Prevalence of Congenital Anomalies in Karak Governmental Hospital

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Abstract

Objective: This study aims at finding the prevalence of congenital anomalies in Karak governmental hospital.

Methods: There were 2349 reported live births in Karak governmental hospital in 2006. The overall prevalence rate of congenital anomalies in Karak hospital was found to be 1.28% of live births.

Results: The total prevalence rate during 2006 was 128/10 000 live births. Each anomaly was studied separately and compared with the total reported anomalies. The highest prevalence was found in chromosomal disorders (26.7%) of total reported anomalies.

Conclusions: The study also revealed some considerable associated factors.

Keywords: Congenital anomalies, birth defects, prevalence**.**

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Introduction

A congenital anomaly is an abnormality of structure, functions or body metabolism that is present at birth (even if not diagnosed until later in life) and results in physical or mental disability, or is fatal. [1] The birth prevalence of congenital anomalies is defined as the number of individual live born and stillborn infants with the congenital anomaly in question expressed as a proportion of the total number of live births and stillbirths, in a given place and time. [1] For the purposes of this study, the researcher excluded the number of stillbirths from calculations across the entire study unless they have any malformation like anencephaly then they are included.

Major congenital anomalies remain a leading cause of death among infants in both the neonatal and postneonatal periods. [1- 4] Although simple birth defects are often correctable, the emotional and financial burden on the family and society is great and always leaves families and health care providers with unanswered questions regarding the causes, recurrence risks and preventive measures. In spite of the frequency of congenital anomalies, the underlying causes for most remain unclear. [1] Genetic disorders and congenital anomalies occur in about 2%-5% of all live births. [3] The frequency of inherited and congenital anomalies varies widely, from 1%-10% of live births. [1, 3, 5] Several studies about the incidence of congenital anomalies in different Arab countries were conducted and they revealed different figures and rates; for example a Libyan study in Benghazi (1995) reported a rate of (74/10000 live births), [4] an Egyptian study reported a rate of (320/10000 live births) in 1998,[5] and a Bahraini study in (1995) reported a

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rate of (270/10000). [2] These results could be compared with the developed countries, for example the United Kingdom which reported a rate of (118.6/10 000 live births) in 2005. [6] It has been estimated that around 15%-25% are due to recognized genetic conditions (chromosome and single gene causes), 8%-12% are due to environmental factors (maternal-related conditions, drug or chemical exposures) and 20%- 25% are due to multifactorial inheritance.

Methods

Karak governorate has two governmental hospitals, one military hospital and three small private hospitals. The majority of deliveries are carried out in the governmental hospitals the rest of the deliveries are conducted in the military hospital or in the private hospitals. Karak governmental hospital is the largest hospital with a capacity of 150 beds in which the majority of deliveries are carried out.

Statistics of Karak governmental hospital for (2006) were used to find out the number of live births, the number of congenital anomalies, and the types of congenital anomalies to calculate prevalence rates of all anomalies and each specific anomaly separately.

A special form (data collection sheet figure (1)) was developed to track any affected newborn and to explore several associated factors including gender, maternal age, consanguinity, family history of congenital anomalies, maternal exposure to diseases, x-ray or medications and address and phone number of the family for the purposes of follow-up. This data sheet is completed by the attendant pediatrician following complete physical examination of the newborn in premature department for accurate diagnosis and classification, and then the form is submitted to the department of medical records in Karak governmental hospital where it is kept and reported to the Ministry of Health information center. This study is concerned only about the congenital anomalies that are reported during the period between 1/1/2006 and 31/12/2006.

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رقم ملف الام	
جنس المولود	
نوع التشوه الخلقي بعد الفحص السريري	
صلة القرابة بين الاوالدين	
عمر الام	
الامراض التي اصيبت بها الام خلال هذا الحمل	
وجود تشوهات خلقية سابقه لدى العائله	
الادوية التي تناولتها الام خلال هذا الحمل	
التصوير الشعاعي خلال هذا الحمل	
اسم الطبيب الذي قام بالفحص السريري	
التاريخ	

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Figure (1): Data collection sheet.

Results

The study found that there were 2349 live births that occured during 2006, among them there were 1309 males and 1220 females. There were 30 reported cases of congenital anomalies, 16 were males and the rest were females, the percentage of congenital anomalies was 1.28% of all reported live births which means a prevalence rate of 128/10000 live births. (Table 1)

This study revealed that consanguinity was reported in (33%) of all reported congenital anomalies. (Table 1)

The study reveals that maternal age of mothers of babies with congenital anomalies ranges from 20 years to 45 years, the majority of reported congenital anomalies (36.7%) was seen in babies of mothers aging 30-34 years; another significant increase in congenital anomalies was seen in young mothers aged 20-24 years (26.7%). (Table 1)

In only 3 reported cases, (10%) of mothers reported consumption of medications or having gestational diseases (one case of PET takes Aldomet and Adalat, 1 case with PET, without medication, another case state taking medications but didn't remember the type). No one could remember X-ray exposure during pregnancy. Table (1).

The study revealed that three quarters of the reported cases of congenital anomalies (76.6%) were having single anomaly, whereas one quarter of the cases have more than one anomaly. (Table 1)

Family history of congenital anomalies was found in only one case, (3.3%) of all reported congenital anomalies, that reported having three repeated babies with congenital anomalies the extraordinary thing in this case is that the parents are not relatives Table (1).

Table (2) shows that types of congenital anomalies was various with different percentages of total reported anomalies ranging from (3.3%) for Cleft palate, Epidermolysis bullosa, Gastroschisis, Hydrocephalus, Intestinal obstruction, Spina bifida, and Turner syndrome to (10%) for Down syndrome (as a single anomaly) and Imperforated anus. Table (2) also illustrates the isolated prevalence rate per 10000 of live births for each isolated anomaly which ranges from (4.3) for Cleft palate, Epidermolysis bullosa, Gastroschisis, Hydrocephalus, Intestinal obstruction, Spina bifida (8.5) for Diaphragmatic hernia, Edward syndrome, Esophageal atersia, Meningiomylocele, Omphalocele, and Cleft lip and palate, and (12.7) for Down syndrome and Imperforated anus.

Table (1): Associated factors of congenital anomalies in Karak governmental hospital 2006

		Number	***Percentage (%)***
Live births			
	Male	*1309*	*55.7%*
	Female	*1220*	*44.3%*
	Total	*2349*	*100%*
Congenital anomalies			
	Male	*16*	*53%*
	Female	*14*	*47%*
	Total	*30*	*100%*
Consanguinity			
	Yes	*10*	*33%*
	No	*20*	*64%*
Maternal age			
	20-24	*8*	*26.7%*
	25-29	*6*	*20%*
	30-34	*11*	*36.7%*
	35-39	*3*	*10%*
	40-45	*2*	*6.6%*
Gestational diseases, X-ray, or Drugs			
	Yes	*3*	*10%*
	No	*27*	*90%*
History of congenital anomalies in the family			
	Yes	*1*	*3.3%*
	No	*29*	*26.7%*
Number of anomalies			
Single anomaly		*23*	*76.6%*
Multiple anomalies		*7*	*24.4%*
	Total	*30*	*100%*

Table (2): Percent of specific congenital anomalies among the total reported congenital anomalies in Karak governmental hospital and prevalence rate /10 000 live births in 2006.

Specific anomalies	*No.*	*Percentage (%) of*		*prevalence /10000*
		Total anomalies	*Live births*	*live births*
Single anomaly	*23*	*76.6%*	*0.97%*	*97.9*
Cleft palate	*1*	*3.33%*	*0.043%*	*4.3*
Diaphragmatic hernia	*2*	*6.66%*	*0.085%*	*8.5*
Down syndrome	*3*	*9.99%*	*0.127%*	*12.7*
Edward syndrome	*2*	*6.66%*	*0.085%*	*8.5*
Epidermolysis bullosa	*1*	*3.33%*	*0.043%*	*4.3*
Esophageal atersia	*2*	*6.66%*	*0.085%*	*8.5*
Gastroschisis	*1*	*3.33%*	*0.043%*	*4.3*
Hydrocephalus	*1*	*3.33%*	*0.043%*	*4.3*
Imperforated anus	*3*	*9.99%*	*0.127%*	*12.7*
Intestinal obstruction	*1*	*3.33%*	*0.043%*	*4.3*
Meningiomylocele	*2*	*6.66%*	*0.085%*	*8.5*
Omphalocele	*2*	*6.66%*	*0.085%*	*8.5*
Spina bifida	*1*	*3.33%*	*0.043%*	*4.3*
Turner syndrome	*1*	*3.33%*	*0.043%*	*4.3*
Multiple anomalies	*7*	*24.4%*	*0.29%*	*29.7*
Ambiguous genitalia & hydrocephalus	*1*	*3.33%*	*0.043%*	*4.3*
Cleft lip and palate	*2*	*6.66%*	*0.085%*	*8.5*
Down syndrome and Omphalocele	*1*	*3.33%*	*0.043%*	*4.3*
Hypospadias and club foot	*1*	*3.33%*	*0.043%*	*4.3*
Down syndrome & Duodenal atersia	*1*	*3.33%*	*0.043%*	*4.3*
Meningiomylocele & hydrocephalus	*1*	*3.33%*	*0.043%*	*4.3*

Discussion

This study analyzed some factors associated with reported cases of congenital anomalies in Karak governmental hospital; the following discussion is related to these factors consequently. The study excludes gender of the affected neonate as an associated factor of congenital anomalies, since the numbers of affected neonates of both sexes are closely similar.

Consanguinity was reported in almost one third of all reported congenital anomalies accordingly showing the dangerous effects of consanguinity as an important risk factor of congenital anomalies. Temtamy SA, (1998) reported that parental consanguinity was found in 55.0% of malformed cases in an Egyptian population. [5] Hamamy H, and Alwan A (1997) reported high frequency of consanguineous marriages in Arab countries [3] which are always associated with higher rates of congenital malformation and autosomal recessive disorders [8] which is already concluded in this study.

This study ascertains that maternal age has a strong association with congenital anomalies which is reported in many studies and review articles; Hamamy H, and Alwan A, (1997) reported that a relatively high birth rate of infants with chromosomal disorders like Down syndrome are related to elder maternal age. They concluded that the risk of having a child with Down syndrome increases with increased maternal age from 1 in 600 births for mothers under 30 years to 1 in 50 births for mothers over 40 years. [3] Singh R, and Al-Sudani O, (1995) reported that the proportion of neonates with chromosomal anomalies in a Libyan population was higher in babies born to mothers of 40 years [4] which is also reported in this study.

Several studies connect congenital anomalies to environmental causes such as exposure to chemical agents, radiation or maternal diseases such as diabetes mellitus, AL-Najashi and AL-Umran reported that (3%) of infants of diabetic mothers in a Saudi population have fatal congenital anomalies compared with (0.4%) in

general obstetric population. [9] Kohut, R (2002) estimated that around 8%- 12% of congenital anomalies are due to environmental factors (maternal-related conditions, drug or chemical exposures) [1] which is reflected in this study where10% of all congenital anomalies have occurred to mothers reporting such factors.

The percentage of multiple anomalies according to this study was 24.4% which is less than what was reported in a Libyan study conducted by Singh R, and Al-Sudani O in 1995 who reported a percentage of 56.3% of congenital anomalies are multiple. [4] Dolk, H in his final report to the Department of Health of the United Kingdom in 2003 reported that 11.5% of the non-chromosomal cases of congenital anomalies were multiple, [7] which is as much as one half of the figures reported in this study. This variation may be related to different reporting policies and because of the severity of multiple congenital anomalies that may result in early deaths which excludes these cases of reporting in this study.

Conclusion

This study concluded that congenital anomalies in Karak governmental hospital falls within the global incidence and obviously similar in associated causes and distribution to the data that is presented in the reviewed literature, but there is a critical need for more detailed studies using other methodologies especially correlational designs to determine the associated factors and determine the preventative ones. There is also a critical need for establishing a sound reporting system for such cases and conditions to help the researchers and decision takers in planning health policies.

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نسبة حدوث التشوهات الخلقية في مستشفى الكرك الحكومي

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الملخص

الهدف: تهدف هذه الدراسة إلى تحديد نسبة حدوث التشوهات الخلقية في مستشفى الكرك الحكومي خلال العام 2006 .

الطرق: لقد تم تسجيل 2349 حالة ولادة في هذا المستشفى وقد وجدت الدراسة أن نسبة حدوث التشوهات الخلقية تساوي 1.28% من مجموع الولادات الحية.

النتائج: وجد ان نسبة حدوث التشوهات الخلقيه هي 10000/128 ولادة حيه. وقد قام الباحث بدراسة كل حالة تشوه خلقي على حده ومقارنتها مع المجموع العام للتشوهات. وقد تبين أن أكثر التشوهات الخلقية حدوثاً هي التشوهات الناتجة عن الاختلالات الكروموسومية (26.7%) من التشوهات الخلقية .

الخلاصة: أظهرت الدراسة نسبة حدوث التشوهات الخلقية والعديد من العوامل المرتبطة بها.

الكلمات الدالة: التشوهات الخلقية، نسب الحدوث.