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Pattern of Congenital Anomalies in Neonatal Unit in Tertiary care Teaching Hospital

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ABSTRACT

Congenital Anomaly is an anomaly that affects a body part or physiologic function and is present at birth.The exact antenatal prevalence of congenital anomalies in Libya is unknown. Early antenatal diagnosis of congenital anomalies is crucial for early counseling, intervention and possible fetal therapy. The objective of this study was to evaluate the pattern of congenital anomalies and malformations for all cases were admitted in neonatal care unit in our hospital.This hospital based prospective descriptive study highlights the point pattern of congenital anomalies in one year. The number of congenital anomalies were 73 cases more in males than Female (M: F = 1.5: 1%). The pattern of congenital anomalies included CVS (36.3%), GIT (16.5%), genitourinary (14.3%), musculoskeletal (11%), CNS (6.6%), respiratory (4.4%), etc. In CVS the most common anomalies were ventricular septal defect, atrial septal defect and patent ducts. In GIT group, commonly imperforated anus followed by esophageal Artesia. In musculoskeletal group, telipes was most common malformation followed by spinabifida. In CNS, group hydrocephalus was the most common malformation followed by anencephaly and meningomyeleceole. Frequency of congenital anomalies was more in vaginal delivery ascompared to cesarean born babies (2.7 % vs. 1.58%). in still born as compared to live born babies (5.5 % vs. 1.5 %) Present study stress upon the importance to carrying out Congenital Anomalies through clinical examination of neonate at birth.

Keywords: Congenital, Abnormalities, Anomalies, NeonateCounseling,Malformation

Introduction:

A congenital anomaly (C A) 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)

Congenital anomalies contribute a significant proportion of infant morbidity and mortality, aswell as fetal mortality. Individual development begins with fertilization and extends into postnatal life at least until processes of growth give way to those of maintenance. Its progress and direction are determined by

genetic and environmental factors acting singly and in combination. Developmental anomaliesinclude all anatomical, physiological, orbiochemical deviations arising during development, especially during organogenesis (including placentogenesis), irrespective of cause. This discussion is confined to eventsoccurring in intrauterine life. (2)

A congenital anomaly is considered to bemultifactorial (or polygenic) in origin whenthere is a combined influence of (a number of)genes and environmental factors that interferewith normal embryologic development.Multifactorial inheritance is considered whenthere appears to be a genetic component butthere is no clear Mendelian pattern ofinheritance. Multifactorial inheritance is the underlying etiology of most of the commoncongenital anomalies.(3)

Each year, eight million children are bornworldwide with congenital anomalies, of which
3.3 million die before the age of five; 3.2 million of the survivors may be mentally and/or physically disabled. [4] The prevalence of birth defects is comparable all over the world; about 3% in the United States, [5] 2.5% in India, [6] and 2% to 3% in the UnitedKingdom. [7] The most prevalent conditions include congenital heart defects, [8] orofacial clefts, Down syndrome, [9] and neural tubedefects.

Causes of Congenital Anomalies

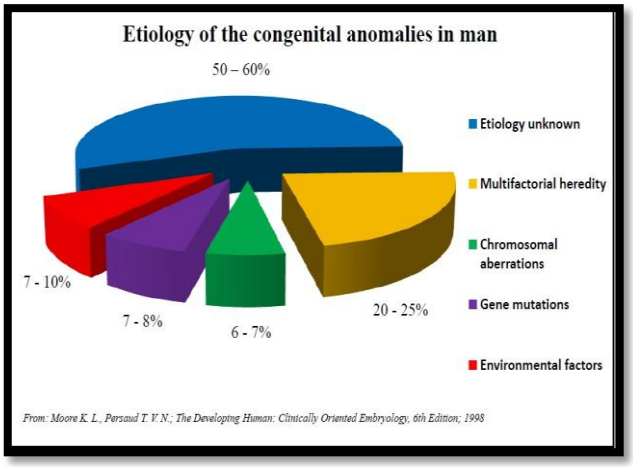
In spite of the frequency of congenital anomalies, the underlying causes for most remain obscure. It has been estimated that around 15%-25% are due to recognized geneticconditions (chromosome and single gene causes), 8%-12% are due to environmental factors (maternal-related conditions, drug or chemical exposures) and 20%-25% are due to multifactorial inheritance. The majority, 40%- 60% of congenital anomalies, have unexplained causes.[10,11]

Examples of infectious agents that can be transmitted to the fetus and have an adverse effect include rubella, cytomegalovirus, varicella and toxoplasma. A number of drugs have clearly been shown to be teratogenic.

A teratogen is a factor that has an adverse effect on an embryo or a fetus between fertilization and birth. The teratogenic risks associated with most maternal environmental exposures are not well-established. [12]

The global epidemic of thalidomide-induced limb defects seen in the 1960s resulted in today's practice of monitoring for congenitalanomalies worldwide. Other examples of teratogenic agents include folic acid antagonists, anticonvulsants (Dilantin,Tegretol), coumarin derivatives and retinoids

(Accutane). The most commonly usedteratogenic agent is alcohol. Recent research has reported increased risksfor structural birth defects and chromosomalabnormalities with air pollution and proximityto hazardous waste sites, respectively. [13] Maternal age is a risk factor for congenital anomalies, specifically chromosome problems, Maternal health conditions that contribute toincreased risks for congenital anomaliesinclude obesity, epilepsy controlled withanticonvulsantmedications, and insulin-dependent diabetes, maternal thyroid disease,even when treated, as increasing the risk forcongenital anomaly-affected pregnancies. [14,15]Currently we register any diagnosis of CAfrom ICD-X Q00-Q99 group[16]. Figure 1.Etiology of congenital anomalies.

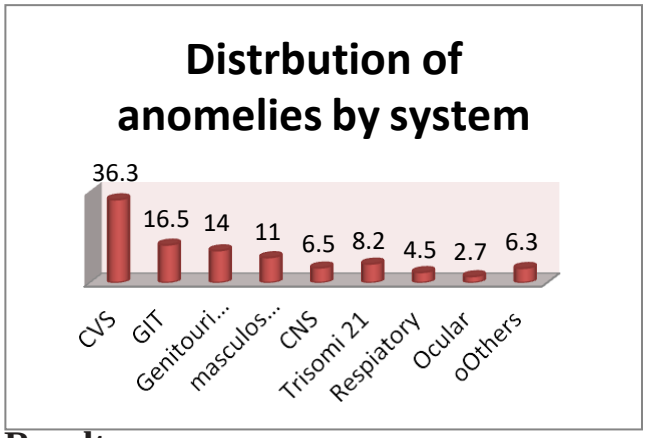


Material and Methods

This prospective study was undertaken inGharian Teaching Hospital, Gharian, Libya. Our hospital provides medical care to about5000 delivered women in every year who are Libyan and other nationality, originating and living in Aljabal algarbi area. All babies born in the department of Obstetrics and Gynaecology and admitted to Neonatal Unit in our hospital were included in the study and the Congenital malformations discovered at birth or before discharge from the neonatal nursery in infants born between Jan 2010 to Dec 2010 were studied. The data presented here include 1360 Births, Both mother and the baby were examined as a unit within 24 hours of birth andwere further followed upto 72 hours. A detailedhistory was taken including all familial and gestational factors and a physical examination of baby was done. The diagnosis of

congenital malformations was based on clinical evaluationand all were logged. The clinical, radiological and laboratory data were entered in the medical records. Chromosomal studies were carried outin infants suspected to have a recognizable chromosome syndrome.

Congenital anomalies were coded according to the International Statistical Classification of Diseases and Related Health Problems, Chapter XVII (Q rubric) 'Congenital Malformations, Deformations and Chromosomal Abnormalities, 10th revision' (ICD-10) (World Health Organization, 1993).



Results

During this one year study, there were 4850 deliveries in our Hospital Out of 1360 newborns admitted to Nursery, 73 had one or other congenital anomaly accounting to an incidence of 5.4%. Out of these, 50 had single congenital anomaly and rest 23 had multiple malformations. Thus, there were total of 103 anomalies amongst 73 newborn babies.

The congenital anomalies were seen more (1.5 %) in neonates born to advanced maternal age(> 35 years). With the increasing parityfrequency of congenital anomalies also increased, it accounted for 3.12 % anomalieswhen the neonates were born to mother having2 or more siblings. There was higher frequencyof congenital anomalies in males as comparedto female babies (1.5% vs. 1 %). and also morein full term as compared to preterm (2.21% vs.1.82%). Frequency of congenital anomalieswas more in vaginal delivery as compared to cesarean born babies (2.7 % vs. 1.58%).Congenital anomalies were more common in stillborn babies as compared to live born babies.Consanguinity was noted in 3 parents out of 73 deliveries who had malformedbabies. Exposure to drugs was not includedbecause no data about it . Family history of congenital anomaly was unknown. None of mothers who delivered congenitally malformedbabies gave history of exposure to radiation, smoking or alcohol during the pregnancy.

Figure 2. Distribution of anomalies by systems.

Discussion

In the present study, the overall incidence of congenital anomalies was 1.5%, which was almost comparable with other studies (17-19). The incidence varied from 1.2% to 1.81% in these studies. With regard to pattern of congenital anomalies in the study, the most common system involved was CVS (36.3%) followed by GIT (16.5%), genitourinary (14%), musculoskeletal system (11%), CNS (6.6%),respiratory (4.4%) etc. This was comparable to studies conducted by other workers (17-19). Some studies howeverrecorded higher incidence of CNS malformations followed by GIT and musculoskeletal system (20,21). It was observed in present study the congenital anomalies were more common in babies born mother aged 35 years and above. Similar observations were recorded in other studies also (4, 20,21). The congenital anomalies were seen more frequently in mothers who had parity of two and above which in our study was comparable to observations made by various authors (4, 7,8). Consanguinity as a factor, significantly increased rate of congenital malformations as reported by other authors too (13,14), but despite the high prevalence ofconsanguineous marriages in Saudi Arabia, theoverall incidence of congenital anomalies was not higher than in other parts of the world as reported .(22)

Higher incidence of congenital anomalies instill born babies (5.5 %) compared to live born babies (1.5 %) was reported in our study whichwas comparable with study by Boyed PA (7) who recorded incidence of congenital

Anancephaly

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OMPHALOCEL

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1. Parental imaging should be considered inspecific cases, depending on the fetal anomaly identified (e.g., potential dominant inheritance).

Parental blood testing and invasive prenatal testing may also be required to clarify the diagnosis for a fetus with isolated or multiple structural anomalies.(23)

Meningomyelocel

2. Maternal consumption of folic acid- containing prenatal multivitamins is

associated with decreased risk for several congenital anomalies (24).

Ampegious Genetelia

3. Avoid potentially teratogenic industrial pollutants because of significant associationsbetween the textile industry and anencephaly,and between the manufacture of engines and turbines and microcephaly(25).

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