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Correlation in Between Age, Weight, Parirty, ANC Visits and weeks of Gestation of Mother and Neonatal Congenital Anomalies

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Abstract
Congenital anomalies leads to long-term disability. various risk factors like advanced maternal and paternal ages, parental consanguinity, teratogenic agents, like infectious agents and drugs, and nutritional deficiencies . Rubella, cytomegalovirus, varicella and toxoplasma are infectious agents that are transmitted to the fetus and cause adverse effects..

Aims and Objectives: *To study the proportion of congenital anomalies at tertiary rural health care and correlation in between age ,weight ,parirty, anc visits and weeks of gestation of mother and neonatal congenital anomalies*

Sample Size: *we took a sample size of 150 patients. All neonates diagnosed with any congenital anomalies born in or coming to nicu of prh..*

Results: *Most of the anomolies were in the age group of 26 to 32 and in above 32 years of age there were 55 anomalies. majoriity of anomolies were in the mothers below 60 kg weight the mean weight of the mother was 53.2.only 41 mothers attended 3 ANC visit prior to delivery whereas 81 attended for 2 times and 48 for 1 once The number of anomalies were high in newborns with gestational age between 32-36 weeks[89followed by those with gestational age above 36 weeks [69Twelve newborns were of gestational age of below 32 weeks*

Conclusion: *Most of our babies with anomalies belonged to mothers with age above 30 years thus highlighting importance of relation in mothers age and pregnancy.*

Introduction

Congenital anomalies are the developmental disorders present at birth. The prevalence and pattern of congenital anomalies varies between regions and may also vary over time. An estimated 303000 newborns die within 4 weeks of birth every year, worldwide, due to congenital anomalies.

According to the World Health Organization (WHO) document of 1972, the term congenital malformations should be confined to structural defects at birth.[1] According to the World Health Organization (WHO) the term congenital anomaly includes any morphological, functional, biochemical or molecular defects that may develop in the embryo and foetus from conception until birth, that is present at birth, whether detected at that time or not[2].

However, as per the more recent WHO fact-sheet of October 2012, congenital anomalies can be

defined as structural or functional anomalies, including metabolic disorders, which are present at the time of birth.[3] Structural malformations with other Congenital anomalies are one of the most important cause of neonatal mortality both in developed and developing countries. It accounts for 8-15% of Perinatal deaths and 13-16% of neonatal deaths in India.[4]

Congenital anomalies causes long-term disability, and have significant impacts on life of individuals, families, health-care systems, and societies all over, 90% of all infants with a serious congenital anomaly are born in middle and low-income countries, with poor economic conditions and it is very difficult to collect. Comprehensive data on congenital anomalies in these countries[5]. Various environmental factors are identified to be risk factors for congenital anomalies among infants.. most common of the risk factors include advanced maternal and paternal ages, parental consanguinity, teratogenic agents, infectious agents and drugs like thalidomide and nutritional deficiencies of iron folic acid etc[6,7]. Rubella, cytomegalovirus, varicella and toxoplasma are infectious agents that are very likely to be transmitted to the fetus from mother and cause adverse fatal effects. Maternal health conditions that contribute to increased risks for congenital anomalies include obesity, use of anticonvulsant medications during pregnancy, and insulin-dependent diabetes mellitus, anemia hypertension etc[8,9,10].

So far, very little information is available regarding the pattern and factors associated with congenital anomalies considering all this facts. This study is conducted to study the congenital anomalies in newborn and its outcome in a rural based tertiary care centre. For identifying the patterns and factors associated with congenital anomalies and its immediate outcome in neonates

Aims and Objectives
1. To study the proportion of congenital anomalies at tertiary rural health care
2. To find the correlation in between the age of mother and neonatal congenital anomalies
3. To find the correlation in between the weight of mother at the time of delivery and neonatal congenital anomalies
4. To find the correlation in between the gestational age in weeks at the time of delivery and neonatal congenital anomalies
5. To find the correlation in between the parity and ANC visits prior to delivery and neonatal congenital anomalies

Materials and Methods
Observational longitudinal hospital based study.
Sample Size
We took a sample size of 150 patients.
Source of Data
Tertiary care Rural Hospital.
Selection of Cases
All neonates diagnosed with any congenital anomalies born in or coming to NICU of PRH.
Duration of Study
2 Years (1/7/2016 TO 31/8/2018).
Inclusion Criteria
All neonates delivered in or referred to NICU of PRH with congenital malformation
All neonates diagnosed with congenital malformation whose parents or guardian are ready to give written informed consent for the study
Exclusion Criteria
Still born.
Study Conduct
Printed proforma will be used for recording thorough clinical examination of new born
    Head to toe examination
    Systemic Examination
Investigational Profile: List of investigations as mentioned in study proforma
Outcome Parameters:
Type of intervention done:
Surgical / Non surgical
Untreated
Status at discharge

Statistical analysis will be done with descriptive statistics

Proforma
Maternal History

Mother's name_____
Age_____   Education_____
Occupation -_____   Income
Father's name
Age -_____   Education
Occupation -_____   Income-_____
Religion   Caste
Antenatal history
Registered delivery   Yes   No
Menstrual History
Age at menarche
cycle
LMP   EDD
Maternal risk factors
Age
Prepregnancy weight
Height
Previous abortion/ still birth
Previous neonatal death
Previous low birth weight
History of Toxaemia
Diabetes
TORCH
UTI
Fever with Type equation here.rash
Addiction smoking tobacco chewing alcohol
Drugs history anticonvulsant,
Antipshychotic
Any other drug during pregnancy
Radiation
pollutants (a) mining (b)other industrial
(c) pesticides
Personal History
Water supply
housing
Income –education
Waste disposal
Family history
H/O Consanguinity 1st /2nd /3rd

Any history of cong. defects in
Siblings
Relative
Neighbour hood
History of repeated abortions

Dietary History
vegan/non vegetarian
Clinical examination of mother
Anthropometry /any malformation
Maternal investigation
Blood group
Hemoglobin %
Routine urine examination
VDRL
HIV
Blood sugar
USG
Fetal Scan
Clinical Examination of Neonate
Term
Age
Sex
Single   twin
Mode of delivery
Vaginal   ceasarian
Apgar
Vit.k
Duration of labour
Anthrometry-

Head to toe Examination of Newborn
Skull, Eyes, Ears, Face, Nose, Oral cavity, Neck, Chest, Upper extremity, Finger Position
Lower extremity Toes, Foot
Spinal examination Continuation, Neural tube defect
Systemic Examination
Cardiovascular system, heart rate , murmur
Respiratory system Respiratory rate, Type of respiration
Abdominal examination Tendernes, organomegaly

Central nervous system examination

Power, Cry, Muscle tone, Activity

Investigation

Complete blood count, Blood group, Blood sugar, S. calcium, CRP

In specific condition

VDRL, TORCH titre, Karyotyping

Neurological inv.

Eeg, CT, MRI, Neurosonography, Infantogram, Invertogram, xray

Observations and Results

In the present study 170 cases newborns with congenital anomalies were studied.

Of which 106 were males and 64 were females Iin our study the percentage of male was more as compared to female

The average maternal age was 30.38 years (5).

| MATERNAL AGE	NUMBER OF ANOMOLIES
19-25	28
26-32	87
ABOVE 32	55
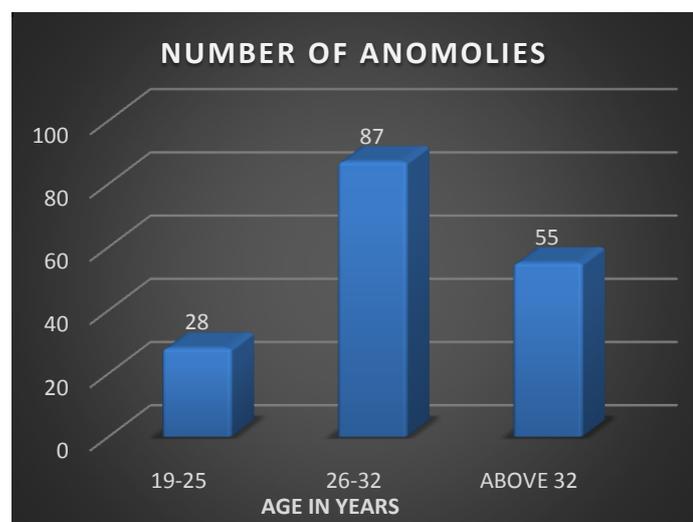
Most of the anomolies were in the age group of 26 to 32 and in above 32 years of age there were 55 anomalies the mean

Weight of the mother and the number of anomolies

The average weight of the mother in our study was

Weight at the time of delivery	NO OF ANOMOLIES
Upto 50	69
51-60	76
>61	25

Majority of anomolies were in the mothers below 60 kg weight the mean weight of the mother was 53.2
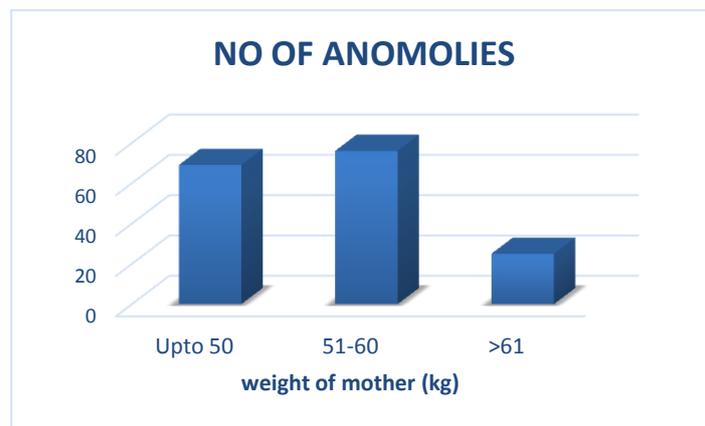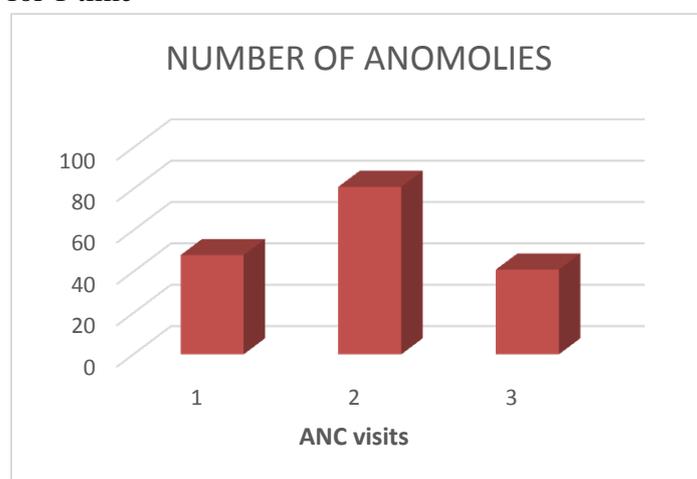

The average weight of mothers was 53.25 kg.

3] ANC visit prior to delivery

ANC Visit prior to delivery	NUMBER OF ANOMOLIES
1	48
2	81
3	41

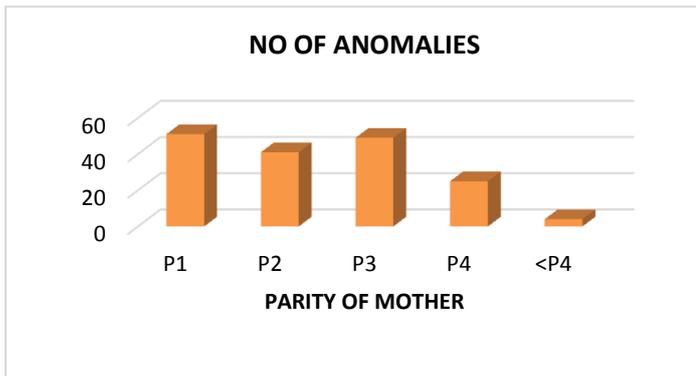Only 41 Mothers Attended 3 ANC Visit Prior to delivery whereas 81 attended for 2 times and 48 for 1 time

The mean ANC visits of mothers was 1.95

4] Parity of mother during delivery

Parity of mother during delivery

P 1	P2	P3	P4	<P4
51	41	49	25	4

5. Distribution of anomalies according to gestational age of newborn.

Gestational Age in weeks	Number of newborns with Anomalies	Percentage (%)
Below 32	12	7%
32-36	89	52.35%
Above 36	69	40.58%
Total	170	100%

The number of anomalies were high in newborns with gestational age between 32-36 weeks [89(52.35)] followed by those with gestational age above 36 weeks [69(40.58%)]. Twelve newborns were of gestational age of below 32 weeks (Table no. 5& Figure no. 5)
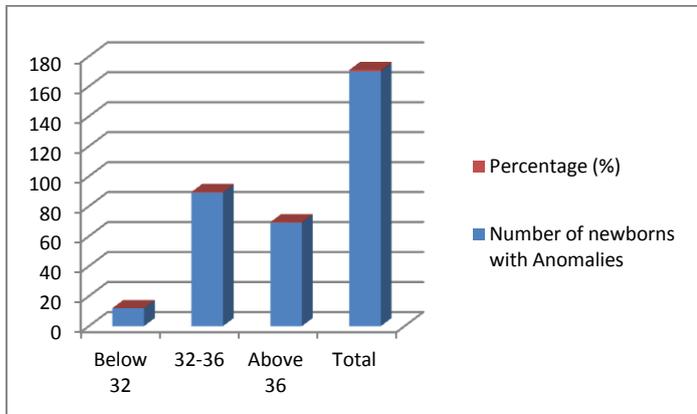
Results and Discussion

1 Distribution of the birth Defects Diagnosed and: sex Distribution of Congenital Malformation

Out of 170 cases of malformations, 106 were males and 64 were females of which 123 were inborn and 47 were outborn. Major Anomolies Were 91.14% and Minor Were 8.82% (Table no 1 and 2)

Total number of neonatal admissions during the period of 1st May 2016 to 30th June 2018 was

19600. Of which 17400 newborns were delivered in this hospital and 2200 newborns were referred from the community during the study period, the total inborns in the hospital were 17400. The inborns and outborns in the study were 123 and 47 respectively. Therefore, the proportion of congenital anomalies in newborns at our hospital setting is 7.06 per thousand births. The proportion of males in both inborn and outborns was proportionately higher in males, (Table no.3). The distribution of gender among inborns and outborns. (P= 0.72, Fisher's Exact Test). Various workers have reported higher incidence of malformations in males than females: Bhat and Babuetal (1998)[13] Misra et al (1989)[17] S. Swain et al. (1994)[51] Of which only Bhat and Babu (1998) 13] found the difference to be statistically significant (15:1).Mathur et al (1975)[16] and Thirumalaikolundu subramanian et al (1985)[21] reported a Male: Female ratio of 2:1 and 1.7:1 i.e. insignificant. Infact a study by J.S. Anand (1988)[12] has found a greater incidence in females than males, while Verma (1991)[11] found no difference in sex distribution. In our study the incidence is more in males.

2 Distribution of Congenital Malformations according to maternal age and weight

In our study of 170 babies with birth defects, 28 anomalies were present in the mother in between the age group of19 - 25yrs and 87 anomolies were in the age group of 26 to 32 and in the number of anomalies were high in newborns with gestational age between 32-36 weeks [89(52.35)] followed by those with gestational age above 36 weeks [69(40.58%)]. Twelve newborns were of gestational age of below 32 weeks (Table no. 5& Figure no. 5 above 32 years of age there were 55 anomalies .the mean mother age in our study was 30.87 years. majority of the mothers in our study were above 32 years of age and were elderly primigravida.

Therefore the incidence of malformation was found to be higher with increasing maternal age 32 yrs. Maternal age has long been known to be

positively associated with congenital anomalies. Most workers have found increased frequency of congenital malformations with advanced maternal age (> 35yrs) our study strongly co incides with the study done by. Patel and Adhia (2005)[18] Swain et al (1994)[20] and Grower (2000)[15] However Verma et al (1991)[11] and J S Anand (1998)[12] did not find increase in incidence with increasing maternal age.studies

4 ANC Visit Prior To Delivery

the mean ANC visit of the mothers with congenital anomalies in our study was 1.95 only 41 mothers attended 3 anc visit prior to delivery whereas 81 attended for 2 times and 48 for 1 time studies done by Mathur et al (1975)[16] and Anand et al (1988)[12] .co incides with us majority of the mothers attended either 1 or 2 ANC clinics this also indicates the poor socio economic conditions

5 Distribution of Congenital Malformation according to parity (P) of Mother:

In our study of 170 cases Majority of mothers were primipara, 51 or third para 49, followed by second 41 and fourth para 25 and only 4 mothers were more than fourth gravida in our study incidence of congenital anomolies was more in the primigravida and the incidence was higher in the elderly primi. Several workers have reported an increased incidence of malformation with rising birth Swain et al (1994)[20] reported significant higher (2.03%) incidence of malformations in gravida > 4 than babies bom to mothers of gravida < 4 (1.04).Grover (2000)[15] reported increased incidence of birth defects with increasing parity order but our study has adual stand in this aspect in our study anomalies are common in the elderly primi and third para . similar to our study Verma et al (1991)[11] in contrast J.S. Anand (1988)[12] found 45% of malformation in primi parous. Bhat and Babu et al (1998)[13] could not establish any correlation between incidence of congenital malformation and parity of mother

11 Gestational age of the newborn and number of anomolies

Out of 170 babies 12 were less than 32wks of gestation, 89 were between 32 to 36wks and 69

babies were more than 36 weeks of gestation 78 were less than or equal to 101wks and 69 were more than 36 weeks of gestation. Our study strongly suggests that gestational age of less than 36 weeks had a strong correlation with anamoly. On comparing Age of mother with gestation age in weeks (Spearman Rank Correlation, Spearman r =0.04123 (corrected for ties), The two-tailed P value0.5936, considered not significant most of the studies are in accordance with us and show higher incidence of birth defects among preterm: like Bhat and Babu (1998)[13] and J.S. Anand (1998)[12]

Conclusion

In our study we came to acopnclusion that congenital anomolies are more common in late pregnancy early gestational age ,and they are more common in multiparous women and regular antanatal check up can reduce the proportion of congenital neonatal anomalies

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