The effect of NuvaRing on lipid metabolism and hemostasis; two comparative studies

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Objective: To compare the effects of a novel combined contraceptive vaginal ring, NuvaRing (15 µg ethinylestradiol and 120 µg etonogestrel daily) and a combined oral contraceptive (COC) containing 30 µg ethinylestradiol and 150 µg levonorgestrel on lipid metabolism and hemostatic variables.
Methods: Two separate open-label comparative studies were carried out over 6 cycles (3 weeks ring/pill use and 1-week ring/pill-free) in 83 (lipid metabolism) and 87 women (hemostasis), respectively (50% of women received NuvaRing or the COC). Analysis of covariance was used for summary statistics.
Results: In the lipid study, total cholesterol did not change from baseline in either group. In contrast, HDL levels did not change with NuvaRing but decreased with the COC, whereas LDL levels increased with the COC, and did not change with NuvaRing use. Lipoprotein (a) levels decreased and triglycerides increased in both groups. In the hemostasis study, for most procoagulation variables there was no difference between NuvaRing and the COC, only Factor VII increased with NuvaRing (+8.8%) and decreased (-14.4%) with the COC. However, this variable has been shown to be unrelated to the occurrence of venous thromboembolism. Both Protein C and antithrombin (both anticoagulation variables) were significantly higher ($p<0.001$) with NuvaRing. Plasminogen increased and tissue plasminogen activator decreased in both groups. There were no differences in antifibrinolysis and fibrin turnover.
Conclusions: NuvaRing has little impact on lipid metabolism and hemostatic variables. The changes in lipid metabolism during NuvaRing use are consistent with the low androgenicity of etonogestrel. Most of the changes in hemostatic variables with NuvaRing tended towards reduced coagulation.