International Journal of Early Childhood Special Education (INT-JECSE)
DOI:10.9756/INTJECSE/V14I5.527 ISSN: 1308-5581 Vol 14, Issue 05 2022

Case Report on Management of a8 month old child with Ventricular Septal Defect and Left to Right shunt

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Abstract:
Introduction: A hole or defect in the wall that joins the heart's lowest two chambers is known as a Ventricular Septal Defect (VSD). The ventricles 2 are these chambers, and the ventricular septum is the wall that separates them.A child's ventricular septal defects might be solitary or numerous. More complex heart disorders, such as Tetralogy of Fallot and transposition of the major vessels, can be related with ventricular septal defects.
Presenting complaints and investigations: The patient was admitted in Tertiary Rural Hospital on with chief complaints of fever, cough, increase of breathing since 2 days, excessive sweating on head while feeding, tachypnoea.Patient was postoperative case of coronary artery bypass graft he was operated. The patient's various investigations are done such as Eco cardiogram, ECG, blood test, physical examination.
The main diagnosis, therapeutic interventions, and outcome: The main diagnosis of the patient is large muscular VSD with left to right shunt. Medical management was provided to the patient Inj. Neomol ,syp. Amoxicillin, Nebulization of normal saline, Nasoclear drop, syp. Augmentin, antipyretic given to treat fever. Patient's treatment outcome is good.
Outcome: The patient's condition improved as a result of the medical therapy. Now, the patient's symptoms have subsided, and he is in better health.
Conclusion: Child was admitted in Tertiary Rural Hospital with Chief complaints of fever, cough, difficultyin breathingsince 2 days, excessive sweating on head. While feeding, tachypnea. Patient's condition was improved with medical therapy.

Keywords: Failure to thrive, Large VSD, Severe PAH, Transcatheter closure

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Introduction:

Pulmonary hypertension is defined as a mean pulmonary arterial pressure (PAPm) of less than 25 mmHg recorded during rest during right cardiac catheterization. People with pulmonary hypertension are a subgroup of Precapillary pulmonary hypertension (PAH), and it is a subgroup of these people. In individuals with no alternative explanations for precapillary P.H., such as lung disease or persistent thromboembolic pulmonary hypertension, A pulmonary artery wedge pressure of 15 mmHg and pulmonary vascular resistance (PVR) of more than 3 Wood Units show this.[1]A hybrid technique has been proposed on occasion. We are sure that by using a transcatheter approach, some VSDs can be effectively closed. Even if the device weighs less than 5 kg, especially if the trend of miniaturization continues.[2]In children, a ventricular septal defect (VSD) is a common cardiac abnormality. In VSD, there is poor communication between the right and left ventricles, which is the primary cause of hemodynamic impairment, which results in shunt formation. Many VSDs heal on their own; major faults can cause problems such as pulmonary arterial hypertension (PAH), ventricular dysfunction, and an increased risk of arrhythmias. [3] [4] [5] Paraphrase that has been formalized Dalrymple was the first to discover VSDs in 1847. [6]
Children with isolated VSD account for 37% of all congenital heart disorders. Isolated VSD affects approximately 0.3 percent of all newborns. Because up to 90% of them may eventually shut on their own, the maturity rate is significantly lower. VSDs do not discriminate between men and females. The proportion of each group is indicated in the pathophysiology section.[7]

Small ventricular septal defects do not elicit symptoms in infancy or youth, and surgical or medicinal treatment is rarely required. During early life, the majority of muscle VSDs close on their own. If a ventricular septal aneurysm is present, membranous VSDs can close at any time. The child's growth and development should be unaffected by small ventricular septal abnormalities.[8]

Patient information:

Demographic details:

A8 month old male child with post operative case of coronary artery bypass graft admitted for further treatment.

Past Medical history:

The patient was admitted in Tertiary Rural Hospital with chief complaints of fever, cough, increase of breathing since 2 days, excessive sweating on head while feeding, tachypnoea.

Surgical history: No any past surgical history.

Relevant past intervention with outcomes: Not reported

Other histories (Family history, habits)

Family history: - he belongs to nuclear family. Total 4 family members in patient family no any hereditary disease.

Clinical finding:-

Physical examination:

On physical examination height is 48cm, weight is 3.5kg. He was orientated, temperature- 99 degree F, pulse 169 beats/min, respiration 30 breaths/min, $spo_2$94 , Hb% 10.9 g/dl, WBC 10900cumm, RBC- 5.55cumm , platelets 2.46mcl .no rashes and no bleeding present .

Heart rate - 146 beats/min, Respiration rate – 68 breaths/min

Timeline: Patient was visited in hospital on OPD base with cheif complaint fever, cough, and increase work of breathing, difficulty in feeding, tachypnea.

Diagnostic Assessment:-

Hb%10.9g/dl, WBCs 10900cumm,RBC-5.55cumm, platelets 2.46 mcl . Radiometer ABL800 basic blood gas value, Oxymetry value, oxygen status, acid base status reports are normal.

Prognosis: His prognosis is good.

Therapeutic intervention:-

Patient is undergoing treatment such as Inj.NeomolOD,syp. Claribid 0.7ml BD/ TDS, Nebulization of normal saline BD, Rubired drop1ml BD,Syp. Augmentin 3ml BD, syp. Furoped 0.5ml TDS, Kufril drop 10° BD, Tab. Envas 2.5 OD, Dixin drop 1ml OD.

Follow-up and outcomes:

Patient was planned for follow up regularly on base of advice given by physician.The patients symptoms improved.Most of children, after surgery have breathing difficulty, difficulty in feeding,.Thischild was treated by surgical management by coronary artery bypass graft early and had better outcomes.

Complications and adverse event: No adverse events were noted.

Nursing perspectives:

Nursing management is very essential aspect in treatment of patients with VSD. Nurses are helpful not only at initial stages but also helpful throughout the treatment. To determine the underlying etiology of VSD a comprehensive history and differential diagnosis is required. Treatment approach started with providing symptomatic treatment at initial stages. Also encourage the patient to continuation of different types of therapy and surgery for VSD. Health education and home care guidelines is given to the patient’s family after completion of treatment.

Follow-up and outcomes:

Patient was plan for follow up regularly on base of advice given by physician the patient symptoms are improve most of children after surgery a few no. Of children's have breeding difficulty, difficulty in feeding, the child treated for surgical management by coronary artery bypass graft early who have involved better outcome.

Discussion:

Present case was an 8-month-old male child with postoperative case coronary artery bypass graft, admitted in Tertiary Rural hospital with a chief complaint of breathing difficulty, difficulty in feeding. Patient pain is reduced with proper treatment now the patient's condition is good.

Young children with a minor VSD and no symptoms have a fair prognosis. Anaemia, infection, or endocarditis may cause symptoms in these children. If a large VSD is not repaired, the patient's prognosis is bad. If the left-to-right shunt continues, it results in the development of pulmonary hypertension and the Eisenmenger syndrome.[9]

The prevention of increasing pulmonary vascular disease necessitates proper management of cardiac anomalies with left-to-right shunts. Pulmonary vascular disease is anticipated to affect 15% (10–18%) of all CHD patients. In

persons with uncorrected CHD problems, the continual increase in pulmonary flow raises tensile stress, which leads to an increase in Rp and, eventually, pulmonary vascular damage.[10]

According to a study done by Denton A. cooley, among 345 patients, a total of 130 individuals with solitary ventricular septal defect were found who underwent bypass surgery for a range of congenital and acquired cardiovascular diseases. Based on this experience, ventricular abnormalities appear to be the most common congenital cardiac malformations requiring open-heart surgery.

By the analysis of experience, excellent results are there as shown in the individuals between the age of 2 to 15 years. There were five deaths among the 71 patients in this age group, reflecting a 7% mortality rate. Surgery during infancy carries a much greater risk. However, a 70% survival rate in children under the age of two years justifies surgery even in these seriously ill children.

A ventricular septal defect is associated with pulmonary hypertension. These people may get cyanosis if the intracardiac shunt is reversed and their pulmonary vascular resistance increases. The risk of surgery increases as the severity of pulmonary vascular anomalies increases. Despite the fact that people with Eisenmenger's syndrome (cyanosis, clubbed nails, polycythemia, and right ventricular hypertrophy) aren't surgical candidates, we've successfully operated on a number of patients with balanced or combination left-to-right and right-to-left shunts.[11-14]

Pretricuspid lesions (ASD) are associated with a delayed onset and lower incidence of PAH than post-tricuspid shunts due to increased pulmonary circulation (VSD, PDA). Pretricuspid lesions (ASD) had a delayed start and lower prevalence of PAH than post tricuspid shunts, owing to increased pulmonary circulation (VSD, PDA).[15-18]

The ratio of pulmonary pressure fluctuation to pulmonary artery flow, which cannot be observed directly, is used to calculate the pulmonary resistance index (RPI). While right cardiac catheterization measurements are beneficial and are currently the greatest available tool, they are not always accurate. Even patients who are in the interval that is known to predict a good surgical outcome can have chronic postoperative PAH. More user-friendly and less intrusive instruments are required, particularly for patients who are on the edge of operability based on their hemodynamic profile. Recent developments, according to Lévyetal., could support hopes for new tools for determining operability.[19]

Conclusion:

Present case the patient of an 8-month-old male child with postoperative case coronary artery bypass graft, their symptoms such as fever, cough, breathing difficulty, difficulty in feeding, tachypnoea pain is reduced with proper treatment, now patient's condition is good.

The perimembranous ventricular septal defect was discovered to be the most prevalent type of ventricular septal defect. The most prevalent complication was severe pulmonary hypertension, which was followed by Aortic Valve Prolapse and Aortic Regurgitation.

From this case Report we can conclude that, VSD is a very common congenital defect occurring in newborn baby, and prevalence rate is very high in premature and low birth babies so mother must take proper care during antenatal period. Treatment is available for treating the early complications of VSD which include pharmacological therapy, medical therapy and surgical management, also effective nursing management is very necessary in initial stage of VSD and throughout the hospital stay until recovery. Although first we need to identify the risk factors and lifestyle modifications, health education and awareness can reduce the risk of illness.

References:

1. HoeperMM.Definition, classification, and epidemiology of pulmonary arterial hypertension. seminars in respiratory and critical care medicine 2009 Aug (Vol. 30, No. 04, pp. 369-375).©Thieme Medical Publishers.
2. Chungsomprasong P, Durongpisitkul K, Vijarnsorn C, Soongswang J, Lê TP. The results of transcatheter closure of VSD using Amplatzer® device and Nit Occlud® Lê coil. Catheterization and Cardiovascular Interventions. 2011 Dec 1;78(7):10
3. Ghosh S, Sridhar A, Solomon N, Sivaprakasham M. Transcatheter closure of the ventricular septal defect in aortic valve prolapse and aortic regurgitation. Indian heart journal. 2018 Jul 1;70(4):528-3
4. Hopkins MK, Goldstein SA, Ward CC, Kuller JA. Evaluation and management of maternal congenital heart disease: a review. Obstetrical &gynaecological survey. 2018 Feb 1;73(2):116-24.
5. Kenny D. Interventional cardiology for congenital heart disease.Korean circulation journal. 2018 May 1;48(5):350-64.
6. Dakkak W, Oliver TI.Ventricular septal defect.StatPearls [Internet]. 2020 Nov 20.

7. Pinto NM, Waitzman N, Nelson R, Minich LL, Krikov S, Botto LD. Early childhood inpatient costs of critical congenital heart disease. The Journal of paediatrics. 2018 Dec 1;203:371-9.
8. Garson A, Bricker JT, Fisher D, Neish S. The Science and Practice of Pediatric Cardiology-Volume 2. Williams & Wilkins; 1998.
9. Maagaard M, Heiberg J, Eckerström F, Asschenfeldt B, Rex CE, Ringgaard S, Hjortdal VE. Biventricular morphology in adults born with a ventricular septal defect.Cardiology in the Young. 2018 Dec;28(12):1379-85.
10. Cevik A, Olgunturk R, Kula S, Saylan B, Pektas A, Oguz D, Tunaoglu S. Left-to-right shunt with congenital heart disease: single-centre experience. International Scholarly Research Notices. 2013;2013.
11. Kirklin JW, McGoon DC, DuShane JW. Surgical treatment of ventricular septal defect. The Journal of thoracic and cardiovascular surgery. 1960 Dec 1;40(6):763-75.
12. Mulder BJ.Changing demographics of pulmonary arterial hypertension in congenital heart disease.European Respiratory Review. 2010 Dec 1;19(118):308-13.
13. Lévy M, Maurey C, Celermajer DS, Vouhé PR, Danel C, Bonnet D, Israël-Biet D. Impaired apoptosis of pulmonary endothelial cells is associated with intimal proliferation and irreversibility of pulmonary hypertension in congenital heart disease. Journal of the American College of Cardiology. 2007 Feb 20;49(7):803-10.
14. Agrawal, S., Kumar, S., Gabhane, V., Acharya, S., Wanjari, A., 2019a. Electrocardiography and Echocardiography Correlation in Patients of Left Ventricular Hypertrophy. JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH 13. https://doi.org/10.7860/JCDR/2019/42697.13329
15. Patil, A.S., Iratwar, S., Rathod, C., Korde, P., 2020. Target Sign of Third Ventricle in Basilar Dolichoectasia with Multiple Clinical Presentations: A Case Report. INDIAN JOURNAL OF NEUROSURGERY 9, 199–203. https://doi.org/10.1055/s-0039-3402536
16. Yeola (Pate), M., Singh, K., 2020. Ventriculoperitoneal shunt presenting as umbilical CSF fistula. JOURNAL OF FAMILY MEDICINE AND PRIMARY CARE 9, 6276–6278. https://doi.org/10.4103/jfmpc.jfmpc_814_20
17. Fating, Lina. "Case Report on Management of Pregnancy in a Patient with Small Muscular Ventricular Septal Defect." Journal of Pharmaceutical Research International, July 26, 2021, 325–28. https://doi.org/10.9734/jpri/2021/v33i38A32091.
18. Talwar, Dhruv, Sunil Kumar, Sourya Acharya, Shivam Khanna, and VidyashreeHulkoti. "Paroxysmal Supraventricular Tachycardia and Cardiac Arrest: A Presentation of Pulmonary Embolism With Infarction as a Sequela of Long COVID Syndrome." Cureus, October 7, 2021. https://doi.org/10.7759/cureus.18572.
19. Thool, Bali, and Shalini Lokhande. "Case Report Onventricular Septal Defect (VSD) with Pulmonary Hypertention (Eisenmenger Syndrome) with LSCS." Journal of Pharmaceutical Research International, December 15, 2021, 238–42. https://doi.org/10.9734/jpri/2021/v33i58B34197.