

## THE FETAL BIOPHYSICAL PROFILE IN HIGH RISK PREGNANCY

PRAKASH K. MEHTA ● PUSHPA SRINIVAS

### SUMMARY

Seventy five biophysical profiles were studied in 65 high risk pregnant patients using Mannings Criterion at gestational age of 34 to 44 weeks. The test was repeated weekly if the pregnancy continued beyond 7 days of the scoring. 93.4% patients had normal test results with one perinatal mortality which was due to septicemia. A score of 6 or less was found in five cases, of which in one case neonatal death due to asphyxia was recorded. A high biophysical profile score correlates well with perinatal well being.

### INTRODUCTION

Accurate perinatal recognition of fetal risk remains a major challenge in modern perinatal medicine. Several antepartum fetal assessment tests have evolved over the decades (Levino & Cunningham, 1988). The fetal biophysical profile scoring is an antepartum assessment based on five different biophysical variables and includes fetal movements, fetal tone, fetal breathing movements, amniotic fluid volume and non stress test. The present study was carried out with aim of finding the relationship between biophysical profile score and perinatal outcome in high risk pregnancies.

### MATERIALS AND METHODS

In this prospective study high risk pregnant patients were selected from Obstetric department of Vanivilas Hospital, Bangalore Medical College, Bangalore. The criterion for selection was the presence of a high risk factor, willingness to be a in patient till the time of delivery and undergo repeated testing if necessary. The period of study was from June 1989 to May 1990. A total of 65 patients were studied. 75 biophysical profile score were done for these patients. All patients after admission underwent obstetric examination and the antenatal investigations. The patients were also taught to keep a fetal kick count. The period of amenorrhea in these patients ranged from 34 to 44 weeks.

Non stress test was done using AFM 210 cardiotocograph while ATL Ultramark 4 scanner was used for ultrasonography. Each biophysical variable was coded as normal or abnormal according to Manning's criterion (Ref. Manning et al, 1980). The biophysical profile was repeated if pregnancy continued for 7 days after the test. The biophysical profile score was not used as a criterion in deciding the time and mode of delivery. The end points used to assess the outcome of pregnancy were

1. Fetal distress in labour.
2. 5 minutes Apgar score and
3. Perinatal mortality.

**OBSERVATIONS & RESULTS**

The high risk pregnancy factors in the study group were as shown in Table - I. The bio-

physical profile scoring was done once in 57 patients, twice in 7 patients and 4 times in one patient. The results are as shown in Table - II, III, IV & V.

**DISCUSSION**

The fetal biophysical profile is a test of fetal well being with high predictive value (Ref. Manning et al, 1980). The distribution of the fetal score in this study indicates that majority of the tests were normal (93.4%). Manning et al (1985) also obtained a normal score in 97.5% of the patients. The obtained test result distribution with the fetal biophysical profile may indicate a improved ability to differentiate the normal fetus from the asphyxiated fetus. The higher incidence of normal results in high risk cases leads to less anxiety and reduces the need for prolonged,

Table I

The Fetal Biophysical Profile in High Risk Pregnancies

**Risk Factors**

Factor	n	%
Hypertension	16	24.6
Bad obstetric history	11	16.9
Post term	8	12.3
Diabetes mellitus	3	4.6
Combination of above with IUGR	7	10.8
Conceived after prolonged infertility	4	6.2
Unsure dates	4	6.2
Loss of fetal movements	1	1.5
Others including anemia, heart disease, bronchial asthma & epilepsy	11	16.9
<b>Total</b>	<b>65</b>	<b>100.0</b>

Table II

The Fetal Biophysical Profile in High Risk Pregnancies

Test Score Distribution

Score	Number of Tests	%
<b>Normal</b>		
10	40	53.4
8	30	40.0
<b>Abnormal</b>		
6	3	4.0
4	2	2.6
0-2	0	0.0
<b>Total</b>	<b>75</b>	<b>100.0</b>

Table III

The Fetal Biophysical Profile in High Risk Pregnancies

Fetal Distress During Labour

Biophysical Profile Score	n	Fetal Distress	
		Present	Absent
Normal	60	3	57
Abnormal	5	1	4
<b>Total</b>	<b>65</b>	<b>4</b>	<b>61</b>

Specificity : 93.4%

False negative rate : 5%

repeat or alternate fetal assessment.

Since nervous tissue function is highly sensitive to hypoxia it seems reasonable to assume that when a coordinated complex fetal biophysical activity is observed, the central nervous system is not hypoxic. The ability to predict continuing fetal survival for finite

interval has major clinical implications for both the mother and the fetus. The art of obstetrics is based on the balancing of risks. The higher probability of continued fetal survival when the biophysical profile is normal can be of major importance in reaching appropriate management decision.

Table IV

## The Fetal Biophysical Profile in High Risk Pregnancies

## 5 Minute Apgar Score and Test Result

Biophysical Profile Score	n	5 Minute Apgar	
		7 or more	Less than 7
Normal	60	59	1
Abnormal	5	3	2
Total	65	62	3

Specificity : 95%

False negative rate : 1.6%

Table V

## The Fetal Biophysical Profile in High Risk Pregnancies

## Perinatal Mortality &amp; Test Result

Biophysical Profile Score	n	Perinatal Mortality	
		Absent	Present
Normal	60	59	1
Abnormal	5	4	1
Total	65	63	2

Specificity : 93.6%

False negative rate : 0.0% (The cause of perinatal mortality in the baby with biophysical profile score normal was septicemia).

## ACKNOWLEDGEMENT

We thank the head of the department of Obstetrics and Gynaecology, Bangalore Medical College for the kind permission to utilise the Hospital data.

## REFERENCES

1. Levino K. & Cunningham G. : *Williams Obstetrics supplement No. 19, Aug. / Sept. 1988, Wyeth Ayrest Laboratories, Philadelphia.*
2. Manning FA., Platt LD., Sijos L. : *Am. J. Obstet. & Gynec. 136 : 787, 1980.*
3. Manning FA., Morrison I., Lange R., Harman C. & Chamberlain Am. J. Obstet. & Gynec. 151 : 343, 1985.