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NUTRITIONAL STATUS OF NEONATES WITH CONGENITAL HEART PATH ADMITTED TO A NEONATAL ICU

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Abstract: Introduction: Congenital heart anomalies are the most common among severe congenital malformations and present high mortality in the first year of life. Newborns admitted to a Neonatal Intensive Care Unit are patients at nutritional risk, who require intensive monitoring. Objective: To verify the nutritional status of newborns with congenital heart disease admitted to the Neonatal ICU of a cardiology reference hospital. **Methodology:** The study was retrospective, quantitative and descriptive, being carried out with newborns admitted to a Neonatal ICU from January to August 2021 at a reference hospital in cardiology in the city of Belém/PA. The study included patients of both sexes, with a diagnosis of congenital heart disease recorded in the medical record. **Results and Discussion:** The study involved a sample of 31 newborns, of which 54.8% were male (n=17) and 45.2% female (n=14). It was found that according to BMI/I, 77.6% were eutrophic (n=24), 12.8% were at risk of overweight (n=4), 6.4% were thin (n=2) and 3.2% overweight (n=1). It is important to highlight that although the majority of newborns with heart disease are eutrophic at the time of hospital admission and at birth, many lose significant weight during hospitalization, which can be influenced by factors such as: type of heart disease, presence of cyanosis, surgery, as well as such as length of stay. **Final considerations:** To carry out nutritional assessment of newborns with heart disease admitted to neonatal ICUs is very important, as it allows the establishment of appropriate nutritional goals for each case according to the clinical conditions, minimizing the metabolic consequences inherent to the heart disease itself.

Keywords: Nutritional status; Neonates; Congenic cardiopatics.

INTRODUCTION

Congenital heart defects (CHD) are a set of morphophysiological malformations of the heart that arise during fetal development. Although CC is present from birth, it may not be detected at first. However, this condition is among the anomalies with the highest mortality in childhood, being the third cause of neonatal death in the country (RODRIGUES,2023). The incidence of these heart diseases is on average 8 for every 1,000 live births according to the World Health Organization (WHO) and are often related to pediatric emergency demands due to the need for hospital admissions and surgical procedures (PAULA et al,2020). Clinically, congenital heart diseases are classified into two groups: cyanotic and acyanotic heart diseases. Cyanosis is defined as the blue-purple coloration of the skin due to reduced hemoglobin in capillary blood (FILHO et al, 2014) and often involves complex surgical procedures. (NETTINA, 2012; ARAGÃO et al, 2013). The most common clinical signs for detecting congenital heart disease in newborns involve: arrhythmia, cyanosis, heart murmur, low cardiac output, progressive tachypnea, fatigue during breastfeeding, skin pallor, sweating, tachycardia, reduced blood flow of central/peripheral pulses and arterial hypotension. (SILVA et al,2014). Weight is the anthropometric measurement most used in the nutritional assessment of newborns and children and is closely related to growth (BROCK, FALCÃO,2008). According to Monteiro et al. (2012) malnutrition is a constant phenomenon among children with congenital heart defects. The main factor involved is the inadequate biological use of available nutrients, due to the increase in energy expenditure due to the clinical conditions inherent to the changes. In this sense, the study aimed to verify the nutritional status of newborns with congenital heart

disease admitted to a neonatal ICU in a reference hospital in cardiology.

METHODOLOGY

This study is retrospective, quantitative and descriptive, carried out in the Medical and Statistical Archives Service (SAME) sector of a reference hospital for heart disease in Belém/PA. The study included newborns (0 to 28 days of life), of both sexes, diagnosed with congenital heart disease and admitted to the neonatal ICU from January to August 2021. Neonates without congenital heart disease, syndromic, amputees or whose height upon admission was not recorded in the medical records. Using the weight and height collected directly from the medical record, the anthropometric indexes were classified as Weight for Age (W/A), Height for Age (H/A), Weight for Height (W/E) and Body Mass Index for Age. (BMI/A) in Z-SCORE, using the growth curves proposed by the WHO 2006 for full-term babies and the P/A and E/A indices by Intergrowth for premature babies. The sample obtained was 28 newborns. The sample calculation was carried out to verify the representativeness of the sample and it was found that the sample is representative considering the confidence level of 97%. This research was submitted and approved by the Research Ethics Committee (CEP) with human beings from the proposing institution, under opinion no. 5,106,621 and started after signing the Data Use Commitment Term (TCUD).

RESULTS AND DISCUSION

Variables	Profile of Neonates	n	%
Gender	Male	18	64,3
	Female	10	35,7
Birth weight (g)	< 2500g	9	32,1%
	2500 – 4000g	18	64,2%
	>4000g	1	3,7%

Table 1 – Profile of newborns with heart disease admitted to the neonatal ICU

Source: own author, 2021

According to Table 1, which represents the profile of newborns with heart disease admitted to the ICU, it was possible to observe that the majority were male (64.3%), with adequate birth weight (64.2%). study was Patent ductus arteriosus with 21.1%, followed by Interatrial Communication (ASD) with 13.5% and Interventricular Communication with 9.6%.

In this study, it was found that both full-term and preterm newborn patients had the appropriate weight and height for their age at the time of admission, and that the majority of those born at term were eutrophic according to the P/E and BMI/I, which can be viewed in table 2.

In the present study there was a prevalence of males, which is in line with Capelesso and Aguiar, 2017 and Monteiro et al. (2012) who found respectively 60.6% and 51.5% of newborns with heart disease were male. This result was different from the study carried out by Amorim et al. (2008) whose majority of newborns with heart disease were female.

Regarding weight at birth, most newborns with congenital heart disease have adequate birth weight (Monteiro, 2009; Silva; Lopes; Araújo, 2007; Peres et al, 2014). The average birth weight of children with heart disease was 2,097 g in the study carried out by Monteiro, 2009. A study carried out by Pereira et al. (2021) with infants with heart disease found

	Neonatos a termo			Preterm Neonates		
Anthropometric Indexes	**Classified by the WHO growth curve (2006)**	**n**	**%**	**Classification by growth curve - *Intergrowth***	**n**	**%**
P/I	Low weight Suitable weight High weight	2 17 1	10 85 5	Suitable weight	8	100
E/I	Short Suitable Height	4 16	20 80	Appropriate height	8	100
P/E	Accentuated thinness Thinness Eutrophy Risk of overweight	1 1 14 4	5 5 70 20	NSA*	NSA	NSA
IMC/I	Thinness Eutrophy Risk of overweight	1 15 4	5 75 20	NSA*	NSA	NSA

Table 2 – Classification of nutritional status using anthropometric indices in full-term and pre-term newborns at the time of admission.

*Não se aplica, pois, a curva de crescimento *Intergrowth* não contém os índices P/E e IMC/I.

that the average birth weight was 3080g, that is, both with adequate weight.

Blasquez et al. (2016) found that in children under 6 months of age diagnosed with congenital heart disease, they showed that the median birth weight was 3050 g (1390–4660 g), which means that the majority also had adequate weight, corroborating this study.

In the study carried out by Mitting et al. (2015) with 248 newborns, a total of 28 (11%) were underweight according to the W/A index. In this study, a similar result was found as 10% of the newborns studied were underweight for their age.

Pereira, Pinho and Silveira (2020), carried out a study in which 117 patients were evaluated, 60.7% male and 20.9% with cyanotic heart disease. This study showed that 93.2% of newborns were born with adequate weight for age (W/A) and 91.4% were also born with adequate weight according to the BMI for Age index (BMI/A), which corroborates our study, showing that the majority of newborns with congenital heart disease have adequate nutritional status.

For Marino et al. (2020), the prevalence of malnutrition in babies with congenital heart disease is between 21 and 29%. In this study, it was found that malnutrition was present in 10% of newborns according to the W/H index and in 5% according to BMI/A.

CONCLUSION

The present study showed that the majority of newborns with heart disease had adequate weight and height at birth and that they were eutrophic in terms of anthropometric indices P/H and BMI/I. Despite normal weight and height at birth in the neonatal period, the installation of nutritional disorders which, in addition to the lack of specific treatment for the malformation, worsens the nutritional condition of these patients. It is also worth highlighting that more studies are needed evaluating anthropometric indices in this population.

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