

Nursing Assistance to Children with Fallot Tetralogy: The Blue Baby Syndrome

Roberta Meneses Sousa¹, Aline de Sousa Rocha², Marcos Antonio Silva Batista³, Rosane Cristina Mendes Gonçalves⁴, Benedita Maryjose Gleyk Gomes⁵

¹Nurse. Post-Graduation in Senior Health at UNASUS-UFMA. Nurse at Hospital Municipal de Imperatriz and Hospital Regional Materno Infantil, Imperatriz, Maranhão Brazil.

²Nurse. Post-Graduation in adult ICU and Nephrology at UNIBF, Paraíso do Norte, Paraná, Brazil.

³Nurse. Post-Graduation in Nurse Work at Faculdade Gianna Beretta. Nurse at EBSEH, Araguaína, Tocantis, Brasil.

⁴Nurse. Post-Graduation Public Health at UFT. Nurse at EBSEH, Araguaína, Tocantis, Brazil.

⁵Nurse. Master in regional management and development, Post-Graduation in Mental health at CEUP/ULBRA-TO. Tutor at Facimp/Wyden and practice Teacher at Universidade CEUMA, Imperatriz, Maranhão, Brazil.

Abstract— *Objective: Congenital heart diseases are responsible for an important number of deaths of children before the first year of life. Tetralogy of Fallot, as one of the potential and frequent congenital heart diseases, can often undergo correction, if it is readily recognized, and it is up to the teams closest to the NB to be attentive to symptoms. As a representative of this care, the nursing team stands out, with a high level of theoretical and technical capacity, as well as the potential for the formation of bonds with patients and families, facilitating the recognition of illness and work focused on their interventions. The present study aimed to work and know the pathophysiological process of tetralogy, as well as therapeutic processes and the nursing action in this regard. Methods: The methodology has as its nature the bibliographic review, enabling the finding of many materials and discussions on the subject. Results: The results present tetralogy as an important alteration, which can be observed through signs such as irritability, frequent crying, difficulty breathing when being breastfed, fingertips and cyanotic skin, also highlight that nurses can act so that the individual can present better responses to the disease and treatment and that these care begin even in prenatal care and extends until after birth. Conclusion: It is necessary to emphasize that tetralogy presents varying levels of commitment and this fact will directly determine the therapeutic process and approach to be adopted.*

Keywords— *Fallot tetralogy, blue baby syndrome; nursing care.*

I. INTRODUCTION

According to the World Health Organisation (WHO), the existence of congenital cardiopathies varies between 0.8% in developed countries and 1,2% in poorer countries. Every year in Brazil, about 29,8 thousand cardiopathies are born, 80% of this value, which corresponds to 23,8 thousand children, will need to undergo surgery, and even 50% of this total, will have to perform the surgical procedure before the first year of life (BRASIL, 2017).

In line with what the WHO presents, in Brazil, cardiovascular diseases cause about 16.7 million deaths annually, with increases for the year 2020 of competing as the primary reason for impossibility and mortality (CASAGRANDE, 2012).

Tetralogy of Fallot is one of the most common aspects of congenital heart disease, characterizing 50% of these heart diseases. It is described by a tetrad: which presents as a defect of the interventricular septum, a dextroposition of the aorta, which obstructs the passage of blood flow from the right ventricle and a ventricular hypertrophy located on the right (RIBEIRO et al, 2010).

In the accomplishment of the therapeutic conduct, the elaborated and competent nursing care is essential and essential, through the implementation of the stages of the Systematization of Nursing Care (SNC), according to the COFEN Resolution - 272/2002, where it mentions that the institutionalization of THE as learning of a work process appropriate to community needs and as a care example to

be placed in all areas in which the nurse develops such care (BARBOSA, LEME and GARCIA, 2009).

It is extremely important that the nursing team has experience on the theme to conduct their procedures and explain them to the companion, in a way understandable for their understanding, attending not only a characteristic and disciplined care to the child, but also an emotional contribution to her and her family members (ROSA et al., 2010).

In this sense, the present study aims to understand the history of cardiac pathology, in order to describe cardiovascular anatomy and physiology, presenting literary data on causes, signs, symptoms, risk factors, diagnosis, treatment and nursing care. children with Tetralogy of Fallot.

The article is prepared in sessions, which include the theoretical framework where the literature of determination is treated tetralogy of Fallot, the blue baby syndrome in its general context aimed at the child and the family member, the following sessions will treat the method used for the preparation of the article and the results and discussions as a product of the entire written text finally, the final considerations, ending the central idea and reaffirming the most relevant points found throughout this production.

II. NURSING CARE FOR CHILDREN WITH CONGENITAL HEART DISEASE

Soon after birth it is possible to observe congenital cardiac imperfections, such as in structure and/or circulatory function. Malformations may arise from multifactorial communication, which is related to environmental and genetic aspects (SILVA et al, 2015).

For every 1000 newborns (NB), about one to two have a theoretically fatal cardiac imperfection, in general systemic blood flow and pulmonary need an arterial duct (MAGALHÃES, QUEIROZ AND CHAVES, 2016).

This cardiac malformation is manifested as one of the most severe at birth, indicating a high mortality rate in the world. It is assumed globally that about 130 million newborns are included in this diagnosis annually. In Brazil, data estimate the occurrence of two to ten cases per 1,000 live births (LIMA, SILVA E SEQUEIRA, 2018).

The nursing care offered to children with congenital heart disease should be defined and performed as soon as they are suspicious of the diagnosis of malformation. For the elaboration of the care plan, it is necessary to have a careful investigation to collect information, especially for the evaluation of cardiac

function and identification of specific signs and symptoms of complications of congenital heart disease (ALMEIDA, 2013).

After performing the medical diagnosis of congenital heart disease, the nursing care provided should be adjusted and performed as soon as possible, to ensure that the child remains stable or hemodynamically stabilized (SILVA, et al 2015).

Nursing care in heart disease is differentiated and specific, since children with congenital heart disease have multiple care needs, which are more or less complex, which indicate the maintenance and monitoring of cardiac output function, fluid and sodium accumulation, tissue oxygenation, oxygen consumption and cardiac needs. Thus, nurses are guided by the nursing process, which is the process of systematized and correlated practices, with child care as their main objective (SILVA et al, 2014).

It is necessary, therefore, to promote permanent nursing education actions, either through their qualification or in the improvement of care technologies that need to be used in nursing conducts, in order to support that clinical opinion directs the nursing team to the benefit of this screening technology (FERREIRA, et al 2016).

The nursing team needs to take care of patients with congenital heart disease by providing individualized assistance, offering them well-being, confidence, quality, comfort and always clarifying their uncertainties (BRASIL, 2017).

2.1 TETRALOGY OF FALLOT

During childhood, the congenital malformations found are the most common causes of emergencies in pediatric cardiology. Some causes that increase the risk of heart disease are: chronic diseases, such as poorly controlled phenylketonuria or diabetes, family history that includes (first-degree relative) maternal factors, alcohol consumption, exposure to environmental toxins and infections as well can significantly increase the likelihood of a cardiac anomaly (LOW et al, 2019).

Fallot's tetralogy refers to an anomaly that causes a lack of blood oxygenation, where the blood is unable to reach the lungs in sufficient portion to return oxygenated to the atrium and left ventricle due to interventricular communicability. This occurs most of the time in childhood, characterized by cyanosis that presents itself by the color of the blue-purple skin and for this reason they are also known as "blue babies" (RIBEIRO et al, 2019).

During the development of the embryo, the heart undergoes several transformations at the physiological

level ranging from folding to septal formation, through cell multiplication, where it passes from the initial formation model, this being the formation based on tubules and receives the final shape that are the 4 chambers, atria and ventricles. When in the fifth week of formation occurs the septation of the arterious trunk, whose main purpose is to separate the aortic canal and the pulmonary canal (SADLER, 2019).

Cells that are located in the neural crest and that are of origin of the rombencephalus move to the exit of the heart, thus will help in the elaboration of the crests of the arterious trunk. All these processes already mentioned are regulated and organized by the second cardiac field, thus the alterations that encompass the second field and the heart cells of the neural crest trigger the onset of malformations (MOORE, 2016; SADLER, 2019).

Fallot's tetralogy is one of the most frequent variables of congenital cyanotic heart disease, formed by four malformations, thus being called "tetralogy". They are situated: a communicability of the interventricular septum, when there is an orifice between the two chambers of the heart, of the ventricles (left and right), displacement of the aorta that means a squalid to the right of the aorta when moving from the heart, a blockage of blood flow from the right ventricle, there is an impasse in the passage of poor oxygen blood to the lungs and right ventricular hypertrophy due to the excessive work of the right ventricle, the mass of the muscle, especially in consistency (NASCIMENTO et al, 2017).

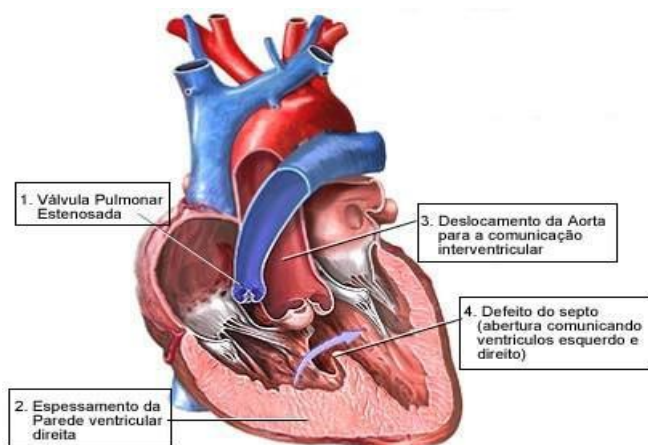


Fig.1: Four components present in Fallot Tetralogy

Source: FERREIRA, 2019.

According to WHO data, every year on average 130 million children are born worldwide with a certain type of congenital heart disease. In the case of Brazil, of the six million children who are born annually, around

23,000 have the problem, but only 13,000 will undergo a surgical process, especially due to the absence of previous diagnosis. Thus, 6.0% die before the first year of life (FIGUEIREDO et al, 2014).

At the moment, the etiology of Tetralogy of Fallot has not been unseen, but it is currently known that some conditions and conjunctures during the pregnancy period may corroborate the onset of the disease, such as: poor diet, alcohol consumption, late pregnancy over 40 years and diseases such as diabetes mellitus, measles, rubella and other viral diseases (HUBER et al, 2010).

Regarding the diagnosis of malformation, prenatal care is extremely important, and the nursing team is competent and multiprofessional, guidance on the importance of vaccines, good eating habits and clarification of doubts, whatever they may be. Diagnosis may occur by fetal echocardiography in the prepartum or by electrocardiogram, chest X-ray, cardiac catheterization and measurement of oxygen level in the postpartum period. If the problem is not repaired, it can lead to serious complications for the individual, including early death, factors that reinforce the need for well-performed prenatal care (RIBEIRO et al, 2019).

Symptoms can vary according to the degree of impairment of Tetralogy, however the most prevalent are bluish skin, rapid breathing especially when breastfeeding, darkened nails on the feet and hands, difficulty in weight gain, easy irritability and constant crying (FERREIRA, 2019).

The therapy offered to the child with the pathology is directly related to the clinical and morphological particularities of heart disease, thus emerging several ways of conduct, ranging from a clinical-drug follow-up to the surgical process, separating it into palliative or permanent (COSTA, MARRAS AND FURLAN, 2016).

III. METHODS

To achieve the objectives of the research, the bibliographic survey was carried out in the following electronic media: Scielo, LILACS, CAPES portal, Medline, Fiocruz, Paho, Wholis, BDENF and VHL and VHL-Psi, in May and August 2020, publications containing relevant information regarding the theme in question. The following words: Fallot tetralogy, nursing care, blue baby syndrome were used as descriptors for international databases. For the national data base, the following terms were used: Tetralogy of Fallot, nursing care. The inclusion criteria regarding materials of use were

articles, books, magazines and websites that addressed the theme.

Thirty-seven articles on the theme were analyzed and 21 articles were selected for the development of the research. The selection criterion has as a preponderant factor the current and relevant publications on the subject.

IV. RESULTS AND DISCUSSION

The authors Magalhães, Queiroz and Chaves (2016) and Lima, Silva and Sequeira (2018), have data that converge and complement each other, when discussing information about tetralogy of Fallot, the first three authors cited, highlight the important finding that determines that in every 1000 live births, 2 have probably fatal cardiac alterations, the other trio of authors present the malformations as severe complications that occur worldwide and with very high potential to cause death.

Turning the look more carefully to the Tetralogy of Fallot, Low et al. (2019), highlights that malformations are most often the main causes of pediatric emergencies, highlighting that the risk of malformations occurring occurs mainly related to past maternal diseases, exposure to toxins and alcohol abuse during pregnancy.

Reinforcing the idea of the author previously cited, Ribeiro et al. (2019) point out the need for the immediate beginning of prenatal care, allocated the possibilities of actions within this process that have a great potential for the prevention of complications in fetal formation, actions ranging from basic care such as vaccination to simple guidance for care for the newborn.

The malformation itself is well worked out in Sadler's view (2019), where he highlights the anatomophysiological process of the development of the alteration, punctuating the formation of the septa, and the 4 chambers, also determining that it is in the fifth embryonic week that the septation of the arterious trunk occurs, which performs the function of separating the aortic canal and the pulmonary canal.

Ferreira (2019), points out that the main symptoms consist of frequent crying, associated with irritability, cyanotic skin, being present also in the extremities of the upper and lower limbs, difficulty in weight gain and breathing above normal, especially during breastfeeding.

When it comes to assistance and care provided to the individual, the nursing team gains special prominence, mainly because it is the professional category that is directly linked to the patient and family, it is the competence of this team, the care in a systematic way,

seeking to reduce complications and promote better development.

Silva et al (2014), points out that nursing has a differentiated provision of care, since the child with tetralogy has special needs and multiple orders, which consist of monitoring cardiac output, adequacy of oxygen supply and other needs at cardiological levels. Ferreira et al (2016), warns of the need for permanent education, whether in the improvement and acquisition of knowledge or in the adaptation to technological supports.

Therefore, nursing competes, the clinical and judicious look towards the patient and the family, from the beginning of the gestational process to birth, ensuring individualized care, well-being, trust and quality in the acceptance of the demands expressed.

V. CONCLUSION

The materials worked present in a very clear way the whole system that surrounds congenital heart diseases, diseases that affect a large number of newborns and that due to the failures of the diagnostic processes, can cause death before the first year of life of the individual.

The cardiopathy approached is an important problem worldwide and nationally, requiring trained and qualified professionals to work directly with this cause. Nursing is, therefore, the profession seen as complete to meet this demand, this is due to the fact that nurses can be close to the patient in the whole process that involves the diagnosis of the disease and even the therapeutic process, through systematized actions, offer better care to children and their families.

In the care of children with congenital heart disease, nurses need to perform a lepid nursing diagnosis to avoid complications and even a possible death, certainly their role is paramount in the diagnosis of congenital heart disease, the care of this professional begins in prenatal care, accompanied throughout pregnancy and prologing from birth to child development.

It is essential to highlight that this alteration does not present a defined exact cause, it is known, therefore, that simple processes such as adequate prenatal care, non-use of alcohol and other drugs, contribute positively to the non-emergence of such complication, not meaning that such measures are preventive, but that they can minimize the possibility of the emergence of tetralogy.

This is said, it is up to the teams working in the monitoring of the mother and child binomial, to be attentive to the signs and symptoms that the children may present, so that with their work instruments and their previous knowledge

can conduct and direct the most appropriate therapy, avoiding premature deaths and contributing to a better quality of life of these children.

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