Congenital Anomalies Admitted to Intensive Neonatal Care Unit in Babylon Maternity and Pediatric Teaching Hospital

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Abstract

Background: The number of recognizable patterns of malformations have more than tripled during the last 25 years. The potential prenatal effect of various drugs, chemicals and environmental agents is better appreciated and the number of genetic and non genetic defects has increased.
Aim of the study: to study the prevalence of the structural defects in the live newborns in Babylon city.
Materials and Methods: Our study provides the structural defects that have been detected in live newborns referred from the labor room and operative theater to the Neonatal Intensive Care Unit (NICU) within one year. Information were taken from the caregivers in a uniform list, examination of the newborn by pediatrician and analysis of the data using chi square.
Results: During one year, 70 live newborns with birth defects admitted to NICU. Thirty- four of them with neural tube defects (49%), cleft lip and / or cleft palate nine cases (12.8%), achondroplasia six cases(8.5%), Down Syndrome five cases(7.1%), ambiguous genitalia three cases(4.3%), arythrogryposis multiplex three cases(4.3%) ,imperforated anus two cases(2.9%), Prunbelly Syndrome two case(2.9%), phacomelia, genovalgum, congenital heart disease, icthyosis each one case (1.4%).
Conclusion: Most patients with congenital anomalies had neural tube defects, necessitating stress on preconception folate supplementation.

الخلاصة

خلفية البحث:إن عدد التشوهات الخلقية الظاهرة تضاعفت ثلاث مرات خلال الخمس والعشرون سنه الاخيره ،والذي قد يكون ناتجا من استعمال أدوية مختلفة. في بداية الحمل وقبله ، أو مواد كيماوية أو نتيجة عامل الوراثة أو التغيرات المناخية في الطبيعة .
طريقة البحث :تمت دراسة حالات التشوهات الخلقية للولادات الحية التي أدخلت إلى وحدة حديثي الولادة في مستشفى بابل للولادة والأطفال التعليمي خلال سنه واحده تم أخذ ألمعلومات من ألأم في صالة الولادة أو ألعمليات بأستماره خاصة وفحص ألوليد في وحدة ألخدج من قبل ألطبيب ألاختصاص وتم تحليل ألمعلومات إحصائيا .
ألنتائج :خلال فترة سنه كان عدد الولادات والعمليات ألقيصريه (٩٥٥١) ،ومنها أدخلت سبعون حالة وليد حي مشوه إلى وحدة ألخدج وفي المرتبة الأولى كانت تشوهات وخلل نمو ألأنبوب ألعصبي ٤٩ % .
الاستنتاجات:معظم المرضى الذين يعانون من تشوهات ولادية كانت تشوهاتهم غالبا في الجهاز العصبي،و التي تحتاج الى التركيز على تزويد الجسم بمادة الفوليت قبل الحمل.

Introduction

Introduction Birth defects (congenital anomalies) according to WHO are structural, functional, and/ or biochemical-molecular defects present at birth .It can be classified into lethal, severe, and mild form. Their causes can be genetic, environmental, and complex multifactor [1].

Neural tube diseases (NTD) e.g: anencephaly, spina bifida, and meningomyelocele, are associated with multifactor inheritance pattern. The frequency of their occurrence varies in different populations (e.g: rates as high as 10:1000 birth in Irland and as low as 0.8 per 1000 births in US). Ninety percent are index cases i.e ,they occur spontaneously without previous occurrence in a family .If a couple has a child with such an anomaly ,the chance of producing another affected child is 2-5%, if they had two such children the risk can be 10 % [1].

Anencephaly develops as a result of closure of anterior neural tube at 28 days followed by degeneration of forebrain. Meningomyelocele, it is closure of the posterior portion of the neural tube at 28 days in 80% at lumbosacral area. [2]

Spina bifida open neural tube disease are characterized by exposure of the meninges and neural tissues to the amniotic fluid .It is evident that secondary destruction of the spinal tissue occurs due to exposure to the amniotic fluid or direct trauma from fetal movement, that led to the technique of open hystrotomy repair of meningomyelocele .Surgery at 25 and more weeks of gestation, fetus of more than 14 mm ventricular size. A Fetus with a defect at L4 is more likely to require shunt for hydrocephaly in the first year of life[3].

Women who have not had a baby with spina bifida should be advised to take folic acid 400 microgram/day from preconception until 12 weeks of gestation to reduce the chance of NTD and higher doses for women with previous affected pregnancy by NTD those taken medications interfere with folate metabolism[4].

Hydrocephalus is an abnormal expansion of ventricales within the brain caused by accumulation of CSF as a result of imbalance between the formation and drainage of CSF .The most common variety, reduced absorption occur with one or more passages connecting the ventriceles blocked, which prevents the CSF movement to it's drainage sites which is called non-comunicating hydrocephalus.If the hydrocephalus results from damage of absorptive tissues this called non-comunicating hydrocephalus.,infantile hydrocephalus occurs in 1-2 of every 1000 live birth, it can be caused by congenital birth defect, infection,hemorrhage or tambour[5].

Cleft Lip with or without cleft palate: the incidence is 1 in 750 white births.Cleft lip is more common in males.Possible causes include maternal drugs exposure, a syndrome malformations complex or genetic factors [6].

Achondrodysplasia typically presents at birth with short limbs, long narrow trunk and large head with mid facial hypoplasia and promenant forehead, skeletal radiographs confirm the diagnosis [7].

Arythrogryposis multiplex congenita which is congenital anomaly involving multiple curved joints,the incidence 1 in 10000 live birth it is multifactorial in etiology factors contributing to it structural abnormality of the uterus like bicurnuate, oligohydramnios,and increased intrauterine pressure.

Material and Methods

This study performed in Babylon Maternity and Pediatrics Teaching Hospital between January 2007 and January 2008. The numbers of deliveries were 9551 from them 787 planned operative deliveries and 1661 emergency Cesarian Sections.From all these deliveries, 70 cases of live birth neonate with congenital anomalies admitted to the Neonatal Intensive Care Unit and evaluated by pediatricians. Informations list for each newborn, taking the details from the mother which includes: name,age, gravidity, parity, gestational age, residence, consiquanity, residence, occupation, her present pregnancy if any complications like rash, fever,any medication, folic acid supplementation, previous abortion or fetal death or previous fetal anomalies and the type of the anomalies and the sex of the baby.

Results were analyzed by chi square, and p value of less than 0.05 considered statistically significant.

Results

During the study period which was one year, seventy cases of live congenitally abnormal babies had been born in the labour room or operative theater admitted to NICU was assessed by Pediatricians. Neural tube defects(NTD) found in 34 cases (49%) ,hydrocephaly in 17 babies ,meningomyelocele in 13 cases,spina bifida two cases ,anencephaly two cases.Cleft lip with or without cleft palate in 9 cases(12.8%) ,achondroplasia 6 cases (8.5%) , Down's Syndrome 5 cases (7.1%) ,ambigious genitalia 3 cases(4.3%), arythrogryposis multiplex 3 cases(4.3%) ,Prunbelly Syndrome 2 cases (2.9%) ,imperforated anus 2 cases (2.9%) ,phacomelia, genovalgum, hypospedious, congenital heart disease, omphalocele and Icthyosis each one case forming(1.4%).

Regarding gravidity and parity 31 women were primigravida and 39 having one or more children with no statistically difference, p value > 0.05.

Folic acid supplementation found in 31 women and 39 women without supplementation during pregnancy and none of them had the folic acid intake before conception which is considered statistically significant (p value <0.001).

Regarding the couple 39(55.71%) were relative and 31(44.29%) are not relative, forming no significant difference.

We found 14(20%) cases had previous history of abortion or fetal death and 56(80%) cases with negative history, it means highly significance with p value <0.001.Only two cases had a history of the same condition and 68 cases with negative history,this is highly significant p value <0.001.

According to maternal age 42(60%) women age group between (15-24)years and 28(40%) of them 25 years and more,with(p value> 0.05) with no significant difference.

Regarding sex of the baby 37(52.86%) were female ,30(42.85%) were males and 3(4.29%) with ambiguous genitalia, so there is no significant difference between female and males (p value >0.05) and there is highly significance between clear sex and undifferentiated sex(p value < 0.001).

According to the occupation of the mother 65(92.86%) of them were housewives, 4(5.72%) were employed and one (1.42%) was student, so there is high significance (p value <0.001) difference.

Regarding the residence 44(62.86%) were from the rural areas and 26(37.14%) from urban (p value <0.05) so there is significant difference

Discussion

Our study provides the structural defects in live newborns that have been detected within one year in Babylon Maternity and Pediatrics Teaching Hospital. There were 9551 deliveris whether normal or operative delivery, 70 live delivered babies with birth defects had been admitted to the neonatal intensive care unit was studied. The most common anomalies were found the neural tube diseases 34 cases forming 49% including anencephaly, spina bifida, meningomy-elocele, and hydrocephaly, these anomalies associated with multifactorial inheretence [9]. Women who has not had a baby with spina bifida, should be advised to take folic acid 400 microgram/ day from preconception until 12 weeks of gestation to reduce the chance of NTD. A recent study has failed to show the efficacy of this strategy in analyzing population incidence of NTD .This is suggested to relate to inadequate preconceptional taking of folate and/ or poor compliance.Suggestions of adding folate to certin foods for example flour to ensure population compliance remain debtable[10].

In our study also nine cases of cleft lip with or without cleft palate which is also heterogenous disorder with multifactorial inheritance .Possible causes mentioned in other studies include maternal drugs exposure, a Syndrome malformation complex, or genetic factors[11].

Five cases of Down's Syndrome ,these can be detected during pregnancy by ultrasound markers (nuchal translucency) or maternal serum markers(alpha-feto protein,oestriol,free B-HCG, inhibin A and pregnancy associated plasma proteinA) in either first or second trimester,if both use the detection rate 75% with 3% false positive rate[12]. The identifications of fetal structural abnormality allows the apportunity for in utero therapy, planning for delivery, paternal preparation and the option of termination of pregnancy.

Three cases found Arythrogryposis multiplex congenita which is of multifactorial inheritance but there are possible contributing factors to it like structural abnormality of the uterus, oligohydramnios, and increased intrauterine pressure mentioned in references. [13]

We found no significant difference regarding parity, maternal age, qunsiquanity and sex of the baby for who develop these defects.

Pre-conception folic acid supplementation is important factor to lessen the risk of NTD which it's benefits were of little understanding as a general knowledge among women even during pregnancy in our society.

Regarding past obstetrical history previous fetal death or abortion due to congenital anomalies increases the risk for recurrence but most of the women in this study were with negative history.

According to the maternal occupation most of the defects found in house-wives and rural areas which can be explained by little knowledge regarding the prevention of birth defects and less attendance for health care pre-conception and during pregnancy.

Conclusions

Most patients with congenital anomalies are of neural tube defects, necessitating stress on preconception folate supplementation.

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