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Congenital Birth Defects in Newborns at AL-Elwaya Maternity Hospital in Baghdad City: Retrospective Study

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Abstract: ***Objectives: This study conducted to assess the congenital birth defects in Baghdad City during the last ten years (2006-2016) and to identify the more common congenital birth defects. Methodology: A retrospective study conducted at AL-Elwaya Maternity Hospital in Baghdad City to assess the prevalence of congenital birth defects in Baghdad City during the last ten years (2006-2016) and to identify the more common congenital birth defects. The study was started at Fab.2017 to May 2017. The data for this study achieved from recorded information in the statistical department in the hospital. Results: The study shows a meaningful power auto-regression model tested in two tailed of alternative statistical hypothesis for two factors, sequence of times per years as independent factor, and numbers of Congenital Delivery as a dependent factor. Slope value estimate and indicating that with increasing one lagged of period with natural logarithm transformation factor, occurrence a positive increment on natural logarithm transformation unit of Congenital Delivery factor, and that estimated by (0.277058), and that increment recorded highly significant and positive effectiveness at P<0.01, as well as strong and highly significant correlation ship coefficient at P<0.01 are recorded between studied factors, and accounted (0.83429) with a meaning determination coefficient R-Square (69.604%), which had explained disturbances among numbers of Congenital Delivery readings along studied periods. Others source of variations are not in model, i.e. Constant term in Auto-regression power equation, shows that non assignable effects that not include in auto-regression power equation couldn't be neglected, since estimated (126.60915) with highly significant at P<0.01, which indicating that rather highly significant effectiveness of the sequence (per yrs.) on the Congenital Delivery numbers, presents that others meaningful effective factor(s) not included in the studied model. Conclusions: In this study there is a highly significant relationship between the abnormal congenital birth defects and the time sequences (years). The incidence of congenital anomalies is high such as cardiac abnormalities, renal, lungs and spine, cardiac anomalies is the more common anomalies in newborns for a several years ago. In developing countries like Iraq due to environmental contaminations, wars, and social problems and stress, the developmental defects are often increased. Many anomalies are severe and cause neonatal death.***

Keywords: Retrospective study,Congenital Birth Defects,prediction of Congenital Birth Defects, time sequence

1. Introduction

In recent years there have been several reports of high percent of congenital birth defects (CBD) in Iraq [(1).] Birth defects can be defined as structural or functional abnormalities, including metabolic disorders, which are present from birth.Congenital disorders are a common condition. WHO estimates that some 260 000 deaths worldwide (about 7% of all neonatal deaths) were caused by congenital anomalies in 2004. They are most prominent as a cause of death in settings where overall mortality rates are lower, for example in the European Region, where as many as 25% of neonatal deaths are due to congenital anomalies. disorder attributable to genetic or environmental causes. The most common serious congenital disorders are congenital heart defects, neural tube defects and Down syndrome. Haemoglobinophathies (including thalassaemia and sickle-cell disease) and glucose-6-phosphate dehydrogenase deficiency, which are account for 6% of all congenital disorders [(2).] Congenital defects began to emerge as one of the major childhood health problems and it refers to any abnormality, whether genetic or not, which is present at birth. Treatment and rehabilitation of children with congenital defects is costly and complete recovery is usually impossible. The etiology of congenital defects is genetic (30-40%) and environmental (5 to 10%). Among the genetic etiology, chromosomal abnormality constitutes 6%, single gene disorders 25% and multifactorial 20-30%; however, for nearly 50% of congenital defects, the cause is yet to be known. In one study, the prevalence of congenital defects was 3% for single major anomaly and 0.7% for multiple major anomalies. It has also been shown that 12.3-32% of deaths that have occurred during the perinatal period are related to congenital anomalies [(3).] About 60% of the causes of congenital anomalies in humans are still unknown. However, in about 25% of congenital anomalies, the causes seem to be “multifactorial”, indicating a complex interaction between genetic and environmental risk factors. A wide range of environmental risk factors have been associated with the occurrence of congenital anomalies. Exposure during pregnancy to drugs such as thalidomide and phenytoin, alcohol, cigarette smoking, certain environmental chemicals and high doses of radiation have all been implicated in the causation of congenital anomalies. The occurrence of congenital anomalies has also been associated with advanced maternal and paternal age, parental consanguinity, increasing birth order and low birth weight [(4).]

An important factor is the normal embryofetal development and maternal health. It is well known that maternal pathologies (chronic, hereditary dismetabolii mother) can induce malformations in children . More commonly incriminated maternal infections: rubella (which increase the risk for cataracts, glaucoma, cardiac malformations, deafness, dental abnormalities); Cytomegalovirus (risk: microcephaly, mental retardation, fetal death); herpes simplex virus (microphthalmia, microcephaly, retinal dysplasia); varicella virus (limb hypoplasia, mental

retardation, muscular atrophy); toxoplasmosis (hydrocephalus, cerebral calcification, microphthalmia); syphilis (mental retardation, deafness)[5].

A congenital malformation is a congenital physical anomaly that is deleterious, i.e. a structural defect perceived as a problem. A typical combination of malformations affecting more than one body part is referred to as a malformation syndrome [6].

2. Methodology

A retrospective study conducted at AL-Elwaya Maternity Hospital in Baghdad City to assess the prevalence of congenital birth defects in Baghdad City during the last ten years (2006-2016) and to identify the more common congenital birth defects. The study was started at Fab.2017 to May 2017. The data for this study achieved from recorded information in the statistical department in the hospital, the researcher record all the information regarding congenital birth defects that include (the total number of deliveries, the total number of alive babies, the number of alive male babies ,total number of female alive babies, the total number of dead babies , the total number of deformed babies finally the total number of more common congenital birth defectsin Baghdad City during the last ten years (2006-2016) .The following statistical data analysis approaches were used in order to analyze and assess the results of the study under application of the statistical package (SPSS) ver. (18.0): Fitted of long term trends for simple auto-linear and auto-nonlinear regression equations, such that [Inverse, (Polynomial auto regression quadratic, cubic), Power, Compound, S-Shape, Logistic, Compound, Growth and Exponential] predicated equations are applicable for congenital delivery numbers, dead birth numbers, Incidence Rates of Congenital Delivery, and Neonatal Mortality Rates, as dependent variables affected by lagged sequence of times as an independent variable (per years).For the abbreviations of the comparisons significant (C.S.), used the followings :NS : Non significant at P>0.05, S : Significant at P<0.05 and HS : Highly significant at P<0.01.

3. Results and Findings

Table 1: Effectiveness of Time Sequence (per years) on the Number of Congenital Delivery

Dependent variable Method. Power - Shape Model " No. of Congenital Delivery					
Simple Correlation Coefficient	0.83429	Meaningful Linear regression Tested in two tailed alternative Statistical hypothesis			
R - Square	0.69604				
F (Statistic)	12.83065	Sig. Level	0.0005 (HS) (*)		
Variables in the Equation					
Variable	B	SE.B	Beta	t-test	Sig. of (t)
Sequence per yrs.	0.277058	0.061030	0.834290	4.540	0.0014
(Constant)	126.265532	13.427751	-	9.403	0.0000
Predicted equation is Y = b0 * (t^b1) or Ln(Y) = Ln(b0) + (b1 * Ln(t))					

(*) HS: Highly Sig. at P<0.01; t: time sequence (per years)

Table (1) shows a meaningful power auto-regression model tested in two tailed of alternative statistical hypothesis for two factors, sequence of times per years as independent factor, and numbers of Congenital Delivery as a dependent factor. Slope value estimate and indicating that with increasing one lagged of period with natural logarithm transformation factor, occurrence a positive increment on natural logarithm transformation unit of Congenital Delivery factor, and that estimated by (0.277058), and that increment recorded highly significant and positive effectiveness at P<0.01, as well as strong and highly significant correlation ship coefficient at P<0.01 are recorded between studied factors, and accounted (0.83429) with a meaning determination coefficient R-Square (69.604%), which had explained disturbances among numbers of Congenital Delivery readings along studied periods. Others source of variations are not in model, i.e. Constant term in Auto-regression power equation, shows that non assignable effects that not include in auto-regression power equation couldn't be neglected, since estimated (126.60915) with highly significant at P<0.01, which indicating that rather highly significant effectiveness of the sequence (per yrs.) on the Congenital Delivery numbers, presents that others meaningful effective factor(s) not included in the studied model.

Figure 1 shows long term trend of Number of abnormal Congenital Delivery factor on the lags of year's sequence.

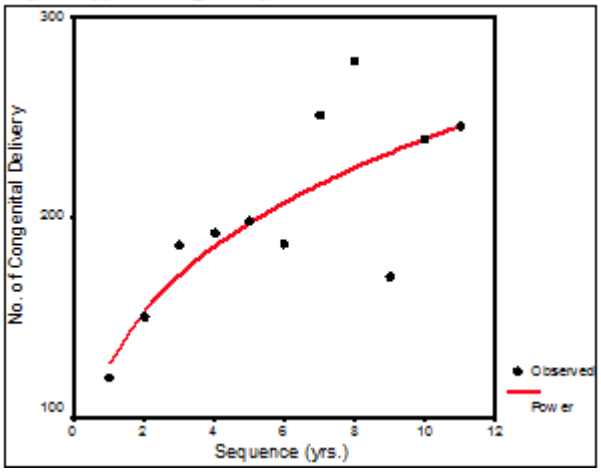

Figure 1: Long term trend scatter diagram Effective of time sequence factor on No. of abnormal Congenital Delivery factor

Table 2: Sexual Variation in Incidence of Anomalies

years	Gender of malformed newborns		Total
	Male	Female	
2006	9,657	9,535	19,192
2007	10,072	10,057	20,129
2008	8,192	10,105	18,297
2009	9,653	9,846	19,499
2010	12,136	10,139	22,275
2011	8,888	8,615	17,503
2012	8,656	8,673	17,279
2013	8,564	8,589	16,653
2014	8,972	9,135	18,107
2015	8,872	1,2803	21,675
2016	8,504	7,287	17,291

Incidence of malformations in general according to the gender for each year

Table 3: Effectiveness of Time Sequence (per years) on the Incidence Rates of Congenital Delivery

Dependent variable... Growth - Shape Model Incidence Rates of Congenital Delivery					
Simple Correlation Coefficient	0.77864	Meaningful Linear regression Tested in two tailed alternative Statistical hypothesis			
R - Square	0.60628				
F (Statistic)	13.85893	Sig. Level	0.0048 (HS) (*)		
Variables in the Equation					
Variable	B	SE.B	Beta	t-test	Sig. of (t)
Sequence per years	0.095996	0.025786	0.778640	3.723	0.0048
(Constant)	1.849513	0.174890	-	10.575	0.0000
Predicted equation isY = e^(b0 + (b1 * t)) or Ln(Y) = b0 + (b1 * t)					

(*) **HS: Highly Sig. at P<0.01; t: time sequence (per years).**

Table (2) shows meaningful Growth-Shape auto- regression model tested in two tailed alternative statistical hypothesis for two factors, time sequence per year's factor as (Independent), and Incidence Rates of Congenital Delivery factor as (Dependent). Slope value estimated and indicating that with increasing one lag of period factor (one yrs.), occurrence a positive increment on natural logarithm transformation unit of Incidence Rates of Congenital Delivery, and that estimated by (0.095996), and that increment recorded highly significant and positive effectiveness at P<0.01, as well as strong and highly significant correlationship at P<0.01 between studied factors, and accounted (0.77864), with meaning determination coefficient R-Square (60.628%), which explanation disturbances among the numbers of dead birth along the studied periods. Others source of variations are not in model, i.e. "Constant term in Auto-regression equation" shows that non assignable effects that not included in the auto-regression equation, couldn't be neglected, since estimated (1.849513) with highly significant at P<0.01, which indicating that rather highly significant effectiveness of sequence per years on the Incidence Rates of Congenital Delivery, presents that others meaningful effective factor(s) not included in the studied model.

Figure (2) shows long term trend of time sequence (years) factor on the Incidence Rates of abnormal Congenital Delivery.

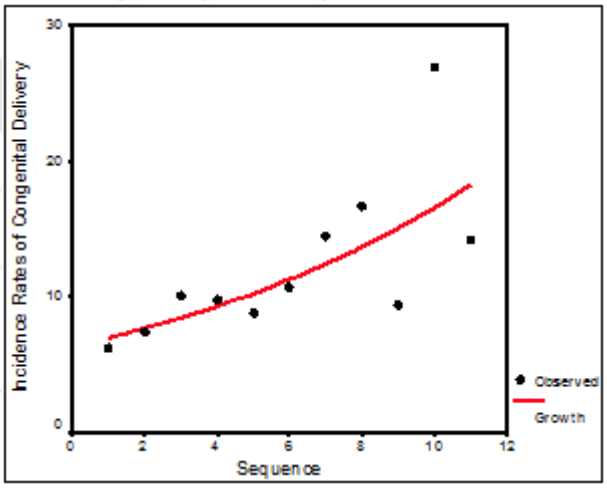

Figure 2: Long term trend scatter diagram Effectiveness of time sequence factor on the Incidence Rates of Congenital Delivery factor

4. Discussion of the results

A congenital disorder, also known as a congenital disease, deformity, birth defect, or anomaly is a condition existing at or before birth regardless of cause. Of these disorders, those characterized by structural deformities are termed "congenital anomalies" and involve defects in a developing fetus [(7).] .This study show highly significant relationship between the increase incidence of abnormal congenital deliveries (Dependent) variable with the period factor (years) in Iraq and that appeared clearly in the figure number (1) through the last ten years ago. In a developing country like Iraq due to environmental contaminations, wars, and social problems and stress, the incidence of congenital anomalies is high such as cardiac abnormalities, renal, lungs and spine, cardiac anomalies is the more common anomalies in newborns for a several years ago. Congenital heart defects (CHDs) are the most common type of birth defect, affecting about one in every 100 babies born in the United States. Scientists are working hard to learn the causes of CHDs.

Most CHDs are due to a complex relationship among environment, lifestyle, and genetic factors [8].

Many anomalies are severe and causes neonatal death .Congenital anomalies represent defective morphogenesis during early fetal life. Major anomalies have serious medical, surgical and cosmetic consequences [9]. Congenital anomalies are important causes of infant and childhood deaths, chronic illness and disability [10]. Major congenital anomalies are diagnosed in 2–4% of births. Cardiac defects account for over one-quarter of all cases [11]. In Egypt a study conducted regarding Congenital anomalies were found 103 cases of 5000 newborns followed in descending order by chromosomal abnormalities (27.2%) [12].In this study we have calculated overall incidence of congenital anomalies both in live born and stillborn babies. Thousands newborn babies of consecutive new born babies delivered at the Department of Obstetrics and Gynecology, at AL-Elwaya Maternity Hospital in Baghdad City were examined at birth for the presence of congenital malformations. They were examined soon after birth for major or minor congenital malformations. Baby's gestational age, birth weight, sex and symptoms in postnatal period were noted. The detailed general and systemic examinations of the babies were carried out. Complete medical, family, antenatal and personal history has taken. Thorough physical examinations of newborn babies were done. High risk newborns were examined in detail within 12 hours of birth. Immediate outcome of all malformed babies were recorded during the period of the mother's hospital stay.

The data of this study received from the recorded information regarding the congenital anomalies for last ten years ago in Iraq and show the high incidence in congenital birth defects and this increase still going on and we can estimated that for the coming years in the future related to all the bad circumstances in the middle east.

5. Conclusion

In this study there is a highly significant relationship between the abnormal congenital birth defects and the time sequences (years).

The incidence of congenital anomalies is high such as cardiac abnormalities, renal, lungs and spine, cardiac anomalies is the more common anomalies in newborns for a several years ago. In developing countries like Iraq due to environmental contaminations, wars, and social problems and stress, the developmental defects are often increased. Many anomalies are severe and cause neonatal death.

6. Recommendations

1) All couples should be counseling for genetic and chronic diseases before marriage.
2) Encourage women to commitment in prenatal visits to detect any abnormality in as soon as possible.
3) All women with a history of congenital birth defects should be delivered in the obstetrical hospital rather than delivered at home.
4) According to this study we can estimated the congenital birth defects for the coming years in Iraq.
5) Further studies should be conducted to know the causes of congenital birth defects in Iraq.

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