

University of Mosul
College of Medicine



Effect of Hormonal Contraceptives on Renal Function Tests

Shadan Abdulsatar Abdulfatah Al-Jomard

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In
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**Supervised by
Dr. Wahda B. Al-Youzbaki
Assist. Prof.**

Abstract

The aim of this study was to evaluate the effects of hormonal contraceptives (HC) on renal function tests that include serum urea, creatinine, sodium, potassium and calculated creatinine clearance in addition to detection of microalbuminuria in hormonal contraceptive users in Mosul city and their relation to the blood pressure (BP) changes and duration of their usage. A case control study design was adopted.

A total of 96 healthy married women, ages range between 19-40 years, from those who were attending AL-Khansa Family Planning Center in Mosul during the period from 15/10/2010 to 15/4/2011. The first group of them included 47 women who were taking Microgynon tablets which are one of monophasic, second generation combined oral contraceptive pills (COCPs) each contains (0.03 mg of ethinyl estradiol and 0.15 mg levonorgestrel) and these were considered as the COCPs users group, while the second group of 49 women taking progesterone-only injection, each injection contains 150 mg of depot medroxyprogesterone acetate (DMPA), are considered as DMPA users group. Both types of hormonal contraceptives have been used for more than 3 months. Another group of 51 healthy married women who did not use any hormonal contraceptives and were drawn from the same population and matched for age and body mass index (BMI) with the users group were considered as the non users groups. Blood samples (10 ml) and urine samples (5ml) were obtained from hormonal contraceptives users and non-user groups. The sera obtained from the blood samples were used for the estimation of urea and creatinine by commercial kits. Serum electrolytes level was measured using OPTI LION Stat Electrolyte Analyzer. Creatinine clearance was calculated using Cockcroft and Gault equation. The urine samples were used for the detection of microalbuminuria using *i*-chroma reader system.

The results of this study demonstrated that using of COCPs caused a significant increase in the mean of SBP and DBP in comparison to the nonuser

group. There was a significant higher level of serum creatinine and a significant lower level of creatinine clearance in the COCPs users group as compared with the nonusers group, but non-significant differences in the level of serum urea and electrolytes. Also there was a significant increase in the mean of MAU level of the COCPs users group in comparison to the nonusers group. There were non-significant positive correlations between SBP and MAU in addition to DBP and MAU level among COCPs users. There were non-significant variations in the renal function tests among COCPs user group according to duration of use except that there was a significant positive correlation between MAU and duration of usage of COCPs.

Regarding the DMPA users group in this study, there were non-significant changes on mean of blood pressure (SBP or DBP), serum urea, serum creatinine and creatinine clearance and serum electrolytes (sodium and potassium) while there was a statistically significant elevation in MAU level (but within the normal range in comparison with non-users group and lesser than the elevation caused by COCPs use

This study concluded that the use of COCPs is independently a cause of a significant increase of BP and MAU (although within normal range) but there were non-significant variations in the renal function tests among COCPs users group according to duration of usage except that there was a significant positive correlation between MAU and duration of usage of COCPs and the changes of MAU is irrespective to the BP changes. These data suggest that the use of COCPs may be deleterious from renal and cardiovascular disease point of view, while the use of progesterone-only injection (DMPA) has been considered relatively safe regarding renal function tests and in relation to BP and duration of use.



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