

# Contraceptive Hormone in Women with Familial Hypercholesterolemia (FH): More Questions than Answers

## CASE:

Young woman with FH, LDL consistently at approximately 150mg/dL on lipid lowering therapy. Fitted with Mirena IUD (levonorgestrel), LDL increased to 244mg/dL. Confirmed on repeat. Other secondary causes ruled out. IUD removed. LDL fell to 170mg/dL.

There are no published data on the use of OCPs in FH women

In the general population estrogen increases hepatic synthesis of apo B-100 leading to increased VLDL secretion<sup>1</sup> but also increases expression of the LDL receptor leading to reduced LDL. This latter effect appears to be mediated, at least in part, through downregulation of PCSK9.<sup>2</sup> Estrogen inhibits hepatic lipase and increases Apo A-I synthesis leading to increased HDL. Estrogen decreases Lp(a) by unknown mechanism. Progestins generally have opposite effects, except for the effect on Lp(a), though the mechanisms are unknown. More androgenic progestins have greater LDL raising effect.

In OCPs in the general population, the estrogen and progestogen components balance but the interplay of an LDL receptor defect with the above physiology is unknown.

In addition, the estrogenic component is thrombogenic. This does not appear to be a problem in non smoking women in the general population but FH women are at higher risk of atherothrombotic disease. Is “low dose” estrogen low enough in an FH population?

Nonetheless, women with FH need to understand the importance of- and should receive repetitive reinforcement regarding- not getting pregnant while on statin.

## BEST ADVICE:

**Have well documented baseline lipid values, prior to starting OCP. If levels show significant increase that cannot be managed with up titration of lipid lowering medications, consider switching OCP. Discuss with the patient her preferences.**

1. Sacks FM, Walsh BW. Sex hormones and lipoprotein metabolism. *Curr Opin Lipidol* 1994;5:236-240. 2. Hussain Y, Ding Q, Connelly PW, Brunt JH, Ban MR, McIntyre AD, Huff MW, Gros R, Hegele RA, Feldman RD. G-protein estrogen receptor as a regulator of low-density lipoprotein cholesterol metabolism: cellular and population genetic studies. *Arterioscler Thromb Vasc Biol.* 2015;35:213-221.