THE CONGENITAL MALFORMATIONS OF THE HEART FROM THE RURAL ENVIRONMENT OF BACĂU COUNTY

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Abstract: During 1998 – 2003 it has been realized a study on a lot of 27,623 subjects represented by children from Bacău county. There were found 128 cases of congenital malformations of the heart, from which 82 cases are coming from the rural environment. The cases of congenital malformations of the heart are found more at boys (45) than at girls (37). The children found with congenital malformations of the heart are of different ages as following: 0-1 year – 55 cases, 1-3 years – 13 cases, 3-5 years – 3 cases, 5-7 years – 3 cases, 7-10 years – 3 cases and over 10 years – 6 cases. From the cases found in the rural environment, 18 deceases have been registered (14 boys and 4 girls) who were under 1 year old. The most frequent congenital malformations of the heart found and confirmed are defects of auricular and ventricular septum, the transposition of the great blood vessels, the auricular and ventricular hypoplasia, coarctation of aorta, the congenital aortic insufficiency, the tetralogy of Fallot, hypoplasic aortic stenosis, the persistence of Botall orifice and the heart's position right part of the body. A number of 16 children have benefited of surgical treatment of reparation in special clinics from Iaşi, Bucureşti and Târgu Mureş.

INTRODUCTION

The congenital malformations of the heart are very frequent (4 – 8 ‰ from the newborns) and also they vary according to the type of the defect, clinical manifestation and the seriousness of the disease. They represented a major factor of death rate especially morbidity at infants (BEMBEA, 2004).

The congenital malformations of the heart represent a heterogeneous group of malformations, they can be produced by monogenic mutations, chromosomal abnormalities and also the pregnant women being exposed at teratogen factors (rubella, alcoholism, diabet, untreated fenilcetonury and also after a long treatment with aspirin, vitamin A, deficiency of folic acid). The most isolated cases have at origin multiple factors. There is a reduced family heredity, but the affected children haven't the same type of malformation, but they have especially abnormalities which have the same mechanism of being produced (COVIC, 2004). We can mention here the defect of auricular septum (0,6 – 0,7‰), the defect of ventricular septum (2,9‰), the conotruncal abnormalities (the tetralogy of Fallot, the transposition of the great blood vessels and some cases of ventricular defect – 0,9‰), the coartation of aorta (0,37 – 0,44‰), the persistence of ducts arteries (0,6‰), the left persistence of hypoplasia (0,36‰). The most cases are isolated (75%) and some of them are associated with other malformations, being a part of monogenic or chromosomal syndromes (MAXIMILIAN, 1996).

Lately it has been noticed on increase of the cases of congenital malformations of the heart, most of them are coming from the rural environment. There is a very serious deficiency of the access at medical care also with sanitary education of the population, all these factors lead to a late discovery of some affections such as congenital malformations of the heart and eventually during some general health checks or after the admissions in hospitals with other diseases. This matter made us to study the distribution and the frequency of cases of congenital malformations of the heart in the rural environment from Bacău county at infants.

MATERIAL AND METHODS

During 1998 – 2003 it has been investigated a lot of 27,623 subjects represented by children with age between a couple of days and 15 years and who come from the rural environment. In assessment of the patient were followed the objectives:

- to realize the history of the case and physical examination (the initial assessment);
- to do some clinical examinations (the EKG, the pulmonic and cardiac radioscopy, Doppler echocardiography) and paraclinical explorations (lab exams: haemoleucogram, hepatic samples, reactive protein C, the VSH, the summary of urine);
- to analyze and to interpret the results obtained;
- to realize genetic explorations when it was necessary and if it was possible in clinics from Iaşi and Bucureşti;
- to finish the observations and to draw up the conclusions;
- to follow the evolution of the patients and to inform the relatives with increased genetic risk (COVIC, 2004).

The personal history has aimed to obtain information regarding the conception – the reproductory history and the age of parents, their chronically
diseases, the blood types, when this disease occurred, the evolution of pregnancy – the beats of fetal heart, the fetal movement, the echo graphical information and the birth – the gestational age, the duration of labor, the presentation of the fetus, some abnormalities that has appeared, APGAR score, the morphological coordinates of the child (the weight, the size, the skull, perimeter, the chest perimeter). The appearance of respiratory crisis, some difficulties in sucking, vomiting, hypotonic, the cyanosis of the face and the extremities, the prolonged jaundice, all these are signals which appear in congenital malformations (MERCIUC and al. ,1998).

The general examination of the child consisted in:

- the assessment of the vital signs (pulse, breathing rate, the arterial tension, temperature);
- the determination of some growth parameters (size, weight, skull perimeter), the general habitus of the body and its proportions;
- the general assessment of the health and nourishing status;
- the thorough examination of the systems and anatomical structures (WINKELMANN).

The cases of congenital malformations of the heart which were found, were confirmed by the specialist doctors after the EKG, the pulmonic and
cardiac radioscopy which have emphasized the position, the shape and the rooms of the heart and the existence of some solutions for continuity, after the cardiac echography which has emphasized the anatomical ratio between cavities, between the cavities and the great vessels from the heart, to discover some abnormalities echo Doppler, the existence of a stenosis on the airing ventricular ducted and also the activity of the heart with arterial and ventricular systoles.

RESULTS AND COMMENTS

According to the study realised during 1998 – 2003 it were discovered 190 cases of congenital malformations from which 128 cases are congenital malformations of the heart. It can be noticed the increased number of this type of malformations from all types of congenital malformations discovered (figure 1).

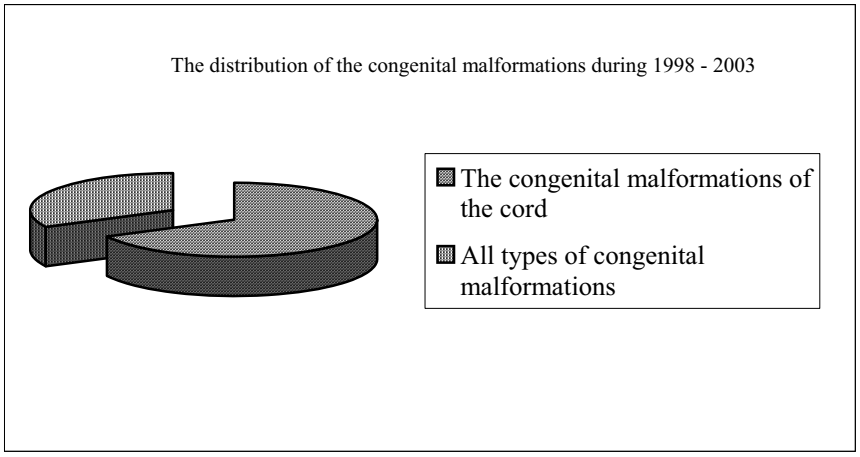

Figure 1 The distribution of the cases of congenital malformations

The most frequent congenital malformations of the heart which have been discovered and confirmed are defects of auricular and ventricular septum, the transposition of great blood vessels, the auricular and ventricular hypoplasia, the coarctation of aorta, the congenital aortic

insufficiency, the tetralogy of Fallot, hypoplasic aortic stenosis, the persistence of Botall orifice and the heart's position in the right part of the body and so on.

Table 1 The congenital malformations of the heart in the rural and urban environment

Year	Number of subjects	Number and frequency of cases (‰)		The distribution and the frequency of the cases in rural and urban environment (‰)			
				Rural environment		Urban environment	
1998	5183	19	3,7	12	2,31	7	1,39
1999	4878	25	5,1	13	2,67	12	2,43
2000	4819	17	3,5	12	2,5	5	1
2001	3919	31	7,9	20	5,1	11	2,8
2002	4413	9	2	5	1,13	4	0,87
2003	4411	27	6,1	20	4,53	7	1,57
1998-2003	27623	128	4,6	82	3	46	1,6

In table 1 it is presented the distribution of the cases of congenital malformations of the heart in the rural and urban environment for each year from the studied period. It can be noticed that every year from the studied period the cases of congenital malformations of the heart which come from the rural environment are more than the cases which come from the urban environment. This observation proves that many women from the rural environment during their pregnancy don't go to see a doctor so this means that they can't benefit of prenatal treatment (folic acid, lactic calcium, iron), medical analysis (haemoglobine, haemoleukograme, VSH, VDRL, blood calcium, sideremy, blood type, Rh factor) and also they can't benefit of advices regarding the regime of life of a pregnant women (RUGINĂ, 2004).

In what regards the distribution on sexes of the cases of congenital malformations of the heart it rises the following situation: every year, the number of boys discovered with such affection is increased in comparation with girls. Only one exception was the year 2001, when were discovered 12 girls with this type of malformations from a total of 20 cases.

Table 2 The distribution and the frequency on sexes of congenital malformations of the heart from the rural environment

Year	Number of cases	The distribution and the frequency of cases (%)			
		Girls		Boys	
1998	12	5	41,67	7	58,33
1999	13	6	46,15	7	53,85
2000	12	5	41,66	7	58,33
2001	20	12	60	8	40
2002	5	2	40	3	60
2003	20	7	35	13	65
1998-2003	82	37	45,12	45	54,88

The repartition of the cases of congenital malformations is presented in the figure 2, in which it can be noticed that the group of age with the most cases is 0 – 1 year with almost 55 cases. This kind of malformations can be discovered from the birth, by the presence of cyanosis and the assessment of the vital signs, also by radioscopic examination and echocardiography. From the rural environment are coming the children with different ages as following: 0 -1 year – 55 cases; 1 -3 years – 13 cases; 3 -5 years – 3 cases; 5 -7 years – 3 cases; 7 -10 years – 3 cases and over 10 years – 6 cases.

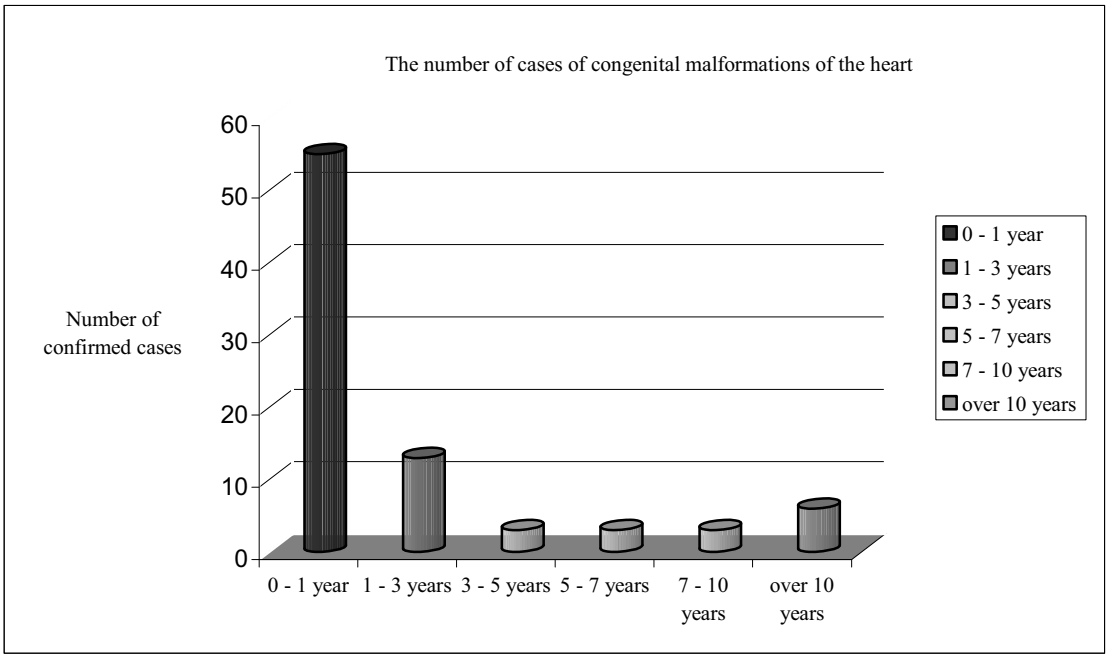

Figure 2 The repartition of cases of congenital malformations of the heart according to age

In discovering and prevention of such malformations are very important the prenatal examinations and the fetus echography but the elimination from the medical legislation of the obligation of the future mothers to see a doctor, the feeding deficiencies which can appear (the lack of folic acid, the lack of animal proteins) lead to the appearance of these cases which can't be discovered in a short while. Underfeeding, as a principal factor of maternal and fetus morbidity, it is expressed by a general weakness of the entire feminin body, which has to carry the burden of her life but also of the future child. It is well said that a healthy mother will give birth to a healty child. But the nourishing must be enough and with corect feeding and varied food. The lack of a proper feeding leads to the aggravation of already existing diseases or at the appearance of new diseases. The proteins, the calcium and the iron are the most important factors in the feeding of a pregnant woman (LYONS JONES, 1988).

During the studied period of time, there were 18 deceases (table 3). When the autopsy was made, it was emphasized the type of congenital malformations of the heart: the defect of the

septum, large interventricular communication, aortic stenosis, ventricular hypertrophy but also swelling and cerebral and pulmonary congestion, hepatospenomegaly, ventricular hypertrophy and the presence of some blood clots at the level of heart. The number of deceases is more at boys (14 cases) than at girls (4 cases) which is shown in figure 3.

Table 3 The frequency of deceases in the cases of congenital malformations in the rural environment

Year	Number of cases	Number and frequency of deceases (%)	
1998	12	5	41,67
1999	13	3	23,08
2000	12	5	41,67
2001	20	2	10
2002	5	1	20
2003	20	2	10
1998-2003	82	18	22

The deceases affect especially the group of age 0-1 year with 16 cases which shows that congenital malformations of the heart discovered were very serious and the outcome vas reserved (table 4).

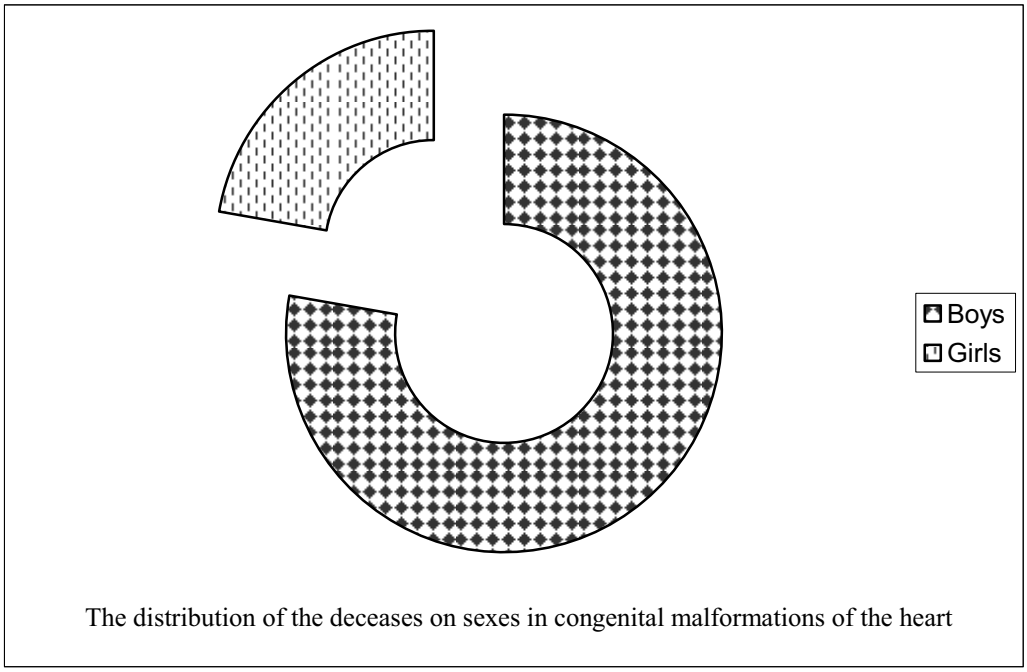

Figure 3 The distribution of the deceases in the rural environment

The infants mortality has reached a descendent tendency, with a percent of 26.9‰ (26.9 deceases at 1000 newborns born alive), 21.2‰ in 1995, 18.6‰ in 2000 and 17.3‰ in 2002; in present it is 16‰. The levels of mortality rate in infants vary from the rural and the urban environment, so this means to make supplementary investigations in the rural environment, especially in poor to areas, isolated regions with a difficult access to medical care. Romania is a country in transition and its characteristic is the decrease of deceases by cardio – vascular diseases, cancer, traumations and congenital malformations (National Plan of Development 2004 – 2006).

After the investigations made by specialists from universitary clinics from Iaşi, Bucureşti, Târgu Mureş and Cluj Napoca, some children found with congenital malformations of the heart show also other complications: Down syndrome, mental retardation, hypertrophy of thymus, pulmonary tuberculosis or congenital crooked leg, renal malformations, multiples malformations syndrome and congenital sprain of the hip.

Table 4 The distributions and the frequency of the deceases on groups of ages in congenital malformations of the heart from the rural environment

Year	The number of deceases	Groups of ages and their frequency (%)											
		0 – 1year		1 – 3years		3 – 5years		5 – 7years		7 – 10years		over 10years	
1998	5	5	100	-	-	-	-	-	-	-	-	-	-
1999	3	3	100	-	-	-	-	-	-	-	-	-	-
2000	5	5	100	-	-	-	-	-	-	-	-	-	-
2001	2	1	50	-	-	-	-	-	-	-	50	-	-
2002	1	1	100	-	-	-	-	-	-	-	-	-	-
2003	2	1	50	1	50	-	-	-	-	-	-	-	-
1998 - 2003	18	16	88,9	1	5,55	-	-	-	-	1	5,55	-	-

From a total of 82 cases of congenital malformations of the heart discovered and confirmed from the rural environment, a number of 16 cases had surgical treatment (table 5) in special clinics from Iaşi (“St. Mary” Hospital) and Bucharest (“Fundeni” Hospital).

Table 5 The frequency of the cases from the rural environment which have been sorted out by surgical methods

Year	Number of cases	Number and frequency of cases sorted out by surgical methods (%)	
1998	12	-	-
1999	13	1	7,7
2000	12	3	25
2001	20	5	25
2002	5	1	20
2003	20	6	30

1998 - 2003	82	16	19,5

From the information presented before it is justified and it must pay a special attention in what regards the rural environment which face the insufficiency of the resources, the lack of specialized medical staff, the lack of medical consulting rooms, the lack of access roads, but also the prevailing traditional methods and the lack of elementary knowledge of hygiene and care. It is noticed and obvious decrease of the sanitary activity and especially of the quality of medical care, also of the services offered for population. It is a also of the services offered for population. It is a small cover in the rural environment of the population with doctors, chemists and medium qualified staff especially in poor and isolated areas, with difficult access at medical care.

Many cases of congenital malformations of the heart can be diagnosed during intrauterine life by echography and some of them immediately after birth. Even if real possibilities of a prenatal diagnosis exit many pregnant women are coming from the rural environment, where the medical consulting rooms from the area don't have the necessary apparatus. This represents a real serious problem of public health because, during last period of time the number of newborns with different malformations, especially congenital malformations of the heart has a spectacular increase. Weekly, there are born 1 – 2 children with deficiencies incompatible with life and a reason of mortality in infants is represented by cardio – vascular diseases.

CONCLUSIONS

During 1998 – 2003 it were discovered and confirmed in Bacău county a number of 128 cases of congenital malformations of the heart, from which 82 cases of them are coming from the rural environment. The most frequent congenital malformations of the heart are defects of auricular and ventricular septum, the transposition of the great blood vessels, the auricular and ventricular hypoplasia, the coarctation of aorta, congenital aortic insufficiency, the tetralogy of Fallot, the hypoplasic aortic stenosis, the persistence of Botall orifice and the heart's position in the right part of the body.

In what regards the distribution on sexes of congenital malformations of the heart from the rural environment, the boys are more affected then the girls. The most cases of congenital malformations of the heart from the rural environment were discovered at the group of age 0 – 1 year.

From all 82 cases of congenital malformations of the heart, a number of 18 children have deceased because of the seriousness of the affections they had. These deceases have occurred at children at small age and have affected more boys than girls.

From all 82 cases, a number of 16 children had surgical treatment in special clinics from Iaşi, Cluj Napoca, Bucharest and Târgu Mureş.

In order to reduce the mortality in infants due to congenital malformations of the heart, it is necessary a prevention based on an attentive and generalized prenatal care, the early discovery of the problems that the fetus may have and also the complications which may occur in this period, the selection and the treatment of the pregnant women with increased risk and to do an attentive and responsible family history in order to prevent the appearance of some children with serious malformations.

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