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A STUDY ON THE CONGENITAL ABNORMALITIES AMONG LIVE BIRTHS AT MAYO HOSPITAL LAHORE

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Abstract:
Objective: *The objective of this research work was to conclude the outline of CM (congenital malformations which is the abnormality in the child at the time of birth) in the live births at Mayo Hospital Lahore.*
Methodology: *In this study the registration of all the new births at Mayo Hospital Lahore carried out. The duration of this research work was from 2016 to 2018. Dead at delivery time and children who died after some hours of birth were not the part of this research work. Four thousand six hundred and sixty new born babies were the participants of this case study.*
Results: *Out of four thousand six hundred and sixty live births, ninety-four neonates had minimum one congenital malformation. The most important systems participating in those abnormalities were musculoskeletal, genitourinary, CNS (central nervous system), digestive problems & abnormalities of chromosomes.*
Conclusions: *The rate of the abnormalities in the neonates in this case study was same as compared to the results of other research works, if we entered miscarriage, the dead babies at birth time and if we utilized the tests of screening & genetic studies, this rate was much higher than 20.1 per 1000.*
Key Words: *Chromosomes, Abnormalities, Musculoskeletal, Malformations, Congenital.*

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INTRODUCTION:

The abnormalities in the neonates or CM (congenital malformations) are the defects in the structure due to malformation at the time of process of embryo development. This abnormality is clearly identifiable in three percent new-borns babies [1]. The abnormalities at the time of death are most frequent reason for continuous medical treatment, long duration of illness and the death of the babies [2]. Regardless the modernism in the field of aetiology & pathogenesis of congenital malformations, even in modern country of United States of America, the mortality rate of the infants is about twenty-two percent due to the CM [3]. The designs and occurrence of the abnormalities in neonates may change with time or with environmental place as well as many other factors [4]. There are many reasons of malformations at the time of birth in neonates and some research works assessed the causes in the development of these abnormalities in the new-borns [5].

About eighty-six percent of CM is inaccessible and most inaccessible abnormalities are the results of various factors from heritage [2]. Most of the research works on CM in Pakistan carries out in the cities of Lahore [6], Karachi [7] & Rawalpindi [8] located at different locations of Pakistan. But, this type of research work has not been carried out in neonates in the city of Lahore which is full of various racial groups. The aim of this case study was to give an outline of CM in this particular area of Lahore.

METHODOLOGY:

This research work involved all the neonates of Mayo Hospital Lahore from 2016 to 2018. The marriages between the first cousins were very frequent. All the live babies at the time of birth during that study duration were the part of this study and selected for CM only by the specialist. The files of the babies with CM were acquired. The demographic data as well as weight, size of head, race & agar scores documented for every participant. There were two groups according to the race of the participants. Detection of the CM was relying on the medical evaluation and ultrasound before delivery proved after a few time of birth.

There is requirement of ECG, ultrasound & analysis of chromosomes for the precise detection of disease. All the abnormalities at birth time suspected at the very 1st week after the birth. The complications at the time of birth are divided in many groups as Genitourinary, abnormalities of musculoskeletal, CNS anomalies, GI (gastrointestinal) & many others different types of abnormalities. Neonates with temporary complications as minimal deformed feet and hyrdocele were not the part of this research work.

RESULTS:

Four thousand six hundred and sixty babies born at Mayo hospital in which two thousand four hundred and twenty-seven were males and two thousand two hundred and thirty-three were females. About 46 mothers gave birth to two children, three children or four children at a time. There were ninety-four babies who were suffering of CM discovered at the time of birth or in the first week of birth, fifty-eight were males and thirty-six were females as mentioned in Table-1. The frequency of CM was not same between males & females. Mild to serious hydrocele was available in 140 males, undescended testis was present in the case of eighty-four boys and ninety-two babies from both genders had deformed feet were not included. The age of others of malformed neonates were smaller than twenty years in five cases, twenty-one to twenty-five years in twenty-eight cases, twenty-eight to thirty years in fifty-four cases and older than thirty years in seven cases.

Table-I: Frequency and Gender Distribution for CM			
Parameters	Males	Females	Total births
Total live births	2427	2233	4660
Malformed newborns	58	36	94
Percentage	2.38	1.61	2.02

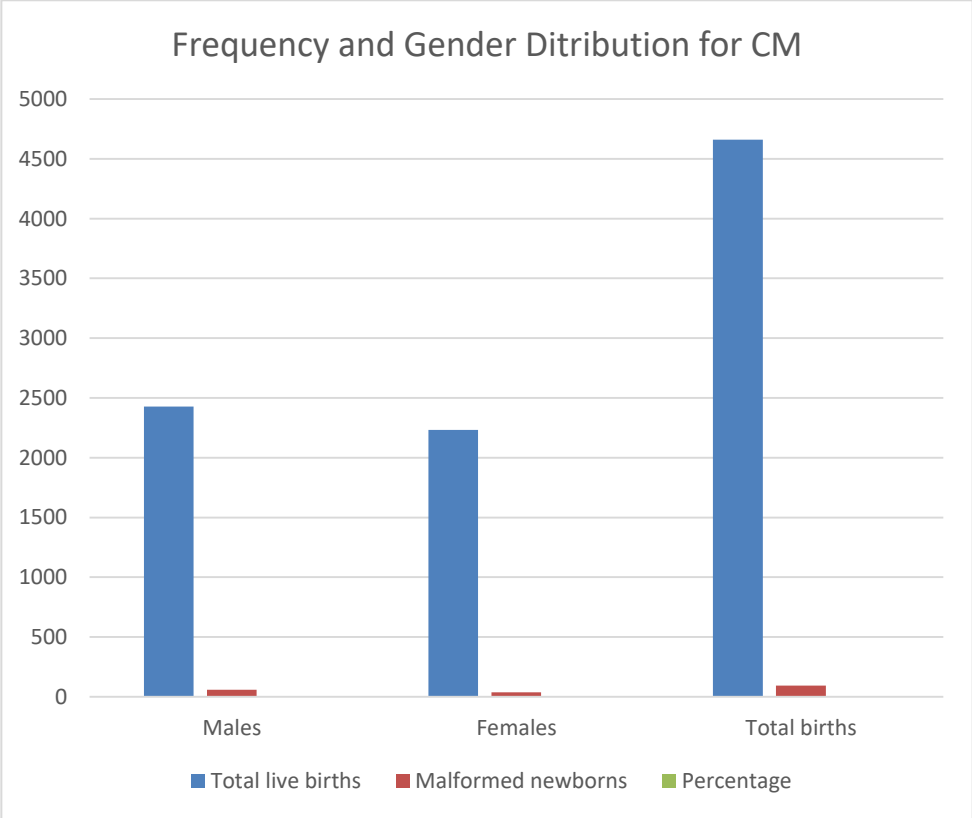
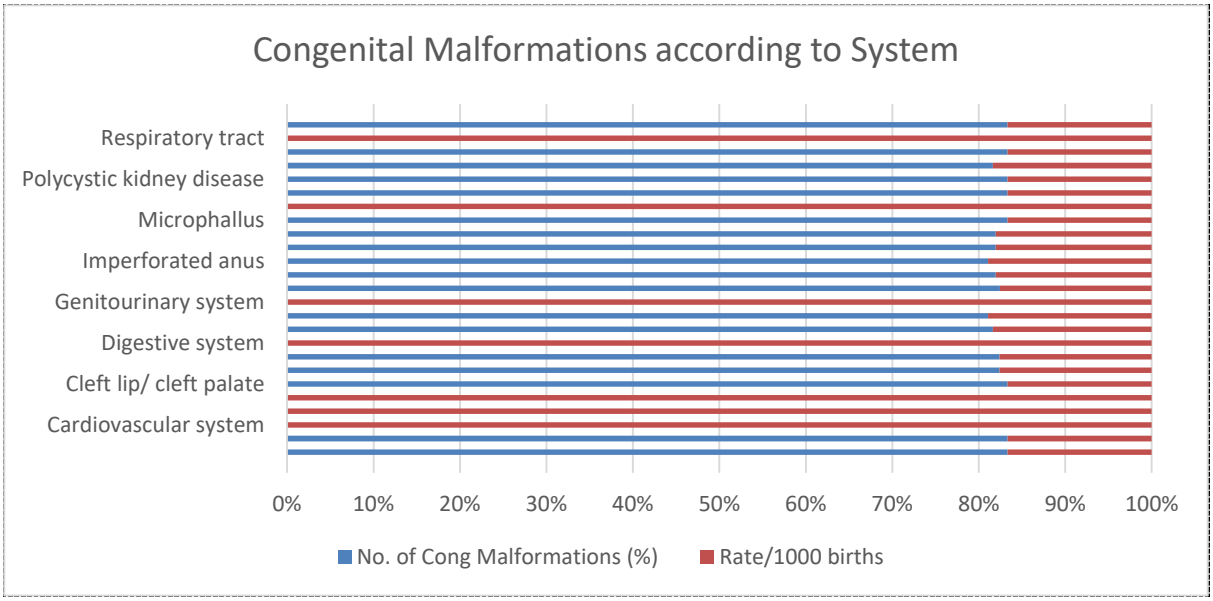


Table-2 provides the systemic division &the rate of CM. The most affected system was musculoskeletal system, consisting about thirty-seven out of ninety-four patients. In this group, the most common abnormality was club foot, CDH (congenital dislocation of hip) & oligodactyly. Eleven patients were suffering of abnormality of CNS (central nervous system). Five patients were suffering of abnormalities of gastrointestinal tract. Chromosomal abnormality was present in four patients; Down's syndrome was available in all these patients. The defect of the congenital heart was present in three patients.

Table-II: Congenital malformations (CM) among 4660 live birth newborns by system involved		
Malformation/system	No. of Cong Malformations (%)	Rate/1000 births
Acyanotic heart disease	3.00	0.60
Anencephaly	1.00	0.20
Cardiovascular system	3.0 (3.20)	0.60
Central nervous system	11.0 (11.70)	2.40
Chromosomal anomalies	4.0 (4.30)	0.90
Cleft lip/ cleft palate	2.00	0.40
Clubfoot	15.00	3.20
Congenital dislocation of hip	15.00	3.20
Digestive system	5(5.3)	1.10
Down's syndrome	4.00	0.90
Epispadias	3.00	0.70
Genitourinary system	33.0 (35.10)	7.10
Hypospadias	23.00	4.90
Hyronephrosis	5.00	1.10
Imperforated anus	3.00	0.70
Meningocele / meningomeylcele	5.00	1.10
Microcephaly	5.00	1.10
Microphallus	1.00	0.20
Musculoskeletal system	37.0 (39.30)	7.90
Oligodactyly	1.00	0.20
Polycystic kidney disease	1.00	0.20
Polydactyly	4.00	0.90
Pulmonary hypoplasia	1.00	0.20
Respiratory tract	1(1.1)	0.20
Syndactyly	2.00	0.40
Total	94.0 (100 %)	20.2 /1000



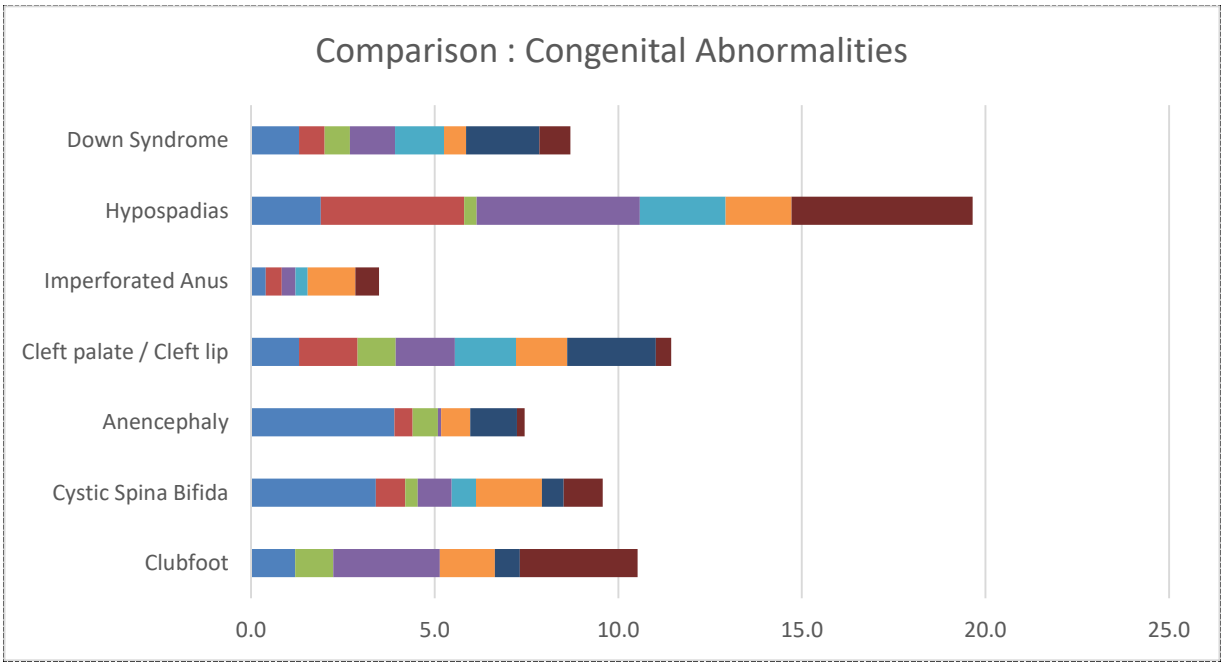
DISCUSSION:

In this research work, the total rate of CM in neonates was 20.2 per 1000. This research work was much similar to the case study of Mashhad, carried out in Iran [7]. Their concluded rate of main CM in their study was 18 per 1000 which is very close to the outcome of this case study. Arak [8] reported a very low rate in his study. There are some other case studies from Iran [6, 9], countries from Middle East and other remote parts of the world describing the various rates of CM [10]. We concluded almost same results as given by other reports, entrance of the miscarriage, stillbirths and if we utilized the tests for screening and studies of genes, the rate of the congenital malformations may rise more than this present result.

Most frequent method involved in this current study was musculoskeletal which confirms outcomes of a study conducted in Lahore [9]. These are much greater than the past research works from various countries of the world [10-12] as mentioned in Table-4.

Table-IV: Comparison of different type of congenital abnormalities (CA) in Lahore with other studies.

	UK1	America [26]	India, Moharashtra 10	Iran, Tehran 27	Egypt, Giza[13]	Iran, Gorgan[16]	Oman, Nizwa[17]	Pakistan Lahore (present study)
Clubfoot	1.2	-	1.0	2.9	-	1.5	0.7	3.2
Cystic Spina Bifida	3.4	0.8	0.3	0.9	0.7	1.8	0.6	1.1
Anencephaly	3.9	0.5	0.7	0.1	-	0.8	1.3	0.2
Cleft palate / Cleft lip	1.3	1.6	1.0	1.6	1.7	1.4	2.4	0.4
Imperforated Anus	0.4	0.4	-	0.4	0.3	1.3	-	0.6
Hypospadias	1.9	3.9	0.3	4.5	2.3	1.8	-	4.9
Down Syndrome	1.3	0.7	0.7	1.2	1.3	0.6	2.0	0.9



Some works reported the abnormalities of the central nervous system as highest [13, 14] but one research work concluded the highest rate of gastrointestinal abnormality [15]. The rate of abnormality of neural tube was 1.1 per 1000 in this study. This result support many studies carried out in Pakistan [8, 9] but it was too low from Britain [12]. The rate of abnormalities of genitourinary system as hypospadias was 4.9 per 1000 which was much high than the works reported from India [10] but it was very similar to a research work performed in Tehran [9]. The rate of the abnormalities of chromosomes was 0.9 per 1000 which was equivalent to the studies from Iran [9] & Egypt [13] but it was very high than India [10]. The occurrence rate of Down's syndrome was from 0.6 to 2 per 1000 [11, 16, 17] but high rate concluded in Oman.

Heridofamilial & marriages in blood relations play a vital role in the occurrence of CM [2]. In the current studies conducted in Kuwait and UAE, most of the abnormal babies born out from the marriages of blood relations [18, 19]. Different methods can be used to minimize the risks of the abnormalities as defects of neural tube, Down's syndrome screening in the mothers, evaluating the previous family history and discovery before the birth of child. In these areas, there are not any preventive measures to tackle these issues of CM in the start. Care of mothers during pregnancy, awareness and educational lectures are some of the struggles which can address the CM and consequences of marriages in close relatives.

CONCLUSION:

The rate of the abnormalities in neonates was same as compared to the other research works. When we included the miscarriages, abortions, stillbirths & utilized the test for screening and gene studies, the frequency rate was higher than 20.1 per 1000.

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