

EFFECT OF ORAL CONTRACEPTIVES ON LIVER FUNCTION

by

U. GUPTA,* M.D.

and

R. C. GUPTA,** M.D.

Introduction

The number of women taking contraceptive steroids is quite large and is expected to rise in future. Therefore, extensive research has been conducted to ensure the safety of contraceptive steroids. Several workers have reported derangement of hepatic function as indicated by a rise in serum enzymes, e.g. transaminases, isocitrate dehydrogenase, alkaline phosphatase, etc., following the use of oral contraceptives though reports to the contrary are not lacking. However, all these enzymes are widely distributed in the body and elevation of these enzymes in serum is not a specific indicator of hepatic injury. Therefore, we investigated the effect of an oral contraceptive (Primovlar; Schering) on serum ornithine carbamoyl transferase (OCT; EC 2.1.3.3.), which is mainly found in the liver (Reichard, 1962).

Material and Methods

Venous blood samples were collected on the fifth day after the onset of menstrual bleeding from 20 healthy women of reproductive age not taking any oral contraceptive (control group) and 10 healthy women of similar age range 3, 6 and 9 months after they started taking Primov-

lar. Serum OCT activity was assayed in each sample according to Sigma Technical Bulletin No. 108 (1975). The data were analysed statistically by Student's t-test.

Results

Serum OCT activity in control group and in women taking Primovlar is shown in Table I. The use of the oral contraceptive for 6 months led to a significant rise in serum OCT activity but the rise was not statistically significant after 3 and 9 months.

TABLE I
Serum OCT Activity in Control Group and in Women Taking Primovlar (All values are mean \pm SD)

	Serum OCT activity (Sigma Units/ml)	P value
Control group	382.5 \pm 191.8	—
Primovlar (3 months)	453.8 \pm 267.0	>0.05
Primovlar (6 months)	540.0 \pm 174.3	<0.05
Primovlar (9 months)	420.0 \pm 287.0	>0.05

Discussion

Effect of oral contraceptives on hepatic function has been studied by a large number of workers. Use of oral contraceptives has been reported to elevate serum gluta-

*Sr. Demonstrator in Physiology.

**Lecturer in Biochemistry.

R.N.T. Medical College, Udaipur.

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mic oxaloacetic transaminase and serum glutamic pyruvic transaminase (Eisalo *et al*, 1964; Thulin and Nermark, 1966; Larsson-Cohn, 1967; Jain *et al*, 1973), serum alkaline phosphatase (Jain *et al*, 1973) and serum isocitrate dehydrogenase (Stoll *et al*, 1965; Rathor and Khuteta, 1974). However, elevation of these enzymes does not provide conclusive evidence of hepatocellular damage because of their extensive tissue distribution.

OCT is found mainly in the liver (Reichard, 1962). Due to its great concentration in the liver, serum OCT is a specific and sensitive indicator of hepatic injury (Sigma Technical Bulletin No. 108, 1975). Thus elevation of serum OCT activity observed by us is very likely the result of hepatic injury caused by the use of the oral contraceptive. However, the decline in serum OCT activity 9 months after starting the oral contraceptive (when the activity became statistically indistinguishable from the control value) shows that the hepatic injury is short-lived and heals by itself with the continued use of the oral contraceptive.

Summary

Serum ornithine carbamoyl transferase (OCT) activity was assayed in 10 healthy women of reproductive age, 3, 6 and 9 months after they started taking an oral contraceptive (Primovlar; Schering), and

in 20 age and sex matched controls. Serum OCT activity rose significantly after the use of the contraceptive for 6 months. The activity declined and became statistically indistinguishable from the control value after 9 months.

As serum OCT is a specific and sensitive indicator of hepatic injury, the raised serum OCT activity appears to be due to hepatic injury caused by the contraceptive. The subsequent decline in activity shows that the hepatic injury is short-lived.

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