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CARDIOVASCULAR SURGERY DURING THE FIRST YEAR OF LIFE: THE IMPACT ON WEIGHT GAIN OF CHILDREN WITH CONGENITAL HEART DEFECTS

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Abstract:

Forty-seven infants with ventricular septum (n=19), tetralogy of Fallout (n=8) and transposition of the great(n=28) who underwent "corrective" surgery in their first year of life were examined for their birth weight and their pre- and post-operative status. postoperative growth. The average birth weight for each group was lower than that of the standard population. Our current research was conducted at Sir Ganga Ram Hospital, Lahore from March 2019 to April 2020. There was a decrease in the growth rate in preoperative period which was reversed after the operation. At follow-up, 13-1 9 months later (mean), Most of the infants had regained at least their birth weight percentile, while the group with ventricular communication exceeded it. The pathophysiological mechanisms contributing to these observations are considered.

Keywords: *Cardiovascular surgery, first year of life, weight gain of children with congenital heart defects.*

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INTRODUCTION:

Growth failure related to congenital heart disease is a while the phenomenon is well known. "-g Patients with cyanosis [1] Coronary artery disease or large left to right shunts have been shown to be serious diseases. Has been established since the 1980s, surgical intervention offers an effective way to stop or reverse this trend" [2-3]. Numerous explanations were provided on the etiology of growth failure, including hypoxia, raised the basal metabolic rate". Of energy" and insufficient caloric intake. Up to Recently, medical intervention has rarely been effective [4]. Most studies on the effects of surgery on the growth of coronary artery disease have been done in the past. Included studies of elderly patients, often subject to correction. Or palliation only after the investigation reports have examined only infants who have had corrective surgery in the first year of life. This paper reports on such a group of patients with ventricular disorders septal defect, transposition of major arteries and the Tetralogy of Fallout [5].

METHODOLOGY:

Records were reviewed for all infants with TGA, VSD. and TOF underwent "corrective" surgery from 1979 to 1983 while he was undergoing12 months old. Our current research was conducted at Sir Ganga Ram Hospital, Lahore from March 2019 to April 2020. These lesions were chosen because they illustrate three broad categories of coronary artery disease in which the Operations can be performed during the first year of life. The site the operations performed were: Mustard procedure for TGA; trans atrial or trans ventricular closure of VSD; and repair of TOF, often with reconstruction of the gusset on the right side the ventricular outlet tract. Patients with VTD and FOT presented with to early surgery are a small group with the most dramatic symptoms of poorly controlled, persistent heart failure. inability to gain weight, high lung resistance(VSD), or severe cyanosis and hyper cyanosis "attacks" (TOF). Patients with uncomplicated TGA are routinely subjected to the "correction" of the first year of life. Infants were only included if they were born full term without all the anomalies before the operation and if they had not been significant and persistent medical or hemodynamic abnormalities postoperative (e.g. cardiovascular, neurological, or other post-operative residues). metabolic: disorders requiring prolonged medical therapy, or normal activities), and in whom adequate follow-up is required. The child's gender, means of feeding, investigations (including hemodynamic data), age at the time of surgery, height, weight, and circ: inference of the head (at all recorded visits) were noted, For the objectives of the analysis, birth weight, immediately before the operation and finally, a follow-up recorded before the age of 2 years. were used (Table 2). The length was only reliably available for preoperative patients, for whom the percentile of the weight length comparisons was made. Inconsistent and incomplete data on head circumference and caloric intake prevented useful evaluation of these Dara meters.

RESULTS:

The average birth weight in this group was lower than that of the standard group (Tables 2,3; Fig. 1). Two (8%) of infants had birth weight below the third percentile, and 13 (53%) had a birth weight below the third percentile, and 13 (55%) had a birth weight below the third percentile. A birth weight below the tenth percentile. Preoperatively (average6.8 months), there was a significant decrease in the birth weight percentiles, out of proportion to length percentiles.at postoperative follow-up (mean age 18.8 months) weight had reached the same relative weight as at birth, demonstrating that infants had regained their growth potential at birth. The average follow-up weight was even lower than the standard group. Preoperatively, 19 patients (75%) were weighed in the standard group. below the third percentile and weight monitoring of five (26%) were below the third percentile. Similar growth trends were observed in the male and female subgroups. heart size on the preoperative chest X-ray, no arterial oxygen saturation during the preoperative cardiac catheterization performed in the 2 months following the operation (Table 4), has had influence growth trends.

Table 1:

Table 1. Statistics on cardiac surgery in Vietnam from 2009.

Vietnam Cardiac Surgery		
Beds	Total	1004
	ICU	242
Cardiothoracic Surgeons		119
Cardiologists		228
Anesthesiologists		83
Perfusionists		59
Intensivists		82
Nurses	Total	960
	Cardiac ICU	391
Operating Rooms		42
Annual Cases		8626
Cardiac Centers		>21
Cath. Labs		22

Table 2:

Table 2 Overview of the actual ongoing studies for myocardial regeneration in children with univentricular hearts, with one study just completed

Clinicaltrials.gov ID	Diagnosis	Intervention	Study design	No. of patients to enroll	Age eligible	Status	Phase
NCT02398604	HLHS	Intramyocardial injection of allogeneic mesenchymal cells during BDCPA (ELPIS-Trial)	Randomized	30	<30 d	Recruiting	Phase I
NCT01883076	HLHS	Injections of autologous umbilical cord blood cells into the right ventricle of HLHS children undergoing BDCPA	Safety study	20	<18 mo	Recruiting	Phase I
NCT01829750	HLHS/ functional single ventricle	Efficacy of intracoronary infusion of cardiac progenitor cells in patients with univentricular heart disease (PERSEUS-Trial)	Randomized	34	<20 yr	Completed	Pase II
NCT03779711	HLHS	Intramyocardial injection of autologous umbilical cord blood derived mononuclear cells during BDCPA in right ventricular dependent variants of HLHS (AutoCell-S2-Trial)	Non randomized	100	up to 8 mo	Not yet recruiting	Phase II
NCT03406884	HLHS	Delivery of autologous c-kit+ cardiac stem cells to coronary circulation during bidirectional Glenn operation via cardioplegia needle	Randomized	30	<28 d	Not yet recruiting	Phase I
NCT03525418	HLHS	Intramyocardial injection of allogenic human mesenchymal stem cells during BDCPA	Randomized	30	Up to 1 y	Recruiting	Phase I/II
NCT02781922	Single ventricle	Intracoronary injection auf autologous cardiac stem cells in pediatric patients with functional single ventricle (APOLLON-Trial)	Randomized	40	Up to 6 y	Recruiting	Phase III
NCT03431480	HLHS	Intracoronary infusion of autologous human placental cord blood mononuclear cells during the Norwood operation	Safety study	12	Up to 4 d	Recruiting	Phase I
NCT03079401	HLHS/ imbalanced AVSD	Injection of mesenchymal precursor cells directly into LV endocardium during LV recruitment surgery (in borderline LV) or BDCPA	Randomized	24	up to 5 y	Recruiting	Phase I/II

HLHS, hypoplastic left heart syndrome; AVSD, atrioventricular-septal-defect; LV, left ventricle; BDCPA, bidirectional cavopulmonary anastomosis.

DISCUSSION:

Growth retardation in some infants with coronary artery disease has been well reported and forms the basis for both concern and investigation. "-Clearly, among infants with coronary artery disease, those who have the most the disturbing hemodyriamic lesions turn out [6]. There is therefore particularly urgent in the case of small children. with significant heart disease whose growth potential may suffer if action is not taken quickly. What is the result? for these young children when they are undergoing early "corrective" treatment surgery? Many mechanisms have been proposed to take into account a slow growth in coronary heart disease [7]. Cyanosis was quickly recognized as being associated with failure to thrive, and some authors have found that the proposed that this should be proportional to the degree of hypoxia. Heart failure can affect growth by raising the rate of heart failure. metabolic demands " and inducing a poor caloric intake "-*". alone or in combination with an altered substrate abort ion. It is likely that a combination of these factors will play differently. The roles depend on the age of the patient. The young child, with its increased requirements in terms of energy intake and is likely to be most severely affected by severe hypoxia, low energy intake and excessive energy expenditure [8]. These questions are important in the decision to submit small babies to early cardiac surgery. The mean birth weight in this study group was less than of the general population [9]. Such observations were made before in patients, e.g. Menachem's disease groups II and 111~ e r i e sw, ~who most resemble the infants in this group, and however, normal birth weights were observed in other series" The standard graphs in this document are may have a slightly higher birth weight than that of the previous g r o ~ p s ' ~In utero-factors such as coronary artery disease itself or the factors that precipitate it can contribute to a birth weight in relation to the normal population. Other studies identified the toddlers in their group as having. This study also found a "decrease in growth potential", while the specific criteria for "intrauterine growth retardation" are often ill-defined. Among the groups examined in this of the study, only individuals with RSD regained an average birth weight equal to that of their parents.to the standard group at the end of the follow-up [10].

CONCLUSION:

The horribleness and death paces of early remedial medical procedure remain a significant thought. The gathering inspected here were chosen for by having sores where early adjustment is either attractive (TGA) or essential (inability to flourish with tenacious congestive cardiovascular breakdown and additionally aspiratory hypertension). Forceful clinical help, for example, tube taking care of with dietary enrichmenti4 has been proposed and from a dietary perspective this may upgrade the state of a few newborn children for medical procedure, or even add to deferring it in a few cases. Anyway for some babies' hemodynamic abnormalities will keep on requesting early activity to limit bleakness and death rates. Follow up of all patients considered is wanted to characterize development drifts further. This report, in any case, bolsters the great result for babies with development disappointment and hemodynamically huge injuries submitted to a medical procedure in the principal year of life. This is a select gathering in whom there is clinical and hypothetical proof to propose that such a methodology is beneficial.

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