Analysis of the Structure of Neonatal CHD in RS (Y) according to the Republic Hospital № 1 - NCM Data for 2011-2013

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ABSTRACT

The structure of congenital heart diseases (CHD) and large vessels in the newborn in the Republic of Sakha (Yakutia) was under study. All the share of septal defects group combined with functioning arterial duct and pulmonary artery valve stenosis was 82,20% of the all CHD (899). The CM of large vessels was 8, 90% (80) of all diagnosed cases of CHD. Complex, combined CHD were 4, 67% (46) of the total number of detected CHD.

Mortality rate was 1.22% (11 cases) of the total number of children with CHD (899) and was formed by obstructive lesions of the aorta and complex defects. The CHD structure has a preponderance of boys: 476/52, 94%. The absolute predominance of children Yakuts with CHD was revealed: 72, 08% (648) of all diagnosed cases of CHD.

Keywords: congenital heart disease, septal defects, developmental abnormalities of large vessels, complex congenital heart disease, structure of congenital heart disease in the Republic Sakha (Yakutia).

INTRODUCTION

Today in structure of children's incidence, disability and infantile mortality congenital developmental anomalies, (CHD) which meet at 4,0-6,0% of newborns are of all great importance, and their contribution to structure of death of children on the first year of life makes more than 20,0% [1,4]. In structure of congenital developmental anomalies the congenital heart diseases (CHD) and large vessels are high on the list (22% of all CD) and their frequency of birth rate worldwide makes 8-14 cases on 1000 newborns [2]. Frequency of occurrence of CHD among the live-born makes 0,7 on 1000 newborns. In 40% of cases CHD are the reason of perinatal losses and in 60% of death on the first year of life [5,8]. The researchers conducted in the USA and Great Britain, showed that at a natural current of CHD by the end of the 1st year more than 70% of children, in North America this pathology is a cause of death of 37% of babies, and in Western Europe – 45%. [3,9]] . Birth rate of children with heart diseases makes in the Russian Federation from 3,2 to 8,0 on 1000 newborns and tends to growth [6]. Republic of Sakha (Yakutia) -RS(Y) steadily is a part of the few regions of Russia in which the natural increase of the population remains. In dynamics, in three years, in RS (Y) the indicator of birth

rate increased by 4,8%. / to data of Territorial body of Federal State Statistics Service (TB FSSS) / In structure of infantile mortality for a number of years CD takes the second place (2012 - 23,1; 2011 - 16,5; 2010 - 11,8 on 10.000 been born live) after "diseases, specific for the neonatality period" (2012 - 45,5 on 10 thousand been born live; 2011 - 25,7; 2010 - 28,6). In 2012, in the republic, in connection with transition to nursing of newborns with extremely low body weight by criteria of WHO growth of coefficient of infantile mortality in comparison with 2010 by 1,4 times – 9,9 on 1000 been born (2011 – 6,3 is noted; 2010 - 7,2). In 2012, in connection with transition to criteria of registration of childbirth under the WHO recommendation from 22 weeks of pregnancy, the indicator of perinatal mortality according to MPI in comparison with 2010 grew by 1,6 times and made 13,7 on 1000 been born live and dead (2011 - 8,6; 2010 – 8,4). In structure of the reasons of **perinatal mortality** the specific weight of congenital anomalies of development – by 1,5 times significantly increased: 2012 - 23,9% (56 cases), 2011 - 15,7% (22 cases), 2010 - 16,3% (22 cases). Leaders in structure of congenital developmental anomalies are multiple developmental anomalies (33,9%), heart diseases and the central nervous system (on 21,4%). On disability the congenital developmental anomalies (CDA) of which 48,3% make anomalies of system of blood circulation are the main reasons of an exit of children. / the report of the minister of Health about states of health of the population of RS (Y); 2012/ . According to the existing order MH Russian Federation No. 268 of September 10, 1998 "About monitoring of congenital developmental anomalies among children" and to No. 392 order MH Russian Federation of 02.11.1999 among all heart diseases and large vessels of obligatory registration and to the account only congenital anomalies of large arteries and "a syndrome of a left-side hypoplasia of heart" are considered. At present there is no uniform full monitoring of CH in RS (Y) in nosological forms since information on other nosological forms and anatomic options of CH drops out. Primary incidence of CHD of bodies of blood circulation of children's age, is generally formed by incidence of CHD among newborns. Thus, incidence growth among newborn children of CD, in which structure of CHD occupy one of leading places, in RS (Y); essential contribution of in formation of perinatal and infantile mortality, and an invalidization among children; insufficient data on a prevalence, frequency and CHD structure among newborns in RS (Y) formed the basis for carrying out studying of frequency and structure of CHD and large vessels among newborn children in RS (Y). Relevance of this problem is caused not only their big prevalence, but a tendency to increase in specific weight of more serious, combined CHD with a frequent fatal case on the first year of life [7] and need rendering the high-tech cardiac help. Data on a prevalence and structure of CHD are necessary for planning

and the organization of volumes of the specialized high-tech cardiac and cardiological help for children.

Purpose of research: to study structure of the congenital heart diseases (CHD) and large vessels among newborns in RS (Y) according to the Perinatal Center State Budgetary Institution RS (Y) RB No. 1NCM for 2011-2013.

MATERIALS AND RESEARCH METHODS

Research was conducted on the basis of the Perinatal Center of State Budgetary Institution RS (Y) RH1 NCM among live-born newborns: department of pathology of newborns (DPN), department of nursing of the prematurely born (DNPB), infectious department of newborns (IDN)

CHD were registered according to the nomenclature headings Q20-Q28 "Congenital anomalies of system of blood circulation'' the XVII class "Congenital Anomalies [Developmental Anomalies], Deformations and Chromosomal Violations" of the International statistical classification of diseases and the problems connected with health (the 10th revision) (MKB10) as primary documentation are used: stationary magazines (form No. 010 order of MH USSR 04.10.1980 No. 1030); statistical cards of the inpatient (form No. 066/u-02 order MH RF 30.12.2002 No. 413) Nosological diagnoses of CHD are confirmed with data of an echocardiography of heart with a Doppler sonography of vessels (EHO-KG with DS), electrocardiograms (electrocardiogram), roentgenograms, computer tomograms in angiographic researches. The indicator of frequency was considered on 1.000, been born the live.

RESULTS AND DISCUSSION

The analysis of structure of CHD according to the Perinatal center State Budgetary Institution RS (Y) RH№1 NCM) showed the following results. According to our data, during 2011-2013 of all 899 cases of CHD, among the newborns who were born live and being on inspection, treatment, and as at the 2nd stage of nursing concerning prematurity in profile departments are registered. In total it is processed: in OPN 433, in DNPB**,** in IDN of 200 statistical cards. Received results are presented in табл.№1. According to these tab. No. 1 in CHD structure the general share of group of the septal defects made 59,29% (533), occupying a half of all revealed cases of CHD. On the first place among all revealed CHD defect of a interatrial baffle (DRIB)-303/33,7% was registered; further combination of defect of an interventricular septum(DIVS) and DRIB-of 109/12,12%; isolated P-of 84/9,34%. The septal defects won first place in group % DRIB 303 / 56,85; on the second place on frequency a combination of DRIB and DIVS-109/20,45 of %; on the third place of DIVS – 84(15,76%); on the fourth place DIVS, DRIB combination, valvate stenosis of a pulmonary artery (VSPA) of-37/6,94%. The share of group of a combination the septal defects with the functioning arterial channel (FAC), VSPA made 22,91% (206). In this group first place won a combination of DRIB with FAC – 75/36,41% and DIVS with FAC-of 74/35,92%; second place combination of DIVS, DRIB to FAC-of 53/25,23%; on the last place on frequency the combination of DRIB to FAC and VSPA - 4/1,94% met. Thus all share of group of the septal defects (533) and groups the

septal defects in combination with FAC and VSPA (206) made 82,20% of all CHD (899). Defects of large vessels (isolated FAC, an aorta coarctation (Co Ao), abnormal drainage of pulmonary veins (ADPV), a stenosis of a pulmonary artery (LA stenosis)) made only 80 cases (8,9%) of the all revealed cases of CD, from them congenital malformations of large arteries unambiguously prevail – 72 cases. In structure of CD of large vessels isolated FAC – 51/63,75% most often met; on the second place Ko Ao – 21 cases / 26,25%; ADPV (total / 3 and partial / 1) - 4/5%; stenosis of LA of 4/5%. The share of a tetrad of Fallo (T. Fallo) made 1,11% (10) of all revealed CHD (899). The share of anomaly of Ebstein (4) and congenital anomalies of the tricuspid valve (1) made 0,56% (5). Share of valvate CHD: atresias of the tricuspid valve (atresia of TV) as a part of a syndrome of a hypoplasia of the right compartments of heart (1), atresias of the valve of a pulmonary artery it (APA) - (7), made 0,89% (8) of all revealed CHD. To the share of the atrioventricular channel (AVK) (10) fell 1,11% from all cases of CHD . The share of the transposition of the main vessels (TMV) made 0,45% (4) Share of a double - outlet right ventricle (DO from RV) 0,22% (2). Other CHD: single ventricle (SV) (OV) - 0,11% (1). Difficult, combined CHD made 4,67% (46) of all quantity of revealed CHD. In structure of difficult CHD, T. Fallo-of 21,74% (10) and AVK-21,74% (10)were the most often met. On the second place: It is AVC-15,22% (7), on the third place - TMS of 8,70% (4), anomaly of Ebshteyn-of 8,70% (4), total ADPV (TADLV) - 6,52% (3), on the fourth DO from RV - 4,35% (2), other defects: TC atresia as a part of a syndrome of a hypoplasia of the right compartments, single ventricle (SV), on 1 (on 2,17%).

The lethality made 11 cases that made 1,22% of total of children with CHD. (899). Among them: AVC – 2, obstructive damages of an aorta in combination with septal defects – 4, partially open AVC with a hypoplasia of an aorta-1, DO from RV-2, Edwards's syndrome with case DIVS, DRIB-2. Department of pathology of newborns: the general lethality during 2011-2013 made 5/0,92%. Department of nursing of the prematurely born: the general lethality, during 2011-2013 in CHD structure made 6/2,57%. Higher share of a lethality in DNPB probably is caused by specifics of department: nursing of deeply prematurely born children, including with extremely low body weight with gestation term of 25-26 weeks, with severe defeats of CNS, bronchopulmonary displasia (BPD), the syndrome of respiratory frustration (SRF) and accompanying MCHD and the genetic pathology, being on mechanical ventilation.

Studying of structure of CD according the sex revealed the following: distribution of boys and girls approximately identical, but boys were revealed 476/52,94%, slightly more, than girls 423/47,06. On national structure Yakuts made 72,08% (648 newborns), the Russian 16,70% (150), Evenks of 4.89% (44), Evens of 1,33% (12), Yukaghirs, Dolgans, Chukchi 0,11% (on 1)-

each, other 4,67% (42). In total indigenous Arctic athnic groups (IAEGs) made 6,56% (59 newborns) of all revealed cases of CHD. In IAEGs structure: on the first place: Evenks of 74.58% (44), second Evens for 20.34% (12), further Yukaghirs, Dolgans, Chukchi 1,69% (1) - each. Absolute prevalence of children of Yakuts with CHD is revealed: 72,08% (648)

CONCLUSIONS

During 2011-2013, according to our data, among all revealed cases of CHD (899) the group the septalny defects often met made 59,29% (533) and also group of a combination the septalny defects with FAC and VSPA which made 22,51% (206). All share of group the septalny defects (533) and groups of the septal defects in combination with FAC and VSPA (206) made 82,20% of all CHD (899), occupying the main part of all revealed CHD. The share of CD of large vessels (isolated FAC, Co Ao, ADPV, PA stenosis) made 8,90% of all revealed cases of CHD (80), from them unambiguously prevail CD of large arteries of-90%./72 case.

T. Fallo's share made 1,11% (10) of all revealed CHD (899). The share of anomaly of Ebstein (4) and congenital anomalies of the trikuspid valve (1) made 0,56% (5). Share of valvate CHD: tricuspidl atresias as a part of a syndrome of a hypoplasia of the right compartments of heart (1), atresias of the PA (7) valve made 0,89% (8) of all revealed CHD. To the share of AVK 1,11%(10) fell from all cases of CHD. The share of TMS made 0,45% (4) the share of DO from RV is 0,22% (2). Other CHD: single ventricle (SV) - 0,11% (1). Difficult, combined CHD made 4,67% (46) of all quantity of revealed CHD. In structure of difficult CHD most often met a tetrad of Fallo-of 21,74% (10) and AVC-21,74% (10).

On the second place: atresia of the PA valve of-15,22% (7), on the third place - TMS of 8,70% (4), anomaly of Ebshtein-of 8,70% (4), TADPV-6,52% (3), on the fourth DO from RV-4,35% (2), other defects: 1 (on 2,17%)- each. During 2011 for 2013 the lethality made 1,22% (11 cases) of total of children with CHD (899) and was formed due to obstructive damages of an aorta and difficult defects. In structure of CHD there is some prevalence of boys: 476/52,94%. On national structure: Yakuts made 72,08% (648 newborns), the Russian 16,70% (150), Evenks of 4.89% (44), Evens of 1,33% (12), Yukaghirs, Dolgans, Chukchi - 0,11% (on 1) - each, other 4,67% (42). In total indigenous Arctic ethnic groups made 6,56% (59 newborns) of all revealed cases of CHD. Absolute prevalence of children of Yakuts with CHD is revealed: 72,08% (648)

Table 1

Structure of CHD according to nosological entity conducted on the basis of the Perinatal Center State Budgetary Institution RS (Y) RH№1 NCM in 2011 -2013

Nosological entity CHD ICD 10	Total CHD 899	
	amount	%
Q21.8 000	40	4,45
Q21.0 DIVS	84	9,34
Q21.1 DRIB	303	33,7
Q21.0+Q21.1 DIVS+DRIB	109	12,12
Q21.0+Q21.1+ VSPA DIVS+DRIB+VSPA	37	4,12
Q25.0 FAC	51	5,67
Q25.0+ Q21.0 FAC+DIVS	74	8,23
Q25.0+ Q21.1 FAC+DRIB	75	8,34
Q25.0+ Q21.1+VSPA FAC+DRIB+VSPA	4	0,45
Q25.0+Q21.0+ Q21.1 FAC+DIVS+DRIB	53	5,9
Q25.1 Ko Ao	21	2,34
Q21.3 T. Fallo	10	1,11
Q26.2 T.ADPV	3	0,33
Q26.3 Ч. ADPV	1	0,11
Q22.8 Congenital anomaly TC	1	0,11
Q22.5 Ebstein's desease	4	0,45
Q22.8 Atresia TV	1	0,11
Q21.2 General AVC	10	1,11
Q20.3 TMS	4	0,45
Q22.0 APA	7	0,78
Q25.6 Stenosis ЛА	4	0,45
Q20.8 SV	1	0,11
Q20.1 DO from RV	2	0,22

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