

STUDY ON TRIGLYCERIDE AND PHOSPHOLIPID IN PUERPERIUM

by

RABINDRA NATH BHOWMICK, M.B.B.S., D.G.O., M.O. (Cal)

Hyperlipidemia was established in respect of triglyceride and phospholipid in serial study on normal and abnormal pregnancies by the author (1972). The study of the same series, i.e. 50 pregnant mothers with normal pregnancy, P.E.T., pregnancy with essential hypertension were followed up here serially on 5th day of puerperium and 6-8 weeks postpartum. One patient of severe P.E.T. was followed upto 20 weeks postpartum. Results were compared with values at 36 weeks of pregnancy and value of 20 case of control. Subjects were of middle class families with average Hb%. History was taken to exclude diabetes, nephritis and clinical jaundice. Ages of patients varied from 17-37 years. Blood samples were collected in the morning with overnight fasting of 12 hours. Extraction and separation of both triglyceride and phospholipid were made from the same sample as modified by Nicolysen and Nigaard (1963). Presest method of estimation of glyceride glycerol is based on micro method of Van Handel and Zilver-smit (1957). Lipid phosphorus was determined from chloroform layer according to method shown by King and Wooton with modification by Fiske and Subbarow (1925).

Fifty cases were divided in 6 groups:

(1) Young primi .. 10 cases

(2) Elderly primi
(Uncomplicated) .. 3 cases
(3) Multipara .. 18 cases
(4) Grande multipara .. 6 cases
(5) P.E.T. (no
eclampsia) .. 8 cases
(6) Essential hypertension
with pregnancy .. 5 cases

On 5th day of puerperium triglyceride showed a magnitude of fall from 28% to 44% in all the groups and the fall is statistically significant. In phospholipid the magnitude of fall ranged from 10.4% to 16.4% in all groups. It is also statistically significant. In 6-8 weeks postpartum, magnitude of fall from 36 weeks of pregnancy ranged from 40.8% to 54.9% and 23.7% to 29.8% in both triglyceride and phospholipid respectively and the fall in all groups is highly significant, $P > .002$ to $.001$ (Table I). Table II shows comparative value of both fractions at 6-8 weeks postpartum with that of control.

The decline is more in triglyceride than phospholipid. At 6-8 weeks postpartum triglyceride level came to normal range of control in young primigravida and multiparous groups, but not in elderly primigravida and grande multiparous groups. The difference with control in young primis and multiparas is slightly significant but in the other group is highly significant. The phospholipid remained sufficiently high even at 6-8 week postpartum. Lowest magnitude of fall was seen in essential hypertension group and

Assistant Professor, Department of Obstetrics and Gynaecology, N.B. Medical College, Sushrutnagar, Siliguri, Darjeeling, West Bengal, Accepted for publication on 12-12-79.

TABLE I
Mean Value in mg% of Triglyceride and Phospholipid in Each Group on 5th Day and 6-8 Weeks Postpartum and Magnitude of Fall from 36 Weeks of Pregnancy with 'T' Value

		36 Weeks of Pregnancy	5th day Postpartum			6-8 Weeks Postpartum		
Young primi- gravida	Triglyceride	152.3 ± 6.7	106.2 ± 19.9	30.2%	4.30 P > .001	77.3 ± 8.5	49.2%	8.06 P > .001
	Phospholipid	263.9 ± 14.0	236.4 ± 10.6	10.4%	3.92 P > .002	198.6 ± 18.8	24%	7.02 P > .001
Elderly primi	Triglyceride	172.3 ± 7.7	124.0 ± 22.8	28%	2.94 P > .05	102.0 ± 7.0	40.8%	8.57 P > .002
	Phospholipid	272.0 ± 11.0	228.3 ± 11.9	16%	3.97 P > .02	194.0 ± 1.0	28.6%	7.80 P > .002
Multi- para	Triglyceride	151.7 ± 4.2	100.7 ± 17.6	33.6%	10.0 P > .001	80.3 ± 10.0	47.0%	17.0 P > .001
	Phospholipid	244.0 ± 11.5	213.0 ± 23.4	12.4%	4.10 P > .001	173.3 ± 11.0	28.9%	10.5 P > .001
Grande multi- para	Triglyceride	172.6 ± 9.3	109.3 ± 26.2	36.6%	5.2 P > .001	88.0 ± 6.7	49%	15.3 P > .001
	Phospholipid	268.0 ± 26.7	224.0 ± 26.7	16.4%	2.62 P > .05	188.0 ± 24.9	29.8%	4.35 P > .002
P.E.T.	Triglyceride	185.4 ± 34.3	124.6 ± 27.8	32.7%	3.34 P > .01	99.0 ± 17.8	46.6%	4.93 P > .001
	Phospholipid	284.1 ± 19.6	240.8 ± 23.9	15.2%	3.43 P > .01	207.5 ± 29.3	26.9%	5.24 P > .001
Essen- tial hyper- tension	Triglyceride	182.0 ± 18.7	102.0 ± 17.6	43.9%	6.29 P > .001	82.0 ± 7.2	54.9%	10.0 P > .001
	Phospholipid	292.6 ± 10.4	257.8 ± 11.6	11.2%	4.24 P > .01	223.0 ± 6.2	23.7%	12.0 P > .001

Control—Triglyceride 65.5 ± 8.5
(in mg%)

Range—51.0—80.0 mg%

Phospholipid 159.7 ± 12.4

Range—132.0—184.0 mg%

		CONTROL	6-8 wks.	T Value
Young primi gravida	Triglyceride	65.5 ± 8.5	77.3 ± 8.5	2.95 P > .01
	Phospholipid	159.7 ± 12.4	198.6 ± 18.8	5.63 P > .001
Elderly primi	Triglyceride	65.5 ± 8.5	102.0 ± 7.0	5.70 P > .001
	Phospholipid	159.7 ± 12.4	194.0 ± 1.0	3.61 P > .002
Multi- para	Triglyceride	65.5 ± 8.5	80.3 ± 10.0	2.82 P > .01
	Phospholipid	159.7 ± 12.4	173.3 ± 11.0	1.95 P > .1
Grande multipara	Triglyceride	65.5 ± 8.5	88.0 ± 6.7	5.0 P > .001
	Phospholipid	159.7 ± 12.4	188.0 ± 24.9	3.25 P > .01
P.E.T.	Triglyceride	65.5 ± 8.5	99.0 ± 17.8	5.31 P > .001
	Phospholipid	159.7 ± 12.4	207.5 ± 29.3	5.55 P > .001
Essential hypertension	Triglyceride	65.5 ± 8.5	82.0 ± 7.2	3.83 P > .001
	Phospholipid	159.7 ± 12.4	223.0 ± 6.2	10.2 P > .001

difference of mean value at 6-8 weeks with that of control in all groups except multipara and grande multipara is highly significant.

In one case of severe hypertension, blood pressure came down to almost normal immediately after delivery. On further follow up she developed hypertension subsequently but in spite of high blood pressure, triglyceride value came almost to normal range of control but phospholipid remained high. One case of fulminant pre-eclampsia was followed up upto 18 week postpartum. Both triglyceride and phospholipid values remained well above control.

Discussion

In the present study, decline of hyperlipidemic state in puerperium are in conformity with that of Boyd (1935), Schwarz *et al* (1940), Peters *et al* (1951). Though their mean were higher than that of present study due to their indirect method of

estimation of neutral fat. The present study did not find any difference of both values in lactating and non-lactating mothers as found by Boyd (1935). Dannenburg *et al* (1962) found subsequent rise in triglyceride value on 1st, 2nd, 3rd day of puerperium which was not found by other workers as Gupta *et al* (1978). In Konttisen *et al* (1964) series, 3 fraction of lipids were studied upto 5th day of puerperium. The decline is more or less in conformity with the present study in both normal pregnancy and P.E.T., though mean values are little higher. In Svanborg and Vikrot's (1965) serial study, triglycerides and phospholipid showed same magnitude of fall on 5th day. Aurel and Cramer (1966) are also of same opinion as that of the present worker. Triglycerides came almost to control limit in 2-3 months postpartum, but phospholipid value remained high. Present observation showed that routine follow up upto 6-8 weeks is not sufficient in all cases for the hyperlipidemic state of pregnancy

to come to non-pregnant control level. In P.E.T., a follow up beyond 20 weeks may be necessary. Higher values of phospholipid at 6-8 weeks postpartum in comparison to triglyceride is not clear. It has to be investigated further. Highest increase and lowest decline of phospholipid in essential hypertension group may point to a conclusion that effect of hypertension is better observed in phospholipids than triglycerides.

It is probable that mechanism of hyperlipidemia in pregnancy is a complex one. Many factors contribute to its production including excessive hormone production like growth hormone, H.P.L., steroids, placenta and foetus.

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