

STUDY OF THE LIVER FUNCTION TESTS IN NORMAL PREGNANCY
DURING THIRD TRIMESTER OF PREGNANCY

by

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SUMMARY

A study of various liver function tests in 50 cases of third trimester of pregnancy as compared to 25 normal non-pregnant cases was carried out. The conclusion was an insignificant variation persisting very much within normal limits. A change away from normal range warrants detailed scrutiny of the case.

Introduction

The varied reaction of liver function is commented upon by various authors in third trimester of pregnancy. The effect on oestrogen metabolites is more affected than the progestational compounds. There is a rise in serum alkaline phosphatase level in last month of pregnancy. Total cholesterol is raised but esterification is normal. Serum albumin is reduced and globulins rise.

To infer the predictability of the liver dysfunction, the study was undertaken and various liver function tests were evaluated such as:

- Serum bilirubin
- Serum alkaline phosphatase
- Serum glutamic oxalocetic transaminase
- Serum glutamic pyruvic transaminase

— Serum proteins (Total and differential).

Material and Methods

Seventy five cases were studied out of which 50 cases comprised study group with apparently normal obstetrical antenatal chart and no signs and symptoms of liver disease. Control group had 25 cases which were non-pregnant normal women of child bearing age. Thorough history taking, general physical examination, obstetrical examination, routine laboratory investigations, haemoglobin, bleeding time, clotting time, urine, VDRL, Rh ABO was done.

Venous blood was stored in a dry test tube at room temperature for half an hour, centrifuged and clear serum analysed for liver function tests.

Serum bilirubin was estimated with method of Malloy and Evelyn (1937). Serum alkaline phosphatase was estimated with the modified method of Bondansky.

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Control Group

TABLE I
Control Group

	Age varied from 17-40 years			Parity variable	
	Normal	Raised	Range	Mean	S.D.
Serum bilirubin	100%	—	0.3-0.8 mg/100 ml	0.56 mg%	0.3 mg
SAP	72%	28%	3.7-7.0 B. units/ 100 ml	4.5 B/Units	0.88 B. units/100 ml
SGOT	100%	—	5-23 K.U/ml	9.8 K.U/ml	4.7 K.U/ml
SGPT	100%	—	5-27 K.U/ml	11.7 K.U/ml	6.0 K.U/ml
Serum proteins	100%	—	6.7-7.4 gm%	7.6 gm%	0.18 gm%
Serum albumin	96%	(low 4%)	2.9-5.7 gm%	4.9 gm%	0.41 gm%
Serum globulin	100%	—	2.0-3.5 gm%	2.6 gm%	0.3 gm%

Study Group

TABLE II
Study Group

	Gestation age		Range	Mean	S.D.
	Normal %	Raised %			
Serum bilirubin	80	20	0.1-1.7 mg%	0.7 mg%	0.09 mg%
SAP	6	94	4.1-9.5 BU/100 ml	6.6 B.U%	1.3 ± 1.9 B.U.%
SGOT	88	12	5-73 KU/ml	20 KU/ml	15.2 KU/ml
SGPT	100	—	5-36 KU/ml	13.1 KU/ml	7.0 KU/ml
Serum protein	88	13 (Low 6 gms)	5.2-7.5 gm%	6.5 gm%	0.6 ± 0.9 gm%
Serum albumin	100	—	3.2-4.7 gm%	4.0 gm%	0.5 gm%
Serum globulin	100	—	1.4-2.9 gm%	2.4 gm%	0.13 gm%

S.G.O.T., S.G.P.T. was done by colorimetric method modified by Raitman and Frankel (1957).

Serum proteins were estimated by CuSO_4 gravity method. Serum protein concentration in gms/100 cc is equal to $369 \times$ serum sp. gravity (S.G.) — 1.007. 1.007 was sp. gravity of protein free plasma ultrafiltration.

Differential proteins were found out with Biuret method.

Reading test \times $\frac{\text{Total proteins}}{2}$
 Reading of standard = Albumin in gm/100 cc
 Serum globulin in gms% = Total serum proteins — serum albumin.

Normal values are:

Total serum proteins : 5.5 to 8.0 gms%
 Serum albumin : 3.5 to 5.5 gms%
 Serum globulin : 2.0 to 3.5 gms%

Comparing the above Tables (Tables I and II) thus the present study concludes

with the remark that some alterations in the liver function tests in the third trimester of pregnancy occur but they are within the normal physiological limits. These slight alterations are because of the increased load on liver and also because of high levels of oestrogen circulating in the late pregnancy. The raised levels of alkaline phosphatase do not reflect hepatic derangement but are of placental origin.

McNair and Jaynes (1960) found out that LFT are normal during first trimester of pregnancy. Changes usually start in the second, increase until the end of third trimester and return to normal soon after delivery.

Those values of the liver function tests when obtained beyond normal physiological limits, warrant a detailed scrutinisation of the underlying liver disease.

Reference

1. McNair, R. D. and Jaynes, R. V.: Am J. Obstet. Gynec., 80: 500, 1960.