Epidemiologia dos casos de insuficiência cardíaca em recém-nascidos e lactentes menores de um ano

Epidemiology of heart failure cases in newborns and infants under a year

Epidemiología de los casos de insuficiencia cardíaca en recién nacidos y lactantes menores de un año

RESUMO

Objetivo: Analisar o perfil das internações e óbitos por insuficiência cardíaca em neonatos e lactentes menores de um ano de idade no Brasil. Método: Trata-se de um estudo epidemiológico transversal, descritivo, analítico e documental realizado com dados obtidos junto ao Sistema de Informação de Agravos de Notificação – SINAN/DATASUS, durante o período de fevereiro de 2013 a fevereiro de 2022. Resultados: No período analisado ocorreram 11.499 internações e 1.180 óbitos por insuficiência cardíaca. A Região Nordeste destacou-se pela maior quantidade de internações (31,5%) e óbitos (30,2%). Houve prevalência do sexo masculino tanto nas internações (51,5%) quanto nos óbitos (50,5%). No que diz respeito à raça/cor destacou-se a população parda com 37,7% das internações e 37,2% dos óbitos, seguida da branca com 24,3% das internações e 23,8% dos óbitos. Conclusão: Observou-se uma queda na quantidade de casos no país, no entanto os números de internações e óbitos por insuficiência cardíaca nesse grupo de pessoas ainda são de grande relevância.

DESCRITORES: Insuficiência cardíaca; Neonato; Lactente; Malformação congênita.

ABSTRACT

Objective: To analyze the profile of hospitalizations and deaths due to heart failure in neonates and infants in Brazil during the period from February 2012 to February 2022, with data obtained by Information System for Notifiable Diseases - SINAN/DATASUS. Method: This is a cross-sectional, descriptive, analytical and documentary epidemiological study conducted carried out with data obtained from the Notifiable Diseases Information System - SINAN/DATASUS, during the period February 2013 to February 2022. Results: In the analyzed period, there were 11,499 hospitalizations and 1,180 deaths due to heart failure. The Northeast region stood out for the higher number of hospitalizations (31,5%) and deaths (30,2%). There was a male prevalence both in hospitalizations (51,5%) and in deaths (50,5%). Regarding race/color, the brown population stood out with 37.7% of hospitalizations and 37.2% deaths, followed by white women with 24.3% of hospitalizations and 23.8% of deaths. Conclusion: There was a drop in the number of cases in the country, however the numbers of admissions and deaths due to heart failure in this group of people are still of great relevance.

DESCRIPTORS: Heart failure; Neonate; Infant; Congenital malformation.

RESUMEN

Objetivo: Analizar el perfil de hospitalizaciones y muertes por insuficiencia cardíaca en recién nacidos y niños menores de un año en Brasil. Método: Se trata de un estudio epidemiológico transversal, descriptivo, analítico y documental, realizado con datos obtenidos del Sistema de Información de Enfermedades de Declaración Obligatoria - SINAN/DATASUS, durante el período de febrero de 2013 a febrero de 2022. Resultados: En el período analizado, hubo 11.499 hospitalizaciones y 1.180 muertes por insuficiencia cardíaca. La Región Nordeste se destacó por el mayor número de hospitalizaciones (31,5%) y muertes (30,2%). Hubo predominio del sexo masculino tanto en las hospitalizaciones (51,5%) como en las defunciones (50,5%). Con respecto a la raza/color, se destacó la población morena con 37,7% de internaciones y 37,2% de defunciones, seguida de la población blanca con 24,3% de internaciones y 23,8% de defunciones. Conclusión: Hubo una caída en el número de casos en el país, sin embargo, las cifras de hospitalizaciones y muertes por insuficiencia cardíaca en este grupo de personas siguen siendo de gran relevancia.

DESCRIPTORES: Insuficiencia cardiaca; Neonato; Niño; Malformación congênita.

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INTRODUÇÃO

Defined as a progressive clinical syndrome whose pathophysiology involves a decrease in cardiac output [1], heart failure (HF), when present in the pediatric population, represents an important cause of death. In neonates and children, it presents a high complexity, having as relevant aspects: the congenital nature of hemodynamic alterations, associated hemodynamic alterations, the beginning of the pathological condition as well as the moment of therapeutic intervention, which should be done as early as possible. [2]

The etiology and symptomatology of heart failure usually differ according to the age of the child. In the newborn, the clinical signs of HF are manifested through increased work of breathing and inadequate systemic perfusion. [3] However, these signs and symptoms are nonspecific and can be confused with other neonatal disorders. In infants, the clinical picture is more comprehensive, including signs and symptoms of HF in the neonate associated with hepatomegaly, excessive sweating, especially when sucking, repeated respiratory infections and low weight and height gain. [1]

The causes of HF in the pediatric population are quite varied, with congenital heart defects being the most common. [4] In neonates, the etiology of a cardiac nature is mainly due to stenosis and/or coarctation of the aorta, hypoplastic left heart syndrome, valve insufficiency, permanence of the ductus arteriosus and transposition of the great arteries due to a defect in the ventricular septum. [5] In non-congenital causes, metabolic disorders, anemic conditions, perinatal asphyxia and arrhythmias stand out. [3,5]

As for infants, the pathology basically occurs due to volumetric overload due to increased pulmonary flow, a common clinical condition in interventricular communications (IVC) and in atrioventricular septal defect (AVSD); and by pressure overload, especially in cases of left ventricular outflow tract obstruction, aortic stenosis/coarctation. [1]

Despite being one of the major public health problems in adults in Brazil today, HF, when present in children, involves considerably greater medical-hospital care, often requiring palliative/corrective surgical interventions in cases secondary to congenital defects, an etiology present in approximately 0.1 to 0.2% of live births. [2]

Thus, it is noticeable that heart failure in the pediatric population is highly complex, with physiological changes in the cardiac development itself, multiple etiologies and a complex and individualized treatment. Faced with this reality, this study aims to analyze the epidemiological profile of cases of heart failure in neonates and infants under 1 year of age reported in Brazil between the years 2013 to 2022.

METHODS

This is a cross-sectional, descriptive, analytical and documentary epidemiological study carried out in May 2022, based on data obtained by consulting SINAN/DATASUS, which is an electronic database of epidemiological data. The sources consulted for theoretical basis were taken from electronic databases in the public domain, such as SciELO, Google Scholar, PUBMED, Brazilian Institute of Geography and Statistics (IBGE), USP journal portal and Sociedade de Cardiologia do Estado de São Paulo (SOCESP), including articles in English and Portuguese, from 2008 to 2022, and excluding those not included in the period and selected languages.

All cases of heart failure in neonates and infants under 1 year of age, in Brazil, registered in SINAN/DATASUS during the period from February 2013 to February 2022 were included, using as variables: region of the country, number of hospitalizations, sex, age, character of care, race/color and deaths. After collecting the data, they were analyzed using absolute and relative numbers in the base of 100 and organized in graphs and tables using Mi-

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crosoft Excel 2010 to present the results. As it is an epidemiological study whose data were obtained from public domain databases, the study did not need approval from the Research Ethics Committee.

RESULTS

From the data collected, it can be seen that, as regards hospitalizations of children under one year of age due to heart failure, there were a total of 11,499 hospitalizations between February 2013 and 2022 in Brazil, as shown in Graph 1.

The Northeast region had the highest number of cases with 31.58% (3,632 cases), followed by the Southeast region with 27.32% (3,142 cases) and the South region with 17.81% (2,049 cases).

In this period of time, the largest number of hospitalizations was concentrated in 2013, accounting for 1,422 hospitalizations (12.36%), in second place was the year 2014 with 1,420 hospitalizations (12.34%) and in third place was the year 2018 with 1,347 hospitalizations (11.71%).

With regard to the nature of care, 80.47% of the hospitalizations occurred on an emergency basis, while 19.53% were of an elective nature.

As for the sex of the hospitalized patients, there was no significant difference between them, so that 51.50% (5,922 cases) were male, against 48.50% (5,577 cases) were female.

With regard to race/color, there was a predominance of brown children with 37.76% of hospitalizations, followed by the white race with 24.38%, however, it is worth mentioning that the number of uninformed children corresponds to 35.63%.

In relation to deaths, per year of care, 1,180 deaths were recorded. Among these, 2013 was the year with the highest number of occurrences, determining 164 (13.8%) cases, followed by 2014 with 151 (12.7%) and 2015 with 133 (11.27%), as shown in Graph 2.

With regard to deaths by region, 357 cases (30.2%) were found in the Northeast, followed by the Southeast with 326 cases (27.6%) and the South with 198 deaths (16.7%).

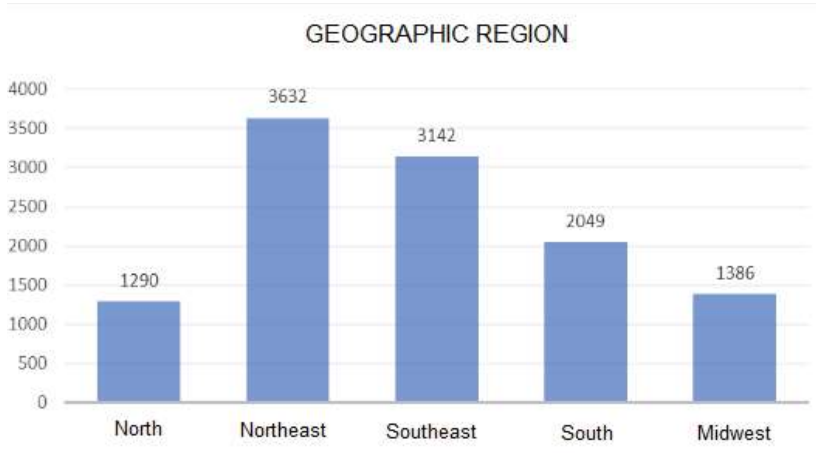
Regarding deaths due to the nature of care, it was observed that 1025 cases (86.8%) were of an urgent nature, followed by elective with 155 incidences (13.3%).

Regarding deaths by sex, it was analyzed that the predominance is in males with 596 cases (50.5%), followed by females with 584 cases (49.4%).

In relation to race/color, 440 cases (37.2%) of the brown race were found, followed by 281 of the white race (23.8%), however, it is worth noting that 415 were not informed (35.1%).

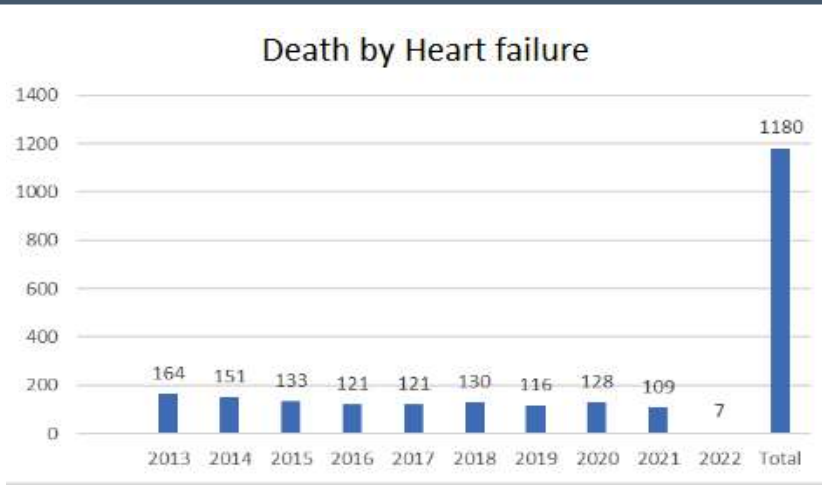
DISCUSSION

Graph 1 – Number of hospitalizations of children under 1 year of age, due to HF in Brazil, according to geographic regions. Brazil. 2013 to 2022. (n = 11.499)



Source: Authors, 2022

Graph 2 – Number of deaths from HF in children under 1 year of age, according to the year of occurrence. Brazil. 2013 to 2022. (n = 1.180).



Source: Authors, 2022

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In the present study, it was observed that, in Brazil, from 2013 to 2022, there was a decrease in the number of hospitalizations for heart failure in children under 1 year of age, with a slight increase only between the years 2017 and 2019. As for deaths, there was a decline from 2013 to 2015, resuming a certain constancy of cases from 2016, with a new decline between 2020 and 2022.

It is known that heart failure in children under 1 year of age can have multiple etiologies, which can be congenital or acquired. Among the congenital malformations are the malformations that are the main responsible for the increasing neonatal morbidity and mortality due to HF, and the acquired ones, such as rheumatic heart diseases, endomyocardial fibrosis, nutritional deficiencies and other tropical diseases. [6,7,8]

In addition, it can be seen that the Northeast and Southeast regions are the most affected. It is known that, when compared to other regions, the Northeast presents greater difficulty in accessing health services, in addition to other important factors such as high rates of illiteracy and reduced coverage of sanitary sewage [9], which makes access to earlier diagnoses, more effective treatments and quality of life difficult, leading to the reality presented. In the Southeast, the high number of cases is justified by the higher population rate, with an estimate for 2021 of 89,632,912 inhabitants, according to data from the Brazilian Institute of Geography and Statistics - IBGE. [10]

These data also call into question the ineffectiveness of hospital care in these regions, both at delivery and after the birth of these patients, since the main component of infant mortality is currently early neonatal (0-6 days of life) and most infant deaths occur in the first 24 hours (25%), indicating a close relationship with care during labor and birth. [11] This fact also justifies the character of care that demonstrates a scenario in which these patients are hospitalized in greater numbers as an emergency, which corroborates the data collected, as they are possibly diagnosed after having complications arising from early screening, which are signs and symptoms such as tachypnea, tachycardia, dyspnea at feedings [2], among others.

The causes of HF in the pediatric population are quite varied, with congenital heart defects being the most common. In neonates, the etiology of a cardiac nature is mainly due to stenosis and/or coarctation of the aorta, hypoplastic left heart syndrome, valve insufficiency, permanence of the ductus arteriosus and transposition of the great arteries due to a defect in the ventricular septum.

With regard to gender, although there are more cases of hospitalizations and deaths in males, there is no prevalence over females that is relevant to the study.

As for race/color, there was a predominance of mixed race both in the number of hospitalizations and deaths, which is justified by the preponderance of the mixed race population in the country, according to IBGE data, so that 46.8% of the population declared themselves to be brown, followed by 42.7% who declared themselves to be white in the 2019 National Continuous Household Sample Survey. [13] However, it should be noted that the percentage of unreported data regarding race/color was quite high, revealing a failure to collect data and update the platform.

CONCLUSION

In view of the above, it is observed that heart failure in children under one year of age in Brazil, despite showing a decrease over the years, it is still a pathology of great relevance among newborns and infants, since it impacts the morbidity and mortality of this group of people, both in the congenital and acquired modality.

This is the result of a health system that still has failures in early diagnosis and the low level of education of a large portion of the population. As a result of this late diagnosis, most cases arrive at hospitals as an emergency, given the degree of complication these children are in, which is reflected in the high number of deaths from heart failure.

In addition, the study points out that the Northeast and Southeast regions have a greater number of hospitalizations and deaths, which demonstrates the need for greater investments in their health institutions, both because they have the largest population volumes in the country, and because they have a deficient health system, especially in the Northeast.

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