A CROSS-SECTIONAL RESEARCH TO EVALUATE THE BAD PERINATAL OCCURRENCE AMONG THE PATIENTS HAVING POOR BIO-PHYSICAL FEATURES

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Abstract:

Objective: This study was conducted to evaluate the rate of bad perinatal consequences of patients having poor health conditions.

Materials and Methods: We conducted this cross-sectional descriptive study at Services Hospital, Lahore (July 2017 to March 2018). In this study 273 patients, ageing from 20 to 35 years were observed. All the patients were having pregnancies of singleton nature and on ultrasound analysis, they all were having a poor biophysical profile (BPP) (A score of <8 out of 10 by taking 5-parameters). From 32 to 42 weeks was the usual gestational age. The rate of parity and the adverse perinatal result had been measured. The data was classified for controlling the modifiers as parity, maternal and gestational age.

Results: The total number of patients was 273, in which the patients from 20 to 25 years of ages were 42.1% (115), the patients from 26 to 30 years of ages were 35.6% (97) and the patients from 31 to 35 years of ages were 22.3% (61). The number of patients, having gestational age from 32 to 37 weeks, was 35.5% (97) and those having gestational age from 38 to 42 weeks were 64.5% (176). Most of the patients had been multiparous 59.0% (161) and most of them had cesarean 72.2% (197) and their Apgar score was poor at 5 minutes 90.1% (246).

Conclusion: The rate of adverse perinatal consequences, of patients having poor BPP (biophysical profile), like cesarean and Apgar score (at five minutes) was higher.

Keywords: *Cesarean Section, Poor Biophysical Profile, Gestational Age and APGAR Score.*

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INTRODUCTION:

The BPP is a test which is noninvasive and which envisages the absence or presence of fetal asphyxia and consequently the danger of death of the fetal during the antenatal phase [1]. After biophysical profile establishes that the fetus is a compromised one, then the death of the fetal due to metabolic acidosis can be prevented through proper actions [2 – 3]. The sources from which BPP takes its data are FHR (Fetal Heart Rate) monitoring and ultrasound images. For observing the types of movements of fetal and to calculate the AFV (amniotic fluid volume), B-mode real-time (dynamic) ultrasonography is utilized. We gain nonstop efficient reading of FHR by a microprocessor of high speed combined with pulsated Doppler transducer [4]. It is an antepartum testing principle that it predicts more accurately about the wellness of the fetal proportionately to the variables taken into consideration. Clinically BPP is a tool which combines a practical standard with bio-physical actions [5]. If the BPP score is 10 and the variables of ultrasound are not abnormal then the variable of FHR is omitted as it does not influence the BPP accuracy of prediction. However, if the variables (one or more) of ultrasound are abnormal then Non-Stress Test (NST) is performed [6].

It is observed in fresh research that adverse results are significantly higher in patients of abnormal BPP, showing cesarean rate 77% and 100% of less than eight Apgar score (at five minutes) [7]. Another research shows these results higher significantly (P <0.001) as compared to normal BPP. The patients in this research belong to a remote area and they cannot afford expensive and invasive tests, therefore, this research is conducted for predicting the absence or presence of adverse fetal result so that to manage it in time and to use the findings of this research in the future practice too.

In the gestation age from 32 to 42 weeks, the BPP is poor if the score is less than eight (<8) out of ten (10), the score was measured, on 5-parameter, through ultrasonography: movements, fetal breathing, amniotic fluid index, nonstress test and tone [9]. Cesarean section: delivery through abdomen, Apgar score (at 5 minutes) i.e. ≤ 8 is taken to be poor Apgar score.

MATERIALS AND METHODS:

We conducted this cross-sectional descriptive study at Services Hospital, Lahore (July 2017 to March 2018). The research included the patients in the age bracket of 20 to 35 years, females' patients through ultrasound checking have poor BPP i.e., a score less than eight (< 8) out of ten (10) on five-parameters. The nature of pregnancy was singleton as shown by the ultrasonography. From 32 to 42 weeks was the age of gestation as established by the ultrasonography. We did not include female having congenital fetal anomalies in medical history or record. Women who need to have Elective Lower Cesarean.

As soon as our scheme of the study was approved by the ethical committee, with the consent of the patients, 273 women were registered. The patients were physically examined and their history was recorded. Their poor BPP was confirmed through ultrasound. A follow up of all the patients was undertaken up to the delivery and results of adverse perinatal, poor Apgar score/cesarean section was noted. the record was maintained on a pro forma already designed for this purpose. Gestational age, maternal age, standard deviation and mean were derived from descriptive statistics. The data had been analyzed through SPSS. The result i.e., parity of subjects and adverse perinatal results like the poor Apgar score at 5-minutes and cesarean section, were shown as percentage and frequency. The data was classified to control the modifiers such as gestational age, parity and maternal age.

RESULTS:

Of all 273 cases of BPP, the standard deviation was 4.2 with the mean age of 27 years. The patients in a range of ages from 20 to 25 years were 42.1% (115), from 26 to 30 years were 35.6% (97) and from 31 to 35 years were 22.3% (61). The gestational age mean was 37.8 weeks having standard deviation of 2.0. The number of patients having gestational age from 32 to 37 weeks was 35.5% (97) and those having gestational age from 38 to 42 weeks were 64.5% (176). Mostly there were multiparous patients 59.0% (161) with nulliparous 41.0% (112). Noting adverse perinatal results, most of the patients had cesarean section 72.2% (197) and calculating Apgar score at 5-minutes, most of them had poor Apgar score at 5-minutes 90.1% (246).

Table – I: Normal and Abnormal Parameters

Parameter	Normal (2 Points)	Abnormal (0 Points)
NST/Reactive FHR	At least two FHR acceleration of > 15 bpm from baseline in 30 minutes period.	Less than two accelerations to satisfy the test in 30 minutes
US: Fetal breathing movements	At least one episode of a prolonged breathing movement of > the 30s in 30 minutes	Less than 30s of fetal breathing movements in 30 minutes
US: Fetal activity/gross body movements	≥ 3 movements in 30 Minutes	Less than three or absence of movements
US: Fetal muscle tone	At least one episodes of limb flexion	No evidence of fetal movement or flexion
US: Qualitative AFV/AFI	At least one largest cord-free pocket or fluid of > 1 cm	Less than 1 cm pocket of fluid.

Table – II: Age and Gestational Age Stratification

Poor Bio-physical Profile		Number (273)	Percentage
Age	20-25 Years	115	42.10
	26-30 Years	97	35.60
	31-35 Years	61	22.30
Gestational Age	32-37 Years	97	35.50
	38-42 Years	176	64.50
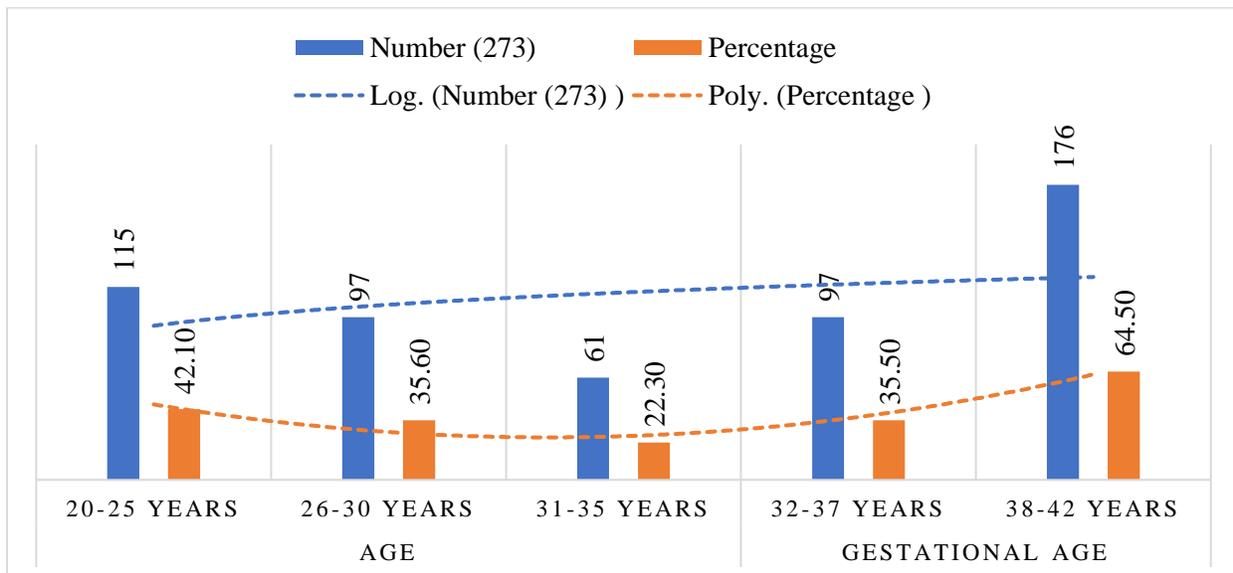
Table – III: Parity, Cesarean Section and APGAR Score

Features		Number (273)	Percentage
Parity Status	Nulliparity	112	41.00
	Multiparity	161	59.00
Cesarean Section	Yes	197	72.20
	No	76	27.80
Poor APGAR Score	Yes	246	90.10
	No	27	9.90
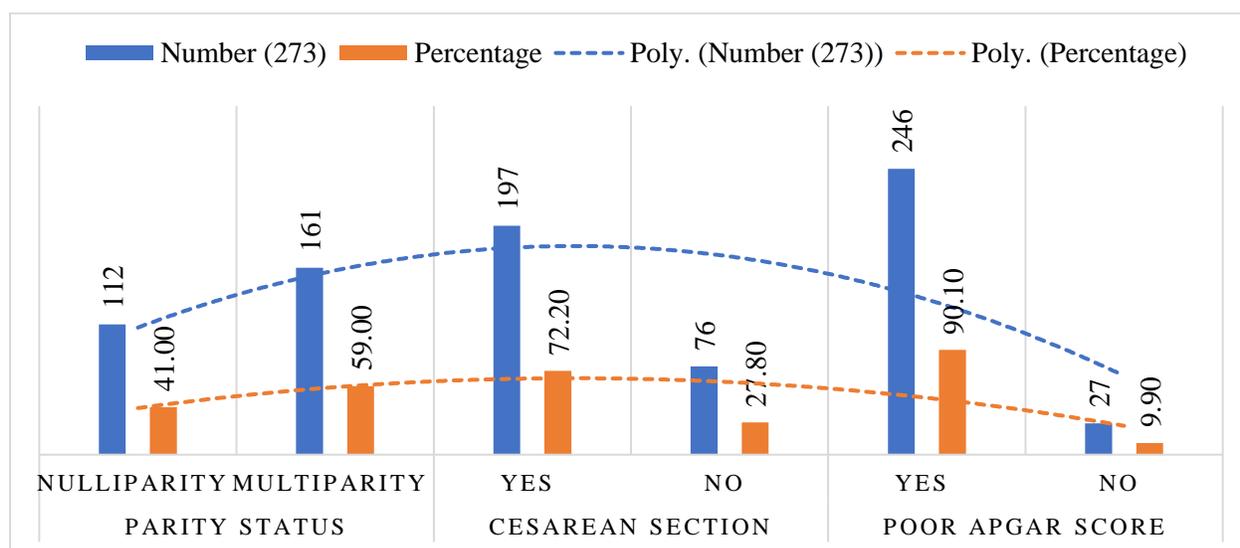
DISCUSSION:

In our research, the patients in a range of ages from 20 to 25 years were 42.1% (115), from 26 to 30 years were 35.6% (97) and from 31 to 35 years were 22.3% (61). Sharma found that there is no connection of age with the pregnancies of high risk [8]. In this research, most of the women were in the range of ages from 20 to 30.

Most of the patients, in our research, were from 38 to 42 weeks of gestational age which is 64.5%. maternal glucose, maternal magnesium administration, gestational age of more than 42 weeks or less than 33 weeks, labour, alcohol ingestion and rupture of membranes are the aspects which affect the scoring of BPP [9]. Most of the patients had a cesarean section in our study 72.2% (197) and it is one of the important features of this research. Manandhar BL research shows that perinatal mortality risk is increased up to 50% (p=0.000) due to abnormal BPS [10]. His research did not show any relation of morbidities of the neonatal and Apgar score but it did show a significant relation of BPS with cesarean section. This

study revealed that 60% (9 out of 15) patients of BPS 8 and 75% (3 out of 4) patients of BPS 4 group were cesarean cases.

The poor Apgar score at 5-minutes, in our research, was observed of 90.1% (246) women. While it seems that this proportion is high, but a thorough examination showed that there is no connection between poor Apgar score and poor BPP [10]. As opposed to our study, research by Hina showed a positive relationship between Apgar score and BPP [11]. The difference in the result of the two studies can be explained as the number of patients with IUGR babies (it was 12% in Manandhar BL research and in the other research it was 35%) [10, 11].

Cochrane carried out an evaluation of the risky pregnancies using BPP, observed that there was no difference between groups of Apgar score < 7 at 5-minutes and groups of perinatal deaths [2, 12]. The group of BPP patients were in the more risk of having a cesarean section. Further researches were

recommended for ascertaining the effectiveness of BPP regarding pregnancies of high risk.

Mostly it is observed that normal BPP is a sign of the perinatal existence [13]. An embryo having low BPP score is prone to a greater mortality rate of perinatal nature, admission to the neonatal unit, five-minute Apgar score less than seven, intrauterine growth restriction, umbilical artery pH less than 7.20 and a higher incidence of fetal distress. The accuracy of BPP is supplemented by these studies and gives the understanding of fetal compromise too [14].

The biophysical profile is more sensitive in comparison to NST method as BPP scoring has more specificity and sensitivity. Both the methods had a similar value of negation [15]. A decrease in the occurrence of cerebral palsy was observed using BPP as an instrument in antepartum evaluation comparing with patients who were untested. The probability of cerebral palsy rises with a low score [15].

BPP provides objective evaluation (a numerical value) of the different physical organs of the embryo which may be affected because of fetal academia and hypoxia. A system of this type of recording gives the physicians a standard through which risky pregnancies and fetuses can be managed uniformly. After biophysical profile establishes that the fetus is a compromised one, then the death of the fetal due to metabolic acidosis can be prevented through proper actions.

The patients, in this research, belong to a remote area and they cannot afford expensive and invasive tests, therefore, this research is conducted for predicting the absence or presence of adverse fetal result so that to manage it in time and to use the findings of this research in the future practice too.

CONCLUSION:
The rate of adverse perinatal consequences, of patients having poor BPP (biophysical profile), like cesarean and Apgar score (at five minutes) was higher. BPP provides an objective evaluation in the form of a numerical value that may be utilized to ascertain the different levels of a compromised fetal. The BPP (biophysical profile) yields great help in the assessment of the of the wellbeing of a fetal in the risky pregnancies of adverse perinatal outcome.

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