ORIGINAL ARTICLE

Congenital Malformation at Gunung Wenang Hospital Manado : A Five-Year Spectrum

by

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Abstract

A five-year evaluation of congenital malformation among newborn infants born at Gunung Wenang Hospital has been evaluated in an attempt to get the picture of the congenital malformation spectrum and the magnitude of its problems in Manado, Indonesia.

The total incidence of congenital malformation in this study was 0.9 %, of which 0.5 % were major types. The most common major malformation were : cleft lip and palate, talipes, multiple malformation, anal atresia, omphalocele and congenital heart diseases. The minor types were : abnormal formation of the ears, incomplete descensus of the testis, hydrocele and finger defects. The risk of having a newborn with birth defects was highest among mother's first pregnancy and among grande multiparity.

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Introduction

Congenital malformations are familial or sporadic, hereditary or non-hereditary, single or multiple, major or minor structural defects on the surface or within the body, present at birth as the result of localized error of morphogenesis caused by various etiology from well recognized to poorly understood. The incidence of congenital malformation varies from country to country and among authors. It is well documented that in developed countries, congenital malformation are one of the leading causes of perinatal morbidity and mortality.

As the family planning program in Indonesia has been a great success in effecting the continuous decline of crude birth rates from 40% in 1960 to less than 30% in 1990, it is necessary to know the spectrum and the magnitude of congenital malformation problems in anticipating that they will become one of the leading causes child health problems in the future.

Materials and methods

This retrospective study was conducted by collecting data from the medical records of the Department of Child Health Gunung Wenang Hospital, Manado. All newborn infants born during the period of 1983-1987 were included in this study.

During that period, 13,354 medical records of newborn were evaluated. The diagnostic procedure of congenital malformation in our department was based primarily on physical examination soon after birth. If necessary, special procedures were carried out such as radiologic, hematologic, serologic, cardiologic, or neurologic examination.

The age and parity of the mother were recorded for evaluation. The pathological condition of pregnant mothers, drugs taken during pregnancy, and history of having a previously born birth defected infants could not be evaluated in this study since they were not well recorded.

Results

A yearly distribution of congenital malformation can be seen in Table 1. The prevalence of major types of defects fluctuated year by year with the lowest prevalence in 1987.

Table 1 : *Yearly distribution of congenital malformation during the period of 1983-1987*

Year	Number of newborn	Congenital malformation		
		Major type	Minor type	Total
1983	2,389	19 (0.8%)	6 (0.2%)	25 (1.0%)
1984	2,773	11 (0.4%)	12 (0.4%)	23 (0.8%)
1985	2,825	15 (0.5%)	12 (0.4%)	27 (1.0%)
1986	2,581	19 (0.7%)	6 (0.2%)	25 (1.0%)
1987	2,786	8 (0.3%)	7 (0.2%)	15 (0.5%)
Total	13,354	72 (0.5%)	43 (0.4%)	115 (0.9%)

Discussion

The total number of incidences of congenital malformations in this study were higher than those previously reported [1,2,3]. It should be realized that the cumulative number of incidence studies, including this study can not be taken as the absolute condition in the community, since the vast majority of pregnant mothers delivered their babies at home or at private maternity clinics. None of these newborns were recorded in this or any of the above mentioned studies. Beside that due to limited or insufficient time to observe and to confirm the diagnosis as the stay in the hospital was only for 2-3 days, the number of recorded congenital malformations might be lower than the exact numbers. This statement can be justified as phimosis was found only in 2 cases during the 5 years period, and the hospital stay of newborns was too short to evaluate profoundly congenital heart diseases.

The diagnosis should be based on pre- and post-natal examinations. Maternal, obstetrics, and family histories of having had birth defects should always be recorded, particularly the presence of polyhydramnion, oligohydramnion, previous birth defects and pregnancy losses. Prenatal diagnosis can be established by amniocentesis, ultrasound, and others. While postnatal diagnosis should be taken shortly after birth and continued to be evaluated at least until the age of 3 months to confirm the diagnosis. And it should also be taken into consideration that the diagnostic approach of birth defects differs from type to type. Cleft lip and palate, talipes, abnormal formation of ears, polydactily, syndactily, anencephaly, hydrocephaly for example, can be based solely on physical examination. However in some cases to confirm the diagnosis, it is necessary to carry out special procedures such as radiologic, serologic, cardiologic, neurologic and surgical or even genetic and

Tables 2a : *Types of congenital malformation found in Gunung Wenang Hospital Manado during 1983-1987*

Major types of Cong. malformation	Number of Cases	Percentage %
Cleft lip and palate	12	10.2
Talipes	11	9.4
Multiple congenital malformation	8	6.8
Anal atresia	7	6.0
Omphalocele	7	6.0
Congenital heart disease	5	4.3
Anencephalus	4	3.4
Hydrocephalus	3	2.6
Anomalous cordia	2	1.8
Down's Syndrome	2	1.8
Congenital megacolon	2	1.8
Meningocele	2	1.8
Congenital toxoplasmosis	1	0.8
Ascites	2	1.8
Pyloric stenosis	1	0.8
Hernia umbilicalis	1	0.8
Hernia scrotalis	1	0.8
Abulbi oculi sin/dextra	1	0.8
Total	72	0.5

hormonal investigations. In pregnant mothers with a previous history of having had birth defects or if the family history shows genetic diseases and has experienced birth defects, amniotic studies should be routinely conducted in order to decide whether or not the pregnancy should be continued or terminated.

There were 32 kinds of congenital malformations detected in this study, divided into the major type malformation which have serious medical, surgical or cosmetic consequencies, and the minor type or localized malformation which have no serious consequencies (Tables 2a and 2b). Cleft lip and palate, anal atresia, omphalocele, multiple congenital, and congenital heart diseases were the most frequent ma-

Table 2b : *Types of congenital malformation found in Gunung Wenang Hospital Manado during 1983 - 1987*

Minor types of Cong. malformation	Number of Cases	Percentage %
Abnormal form of ear	10	8.5
Incomplete descended testis	7	6.0
Hydrocele	4	3.4
Syndactily	4	3.4
Polydactily	3	2.6
Hemangioma	3	2.6
Albino	3	2.6
Phymosis	2	1.8
Hermaphrodite	2	1.8
Med. art. genu rotation	1	0.8
Premature toothing	1	0.8
Hypospadia	1	0.8
Atresia septum nasi	1	0.8
Asymmetric face	1	0.8
Total	43	0.3

jor type, while abnormal formation of ears, incomplete descensus of the tests, hydrocele and syndactily were the most common minor type of congenital malformations in this study.

The mother's age is very interesting to be highlighted in determining the risk of having congenital malformations. Gordon stated that the frequency of malformation increases proportionately with the increase of the mother's age, particularly over the age of 40 years [4], but Lubis et al. and Chinaria and Singh failed to prove it [2,5]. However, our findings show that the congenital malformations were frequently found among the first pregnancy of young multiparity (Tables 3, 4, 5, 6, 7 and 8). Based on these differences, it is necessary to carry out a comprehensive study which should include all possible factors influencing morphogenesis in relation to age of mothers and parity.

Table 3 : *Types of congenital malformations according to age group of mothers*

Type of malformation	Age group of mother		
	Under 20 years N = 2334	21-30 years N = 8578	Over 30 years N = 2442
Major types	16 (0.7%)	52 (0.6%)	4 (0.2%)
Minor types	6 (0.3%)	29 (0.3%)	8 (0.3%)
Total	22 (1.0%)	81 (1.0%)	12 (0.5%)

Table 4 : *Types of congenital malformations by age group and parity of mothers*

Age group of mother	Number of newborn	G		G 2-5		G 6/over		Total
		Major	Minor	Major	Minor	Major	Minor	
Under 20 years	2334	14 0.6%	6 0.3%	2 0.1%	-	-	-	22 10 %
21-30 years	8578	22 0.3%	10 0.1%	28 0.3%	18 0.2%	2 0.02%	1 0.01%	81 0.9%
Over 30 years	2442	1 0.04%	2 1.0%	2 0.9%	6 0.2%	1 0.04%	-	12 0.5%
Total	13.354	37 0.3%	18 0.1%	32 0.2%	24 0.20%	3 0.2%	1 0.008	115

Table 5 : *Types of congenital malformations by parity according to mother's age*

Gravida	Number of newborn	Age group of mother					
		Under 20 years		21–30 years		Over 30 years	
		Major	Minor	Major	Minor	Major	Minor
G1	5,423	14 0.3%	6 0.11%	22 0.4%	10 0.2%	1 0.01%	2 0.02%
G 2-3	7,457	2 0.02%	-	28 0.4%	18 0.2%	2 0.02%	6 0.08%
G 6/over	574	- -	- -	2 0.4%	1 0.2%	1 0.2%	- -
Total	13,354	16 0.7%	6 0.3%	52 0.6%	29 0.2%	4 0.2%	8 0.3%

Table 6 : *Congenital malformations in the first pregnancy (G 1) by age of the mothers*

Age of the mother	Congenital malformations		
	Major	Minor	Total
Under 20 years N = 1,842	14 (0.8%)	6 (0.3%)	20 (1.1%)
21 - 30 years N = 3,276	22 (0.7%)	10 (0.3%)	32 (1.0%)
Over 30 years N = 305	1 (0.3%)	2 (0.7%)	3 (1.0%)
Total 5,423	37 (0.7%)	18 (0.4%)	55 (1.0%)

Table 7 : *Congenital malformations in G 2-5 by age of the mothers*

Age of the mother	Congenital malformations		
	Major	Minor	Total
Under 20 years N = 492	2 (0.4%)	-	2 (0.4%)
21 - 30 years N = 5,203	28 (0.5%)	18 (0.4%)	46 (0.9%)
Over 30 years N = 1,762	2 (0.1%)	6 (0.3%)	8 (0.4%)
Total 7457	32 (0.4%)	24 (0.3%)	56 (0.8%)

Table 8 : *Congenital malformations in G6 and over by age group of the mothers*

Age of the mother	Congenital malformations		
	Major	Minor	Total
20 years or less 21-30 years (N=99)	2 (2.0%)	1 (1.0%)	3 (3.0%)
Over 30 years (N = 375)	1 (0.3%)	-	1 (0.3%)
Total (N = 474)	3 (0.6%)	1 (0.2%)	4 (0.8%)

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