Reduced enterohepatic recirculation
Theoretically, broad-spectrum antibiotics might temporarily eradicate the gut flora responsible for the deconjugation of ethinyloestradiol metabolites interrupting the enterohepatic recirculation. In practice, the interaction between broad-spectrum antibiotics and COCs seems doubtful. To date, limited retrospective surveys with multiple limitations have been conducted on patients from outpatient clinics evaluating possible interactions between antibiotics and COCs. The American Council on Scientific Affairs (see further reading – Dickinson et al.) analysed pooled data and concluded that COC failure rates of 1.2 - 1.6% were found in women who were concomitantly treated with antibiotics. Although lower than the ideal failure rates predicted with perfect compliance, they are well within the range encountered with typical use. Multiple individual case reports implicate antibiotics prescribed to women using COCs as the cause of COC failure in compliant patients, but caution should be exercised in data interpretation because of recall bias and underreporting of poor compliance when confronted with an unplanned pregnancy.

Non-enzyme-inducing antibiotics have no effect on the progesterone-only pill since the progestogenic metabolites that are reabsorbed after the cleaving by gut bacteria are biologically inactive.

The above are theoretical mechanisms for COC failure when used together with antibiotics. It should be noted that there is little evidence of increased rates of COC failure in patients treated with antibiotics despite the extensive use of COC. In order to assist prescribers, clear recommendations are presented.

Recommendations
Rifampicin potently induces the hepatic metabolism of COCs, and extra contraceptive methods should be employed. Rifampicin is such a potent enzyme inducer that when given for only 2 days (to eliminate carriage of meningococcus), increased metabolism of ethinyloestradiol must be assumed for the following 4 weeks. Additional non-hormonal contraceptive cover should be used for that time. An alternative method of contraception to the COCs should be considered when treating patients with long-term rifampicin.

The jury is still out whether reduced enterohepatic circulation of COCs caused by disrupted gut flora is fact or textbook theory. Nonetheless, despite the shortage of convincing evidence linking antibiotic use with COC failure, it is possible that some individuals may be more prone to the COC-antibiotic interaction. Women more susceptible to COC failure when using antibiotics cannot currently be identified by any routine diagnostic tests. Given the serious consequences of unwanted pregnancy, a cautious approach is advisable when prescribing a short-term broad-spectrum antibiotic to women using COC. These patients should be informed about the small risk of interactions with antibiotics and, when not comfortable with the risk, should be counselled about the use of additional non-hormonal contraceptive methods. It is generally accepted that additional non-hormonal contraception should be used for the duration of antibiotic treatment and continued for 7 days after the last antibiotic dose. Should the 7 days run beyond the end of the COC pack, the next COC pack should be started with omission of the pill-free interval. Antibiotic courses exceeding 2 weeks allow gut bacteria to develop antibiotic resistance. Extra contraception precautions need to be continued only for the first 2 weeks and an additional 7 days (3 weeks in total) with elimination of the next pill-free interval. Should the first 2 weeks of antibiotic use extend into the last 7 days of the pack, eliminate the next pill-free interval as well.

Further reading

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