

## ESTIMATION OF MATERNAL SERUM HPL LEVEL IN THREATENED ABORTION AND ITS PROGNOSTIC SIGNIFICANCE

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### SUMMARY

Human placental lactogen level was measured from sera of 20 cases of normal pregnancy below 20 weeks and the value ranged from  $0.054 \pm 0.03$  ug/ml at 5 to 6 weeks to  $2.2 \pm 1.7$  ug/ml at 19 to 20 weeks gestation. In normal pregnancy the levels showed a steady increase with the increase in gestation. A similar increase was found in 8 cases of threatened abortion which continued till term. In contrast in 7 cases in whom the levels showed falling trend on serial estimations and in 40 cases which showed low or undetectable levels on admission which ended in abortion. This suggests that human placental lactogen assay may be of prognostic significance in case of threatened abortion.

### Introduction

HPL is a protein hormone produced by syncytiotrophoblast of placenta in pregnant females. A good test of placental function is carried out by measurement of HPL level, as it is produced by placenta alone with a short half life and little diurnal variation. The modern technique of RIA has been able to estimate HPL in maternal serum even during early weeks of pregnancy. A fall in the level of serum HPL is therefore expected to reflect the status of placental function and thus the outcome of pregnancy.

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*Accepted for publication on 10/11/1989.*

The present study was undertaken to estimate the normal circulating HPL levels during pregnancy below 20 weeks and based on this data to assess the prognostic value of HPL determination in patients with threatened abortion.

### Materials and Methods

This study was carried out in the RIA laboratory of the Department of Obstetrics and Gynaecology, Gauhati Medical College during 1987-88.

In group A, 20 normal cases of pregnancy at different weeks of gestation, between 5 to 20 weeks, were studied and their serum HPL levels were estimated from 50 samples.

In group B, 55 cases of pregnancy

upto 20 weeks with history of hypogastric pain and bleeding per vagina (clinically diagnosed to be threatened abortion) were studied and their serum HPL levels were estimated from a total of 85 samples.

In 15 cases of group 8, serial estimations of serum HPL were done at weekly interval till the pregnancy definitely continued normally or ended in abortion.

Cases attending O.P.D. as well as those admitted in the ward were taken for the study. Cases with medical complications and cases clinically diagnosed to be hydatidiform mole, ectopic gestation, missed abortion, inevitable, recurrent or incomplete abortion were excluded from the study. 5 ml of venous blood was collected from the patient. Serum was separated by centrifuging within 12 mts at room temperature and stored in deep freeze at  $-20^{\circ}\text{C}$  till assay. The estimation was done as per protocol for RIA estimation of HPL using RIAK-2A kit, supplied by BARC, Bombay.

### Result

In group A the normal range of HPL as obtained from 50 samples from 20 women are shown in the Table I. All pregnancies continued without any complications and the HPL levels were found to increase as the pregnancy progressed. The value ranged from  $0.054 \pm 0.03$  ug/ml. (Mean  $\pm$  2 SD) at 5 to 6 weeks to  $2.2 \pm 1.7$  ug/ml. (Mean  $\pm$  2 SD) at 20 weeks gestation.

In 36 cases of group B, the serum HPL levels were lower than normal as shown in Table II and in 4 cases the levels were below detectable limits. All these 40 cases ended in abortion.

**TABLE - I**  
**HPL LEVEL IN NORMAL PREGNANCIES**  
**(MEAN  $\pm$  2 SD) UG/ML.**

Weeks of gestation	HPL level
5 - 6	$0.054 \pm 0.03$
7 - 8	$0.013 \pm 0.05$
9 - 10	$0.18 \pm 0.07$
11 - 12	$0.21 \pm 0.09$
13 - 14	$0.42 \pm 0.23$
15 - 16	$0.61 \pm 0.42$
17 - 18	$0.8 \pm 1.1$
19 - 20	$1.1 \pm 1.7$

**TABLE - II**  
**HPL LEVELS IN 36 CASES OF**  
**THREATENED ABORTION WHICH ENDED**  
**IN ABORTION (MEAN  $\pm$  2 SD) UG/ML.**

Weeks of gestation	No. of Cases	HPL Level
5 - 6	2	$0.02 \pm 0.01$
7 - 8	4	$0.06 \pm 0.03$
9 - 10	8	$0.07 \pm 0.03$
11 - 12	9	$0.09 \pm 0.07$
13 - 14	7	$0.12 \pm 0.1$
15 - 16	3	$0.31 \pm 0.2$
17 - 18	2	$0.61 \pm 0.3$
19 - 20	1	$0.85 \pm 0.4$

In 7 cases of group B though the HPL levels were within normal range initially, serial estimations showed falling levels of HPL and the cases ended in abortion.

In the remaining 8 cases of group B, the initial HPL levels were normal and the serial estimations showed rising levels. The pregnancies continued till term.

### Discussion

The normal range of HPL levels as obtained from 20 cases of normal pregnancy which continued till term without



any complication are comparable with the levels reported by Sivaprasad et al (1986). 40 cases of threatened abortion which showed low or undetectable HPL levels on admission ended in abortion. Similar was the observation of Genazzani et al (1969), Niven et al (1972), Jovanovic et al (1978), and Sivaprasad et al (1986). Though the initial HPL levels in 7 cases were within normal range serial estimations showed falling trend and the pregnancies ended in abortion. This is supported by Ganazzani et al (1969) and Sivaprasad et al (1986). Eight cases of threatened abortion which showed rising HPL levels on serial estimations, continued till term. Similar were the observations of Niven et al (1972) and Sivaprasad et al (1986).

help management and lead to a reduction in unnecessary inpatient stay.

#### Acknowledgement

We are grateful to the Principal and the Superintendent of Gauhati Medical College and Hospital for allowing us to conduct the study and to use the hospital records for publication. We are indebted to Dr. S. Duttachoudhury, Mrs. S. Choudhury and other staff of RIA laboratory of the Department of Obstetrics and Gynaecology, Gauhati Medical College, Guwahati for their kind help in conducting the study.

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TABLE - III  
SHOWING THE OUTCOME OF THE CASES OF THREATENED ABORTION IN  
RELATION TO SERUM HPL LEVEL AS OBTAINED BY DIFFERENT AUTHORS.

Authors	Total cases	Preg. cont. with normal HPL level	Preg. contd. with low HPL level	Abortion with low HPL level	Aborted with normal HPL level
Genazzani et al (1969)	13	5	—	8	—
Niven et al (1972)	236	69	—	141+12*	14***
Jovanovic et al (1978)	12	3	—	8	1**
Sivaprasad et al (1986)	90	31	1	57	1
Present Series (1987-88)	55	8	—	47	—

\*Ectopic Pregnancy \*\*At 25 weeks \*\*\*Aborted after discharge.

Threatened abortion is a common obstetric problem. It is often difficult to assess the outcome of such a case on clinical grounds alone. Human placental lactogen assay may be useful prognostic index in cases of threatened abortion. It can thus

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FIGURE - 1

