57% experiencing resumption within 3 days of the expected day.[8] Also, 31% of women treated with levonorgestrel experienced bleeding; 5% had a delay of menses of more than 7 days.[12]

Over the last 3 decades, teenagers have become sexually active at a younger age, resulting in increased pregnancy rates. The progesterone-only pill is as effective for preventing pregnancy as, and has fewer adverse effects than, the combined pill. Thus, use of the progesterone-only pill is recommended.

References

1. Trussel J, Ellertson C, Stewart F, Raymond EG, Shochet T. The role of emergency contraception. *Am J Obstet Gynecol* 2004;190(4 Suppl):S30-8.
2. National Campaign to Prevent Teen Pregnancy. *Teen pregnancy—so what?* Washington, DC: National Campaign to Prevent Teen Pregnancy; 2004. Available from: **http://www.teenpregnancy.org/whycare/pdf/sowhat.pdf**. Accessed 2004 July 26.
3. National Campaign to Prevent Teen Pregnancy. *Recent trends in teen pregnancy, sexual activity, and contraceptive use.* Washington, DC: National Campaign to Prevent Teen Pregnancy; 2004. Available from: **http://www.teenpregnancy.org/resources/reading/pdf/rectrend.pdf**. Accessed 2004 July 26.
4. Dryburgh H. Teenage pregnancy. *Health Rep* 2000;12(1):9-20. Available from: **http://www.statcan.ca/english/kits/preg/preg3.htm**. Accessed 2004 July 26.
5. Delbanco SF, Parker ML, McIntosh M, Kannel S, Hoff T, Stewart FH. Missed opportunities: teenagers and emergency contraception. *Arch Pediatr Adolesc Med* 1998;152:727-9.
6. Roye CF, Johnsen JR. Adolescents and emergency contraception. *J Pediatr Health Care* 2002;16:3-9.
7. American Academy of Pediatrics Committee on Adolescence. Emergency contraception. *Pediatrics* 2005;116(4):1026-35.
8. Task Force on Postovulatory Methods of Fertility Regulation. Randomised controlled trial of levonorgestrel versus the Yuzpe regimen of combined oral contraceptives for emergency contraception. *Lancet* 1998;352:428-33.
9. Ho PC, Kwan MS. A prospective randomized comparison of levonorgestrel with the Yuzpe regimen in post-coital contraception. *Hum Reprod* 1993;8:389-92.
10. Task Force on Postovulatory Methods of Fertility Regulation. Comparison of three single doses of mifepristone as emergency contraception: a randomised trial. *Lancet* 1999;353:697-702.
11. Xiao BL, von Hertzen H, Zhao H, Piaggio G, Wu SC, Huang J, et al. [Effects of mifepristone of different doses on emergency contraception, a randomized double-blind study]. *Zhonghua Yi Xue Za Zhi* 2003;83(10):813-8 [Chinese].
12. Von Hertzen H, Piaggio G, Ding J, Chen J, Song S, Bartfai G, et al. Low dose mifepristone and two regimens of levonorgestrel for emergency contraception: a WHO multicentre randomised trial. WHO Research Group on Post-Ovulatory Methods of Fertility Regulation. *Lancet* 2002;360:1803-10.

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