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Cardiac Congenital Pathologies More Frequent In Children Under 1 Year Old In The General Hospital Of The North IESS Los Ceibos, Guayaquil (Ecuador).

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ABSTRACT

Congenital heart diseases (CHD) are structural malformations of the heart or large vessels, which cause a functional impairment, present at birth, being discovered at that time or during the course of the life of the carrier. CHD are a group of complex diseases that cause a serious public health problem. The objective of this study is to identify the most frequent congenital heart malformations in children under 1 year of age in the general hospital of the north IESS Los Ceibos of the city of Guayaquil (Ecuador) in the period July 2017- January 2018. The data of this investigation were taken from pediatric patients by reviewing medical records. In the study period, 35,105 pediatric care visits were made to children under 1 year of age, and 1.025 (2,92%) cases of congenital malformations were detected, of which 108 corresponded to congenital heart malformations (CHD), that is, 10,53% of the malformations observed were of the CHD type. According to the data obtained, it is concluded that the most frequent cardiac congenital malformations in children under 1 year old are non-cyanotic congenital cardiac malformations (NC) with a total of 102 cases (94%) and 6 cases (6%). they correspond to congenital cardiac malformations (C), being these less frequent.
Keywords: Malformations, Congenital Heart Disease, Cyanosis, Non-Cyanosis, Prevalence, Children.

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INTRODUCTION

Congenital heart diseases (CHD) are structural malformations of the heart or the great vessels, which cause a functional impairment, which are present at birth, being discovered at that moment or during the course of the life of the carrier. This type of pathologies is an alteration in the embryonic development of the heart (3rd and 10th week of gestation) (Uribe et al., 2015).

The causes of CHD are unknown, although there is evidence that inheritance plays a decisive role in 8% of those affected and teratogens are involved in 2% of cases. The genesis of the remaining 90% is multifactorial (hereditary predisposition) (Quesada and Navarro, 2014)

The CHD are highlighted due to their high lethality, whose mortality in children under one year corresponds to something more than 1/3 worldwide (Madrid and Restrepo, 2013). While in our country they correspond to one of the main causes of mortality child category within the group of "catastrophic diseases", occupying between the third and fourth place in this list (INEC, 2014).

The most prevalent CHD are those of the acianotic type (non-cyanotic), among the most frequent are: defects of the interventricular septum (VSD) and atrial septal defect (ASD), patent ductus arteriosus, pulmonary valvular stenosis and coarctation of the aorta (Uribe-Rivera et al., 2015)

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Approximately 3-4% of all newborns have a congenital malformation, either structural or functional. Among these anomalies are congenital heart diseases (CHD), which are among the leading causes of death in the population of childhood malformations in Latin America (Baltaxe and Zarante, 2006, Aracena, 2003). It is proposed that out of every 1.000 live births, 8 to 14 will have some type of CHD, with premature children being the most at risk (Mendieta-Alcántara et al., 2013).

In Ecuador, in 2011 and 2012 the National Institute of Statistics and Census (INEC) reported that CHD are among the first ten etiologies of infant mortality (INEC, 2014).

Heart diseases are usually accompanied by extra cardiac abnormalities and the relationship between sexes is very even, almost always close to 1:1, except in specific pathologies such as the transposition of large arteries where males are mostly affected with a ratio of 3 to 1 (Myung Kun, 2008).

The presentation of CHD can be of two basic forms, cyanotic or cyanotic, the method of choice for the diagnosis of these malformations in pediatric patients is echocardiography, considering the advantages in costs and easy access (Cloherty and Stark, 2002; Velásquez et al., 2008; García et al., 1998; González and Hernández, 2005).

Usually the most frequent pathologies are the non-cyanotic heart diseases being the ventricular septal defect (VSD), the atrial septal defect (ASD) and the patent ductus arteriosus (PDA) the most frequent in this group (Mendieta-Alcántara et al., 2013).

CHD not cyanosantes

Among the heart diseases that produce volume overload. The common pathophysiological denominator of this group is the communication between the systemic and pulmonary sides of the circulation. These are characterized by pulmonary congestion. The most frequent representatives of this group are: atrial septal defect, ventricular septal defect, septal defects and persistent ductus arteriosus. (Myung Kun, 2008; Cloherty and Stark, 2002)

Among the cardiopathies that give rise to pressure overloads. The common pathophysiological denominator is the obstruction to normal blood fl ow. The manifestations are: sweating, tiraje, tachypnea, galloping rhythm, murmurs or recurrent pneumonia, cardiomegaly. The most frequent are outflow tract

obstructions (pulmonary valve stenosis, aortic valve stenosis, and coarctation of the aorta). Obstructions of the entrance tract (mitral or tricuspid stenosis) are less frequent (Myung Kun, 2008).

CHD cyanantes

These CHDs present with cyanosis and hypoxemia as a capital sign. This group can be subdivided according to the pathophysiology: if the pulmonary blood fl ow is reduced or increased (Cloherty and Stark, 2002). Among the cyanotic cardiopathies with decreased pulmonary blood flow.

These heart diseases are characterized by both obstruction to the pulmonary fl ow, either at the level of the tricuspid valve, the right ventricle or the pulmonary valve. Common heart diseases in this group include tricuspid atresia, tetralogy of Fallot, and various forms of single ventricle with pulmonary stenosis. (Myung Kun, 2008; Cloherty and Stark, 2002).

CHD cyanosias more frequent

CHD with decreased pulmonary Flow

Tricuspid atresia. It is the anatomic absence of the tricuspid valve, accompanied by severe hypoplasia or absence of a right ventricle. It manifests with severe hypoxemia and acidosis, it is considered a bad prognosis heart disease when it coexists with other heart diseases such as transposition of large arteries or pulmonary stenosis (Myung Kun, 2008; Álvarez et al., 2005).

Tetralogía de Fallot: It has 4 components; obstruction to the exit in right ventricle, ventricular septal defect, overload of the aorta and hypertrophy of the right ventricle (Myung Kun, 2008; Cloherty and Stark, 2002).

Most frequent accianantes CHD

ventricular septal defect (VSD). It is a lesion in which the interventricular septum allows communication between the two ventricles.

Interventricular communication is classified according to the anatomical location where the defect is found: Membranous in 80%, Trabecular in 0,5 to 20%, Entrance tract in 5 to 7%, outflow tract (or infundibular) in 5% (Madrid and Restrepo, 2013). The purpose of this study was to know which are the most common congenital heart diseases in children under one year of age in the General Hospital of the North IESS Los Ceibos during the period from June 2017 to January 2018, it should be noted that the technical-scientific literature has been revised on the subject, there are no published antecedents of the epidemiology of CHD in this hospital or in the city in recent years, and there are very few studies on this subject in Ecuador.

MATERIALS AND METHODS

Children under 1 year of age diagnosed with congenital heart diseases were registered in the general hospital of the North IESS Los Ceibos during the period from June 2017 to January 2018. For this, the population of 108 individuals was used; randomization and the previous review of the clinical histories was carried out.

Table 1. Study variables

VARIABLE NAME	VARIABLE	TIPE	MEASUREMENT LEVEL
Congenital Cardiac Malformations	Categorical Variable	Nominal	Yes/No
Congenital Cardiac Malformations	Categorical Variable	Nominal	Yes/No
Congenital Cardiac Malformations	Categorical Variable	Nominal	Yes /No
Age	Numerical Variable	Continuous	1, 2, 3 months, etc…

After identifying the pediatric patients under 1 year of age treated in the general hospital of the north IESS. Los Ceibos during the analysis period diagnosed with congenital cardiac pathologies, the prevalence of congenital cyanotic and non-cyanotic cardiac pathologies was determined.

Distributing this percentage according to sex, gestational age, birth weight, APGAR at the first minute of the patients in the study and according to certain characteristics of the mother such as age, number of feats and infectious factor that may be present.

For all previously described, a descriptive, observational, retrospective, cross-sectional analysis was applied.

RESULTS AND DISCUSSIONS

In our study of a total of 35.105 pediatric visits to children under 1 year of age in the IESS Los Ceibos General Hospital in the period of analysis, 1.025 cases of congenital malformations were detected, accounting for 2,92% of total pediatric care; of these cases, 108 corresponded to congenital heart malformations (CHD), that is, 10,53% of the malformations observed were of the CHD type.

The prevalence obtained was 3 cases per 1000 children under 1 year (0,30%) seen in this hospital. With respect to gender, the prevalence of CHD in the female population is relatively greater with 57 cases (52%) while in the male gender there were 51 cases (48%).

In this regard, studies conducted by Baltaxe and Zaranta (2006) and Aracena (2003), indicate that approximately 3-4% of all newborns have a significant congenital malformation at birth, whether structural or functional; This suggests that the results of this study to date show us that this rate obtained more than 10 years ago, still remains in this sector of the country.

Madrid and Restrepo (2013), point out that, among the group of congenital malformations, heart diseases are the most frequent, leading to an incidence of 4 to 12 per 1,000 live births, and they are second only to congenital malformations worldwide. Premature children are the most at risk of having a CHD (Mendieta-Alcántara, et al., 2013), whose mortality in children under one year corresponds to something more than 1/3 worldwide.

Studies carried out in our country by the National Institute of Statistics and Censuses (INEC, 2014), during the years 2011 and 2012 report that CHD malformations are among the first ten etiologies of infant mortality in Ecuador cataloged within the group of " catastrophic diseases", occupying between the third and fourth place in this list. (INEC, 2014).

Of the 108 cases determined as congenital heart malformations (CHD), congenital non-cyanotic cardiac malformations stand out in 94%, with a total of 102 cases and the remaining 6% (6 cases) correspond to congenital malformations of cyanotic heart (C) (Figure 1).
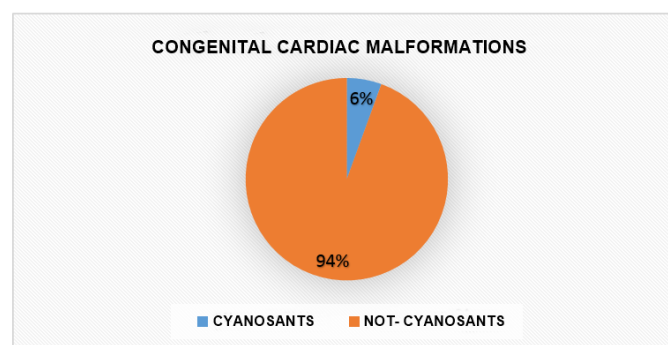

Figure 1. Congenital Cardiac Malformations

Of the 102 cases that correspond to CHD NC, the most frequent was the CIA with 58 cases (56,86%), followed by patent ductus arteriosus (PDA) (19; 18,6%), VSD (18; 17,64%). There were 2 cases (1,96%) with CIA + CIV, and with aortic coarctation (CoA). Finally, in 1 case (0,98%) the pathologies were aortic stenosis (AE), ventricular hypoplasia, and abnormal pulmonary venous drainage (APVD). (Figure 2).
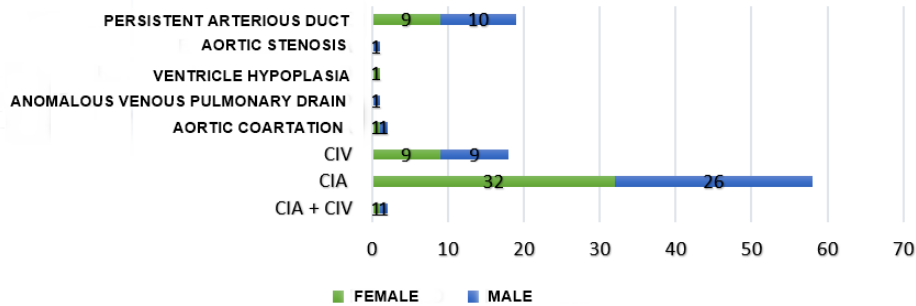

Figure 2. Congenital Cardiac Malformations, Non-Cyanosine

Regarding the 6 cases that correspond to cyanotic congenital heart malformations, they can be classified into different pathologies: TF with 5 cases representing 83,33%, this being the most prevalent pathology; and, transposition of large vessels with 1 case, which represents 16,66%. (Figure 3).
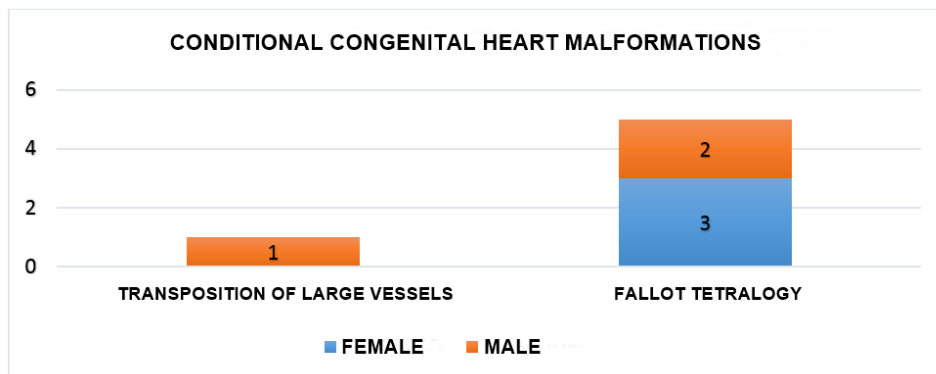

Figure 3. Congenital Cardiac Malformations

For the study of Cardiac Congenital Pathologies, the variables selected for this research are divided into pediatric aspects related to gestational age, birth weight and APGAR at minute of life; and, maternal aspects that may have influence on the appearance of congenital heart malformations, which are: maternal age, number of feats and presence of infectious factor.

For the variable gestational age we find the following results:

A. Severe prematurity Nb (Newborn) less than 32 SG 8 cases corresponding to 7,4% of the total of our study cases. In these cases, the following congenital cardiac pathologies were presented: PAC 5 case – 62,5%, CIA 2 cases - 25%, CIV 1 case – 12,5%.
B. Moderately premature Nb from 32 SG to 34 SG 9 cases corresponding to 8,33% of the total of our case studies. In these, the following congenital cardiac pathologies were presented: CIA 5 cases – 55,6%, PCA 2 cases – 22,2%, CIV 1 case – 11,1%, TF 1 case – 11,1%.
C. Nb prematurely mild from SG 35 to SG 36 17 cases corresponding to 15,74% of the total of our case studies. In these, the following congenital cardiac pathologies were presented: CIA 7 cases – 41,1%, PDA 5 cases – 29,4%, CIV 2 cases – 11,8%, and CoA TDGV, CIA + CIV with 1 case – 5,9 % each.
D. Nb to term 73 cases corresponding to 67,59% of the total of our case studies. In these the following congenital heart pathologies were presented: CIA 43 cases – 58,9%, CIV 14 cases – 19,1%, PDA 8 cases – 10,9%, TF 3 cases – 4,1% and CoA, EA, DVPA, CIA + CIV, HV with 1 case – 1,4% each.

E. Post-term Nb 1 case corresponding to 0,92% of the total of our study cases. In these the following congenital cardiac pathologies CIV 1 case -100% were presented.

For the variable APGAR at minute we find the following results:

A) APGAR at the minute of 0 to 3,13 cases corresponding to 12,03% of the total of our case studies. In these, the following congenital cardiac pathologies were presented: CIA 7 – 53,8%, PCA 3 cases – 23,1%, CIV 2 cases – 15,4%, AD 1 case – 7,7%.
B) APGAR at the minute from 4 to 6,22 cases corresponding to 20-37% of the total of our case studies. The following congenital cardiac pathologies were present in these cases: 13 cases – 59,2%, CIV 5 cases – 22,7%, PCA 3 cases – 13,6%, TDGV 1 case – 4,5%
C) APGAR at the minute of 7 or greater, 73 cases corresponding to 67,60% of the total of our case studies. The following congenital cardiac pathologies were presented in these cases: 34 cases – 46,5%, CIV 17 cases – 23,3%, PCA 15 cases – 20,5%, TF 4 cases 5,6%, CoA 2 cases – 2,7 %

Gratitude

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