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FIRST 60 CASES IN THE NEWLY ESTABLISHED PEDIATRIC CARDIOVASCULAR SURGERY CLINIC

***[1]Babürhan Özbek, [2]Ali Kemal Gür, [3]Mehmet Coşkun Aykaç, [4]Esra Eker and [5]Mahmut Yargı**

[1]Van Training and Research Hospital, Pediatric Cardiovascular Surgery Department, Van, Turkey
[2]Yüzüncü Yıl University Medical Faculty, Cardiovascular Surgery Department, Van, Turkey
[3]Erciş State Hospital, Emergency Medicine Department, Van, Turkey
[4]Van Training and Research Hospital, Anesthesiology and Reanimation Department, Van, Turkey
[5]Van Training and Research Hospital, Cardiovascular Surgery Department, Van, Turkey

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ABSTRACT

Introduction: The number of congenital cardiac diseases patients increase day by day. With the rapid improvements in the diagnosis and treatments of these patients, a higher number of equipped pediatric cardiovascular surgery clinics are required today.
Material and Method: The aim in our study was to retrospectively evaluate the first 60 cases in our new-established pediatric cardiovascular surgery clinic between June 20, 2017 and April 17, 2018. Among these patients, with a wide spectrum from neonatal to 53 year-olds, 33 were male and 27 were female. The median age was 5 (0-53).
Result: The most common operation type was detected as closure with atrial septal defect patch (15%). Average hospitalization duration of the patients who had open cardiac surgery was detected as 7.1 ± 3.7 days. Early period mortality was observed in two patients (3.3%). No patients were taken in revision due to postoperative bleeding.
Discussion: Pediatric cardiovascular surgery minor specialty education has been actively provided in Turkey for the last six years. The aim of the new established pediatric cardiovascular surgery clinics was to reach easily to patients requiring congenital cardiovascular disease surgery. When we evaluated the first 60 cases in our newly established group, we observed that the operations were completed successfully with low mortality values. We consider that it would be appropriate to increase varieties of cases after providing the harmony and trust among the branches in newly established centers.

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INTRODUCTION

Ludwig Reh successfully repaired the myocardium of a cardiac trauma patient in 1896. Thus the patient was kept alive and this operation is regarded as a start in cardiac surgery (Örer, 1999). Developments in cardiac surgery gained speed especially with the usage of cardiopulmonary machine after 1953 (Kırali, 2001). Developments in cardiac surgery had a parallel course in Turkey and the first open cardiac surgery was made with the cardiopulmonary machine by Aydın Aytaç in 1959 (Büyükateş, 2007).

Corresponding author: **Babürhan Özbek,**
Van Training and Research Hospital, Pediatric Cardiovascular Surgery Department, Van, Turkey

Aydın Aytaç made great contributions in the improvement of pediatric cardiovascular surgery in Turkey. Pediatric cardiovascular specialty education has been given in Turkey as minor specialty education for two years after cardiovascular surgery specialty education in Turkey since 2012 (Ozbek, 2018). The prevalence of those with congenital cardiac diseases among the wide spectrum of cardiovascular surgery patients gradually increases (Hoffman, 2002). To be able to reach more congenital cardiac disease patients in short time, the number of equipped pediatric cardiovascular surgery clinics must be increased within a plan. The aim in our study was to present the first 60 cases in our newly established pediatric cardiovascular surgery clinic.

MATERIALS AND METHODS

We aimed to retrospectively evaluate the first 60 cases between June 20, 2017 and April 17, 2018. Among 60 patients, 33 were male and 27 were female. The median age was 5 (0-53). 36 cases were CPB (cardiopulmonary bypass) guided. Pulmonary banding and aorta pulmonary shunt operations were made with median sternotomy. CPB was required in two of aorta pulmonary shunt cases (40%). Isolated patent ductus arteriosus closure and aortcoarctation repair operations were made with left thoracotomy. Bidirectional cavapulmonary anastomosis cases were guided with CPB but without aortic cross clamp. In aortic cross clamp located cases, antegrade blood cardioplegia was used in every 20 minutes and low-medium degree hypothermia (28°C– 32°C) was applied. Operation types and numbers in the first 60 cases are shown in the Table. All cases other than vascular repair were followed up in intensive care unit after the operation.

Table 1. Operation types and numbers in the first 60 cases in the newly established pediatric cardiovascular surgery clinic (ASD: Atrial septal defect, PDA: Patent ductus arteriosus, VSD: Ventricular septal defect, AVSD: Atrioventricular septal defect, RVOT: Right ventricule outlet tract, AV: Arteriovenous)

Operation Type	*Number of Operations*
1- Covering with Isolated ASD Patch	9
2- Closure with ASD Patch + Tricuspid Valve Repair	3
3- Covering with Isolated VSD Patch	3
4- RVOT Reconstruction with VSD Closure	1
5- Aorta Coarctation Repair	4
6- Aorta Pulmonary Shunt	5
7- Pulmonary Banding	2
8- Isolated PDA Covering	6
9- Partial AVSD Repair	1
10- Complete AVSD Repair	1
11- Double Outlet Right Ventricle Repair	1
12- Fallot Tetralogy Repair	4
13- Partial Pulmonary Venous Return Anomaly Repair	3
14- Bidirectional Glenn Operation	2
15- Isolated Mitral Valve Repair	2
16- Isolated Aortal Valve Repair	1
17- Mitral Valve Replacement	1
18- Ascending Aorta Aneurysm Repair	1
19- Ebstein Anomaly Repair	1
20- Repair of Cardiac Injury with Sharp Object	1
21- Pericardial Effusion Drainage through Subxiphoid Window	2
22- Brachial AV Fistule Repair	1
23- Popliteal AV Fistule Repair	1
24- Femoral Embolectomy	1
25- Radial Artery Repair	2
26- Femoral Vein Repair	1

RESULTS

Among the 60 cases, the most common operation type was detected as closure with atrial septal defect patch (15%). Isolated PDA closure (10%) and aorta pulmonary shunt operations (8.3%) followed this in order. Aortic cross clamp duration was detected as 63 ± 39 minutes and cardiopulmonary bypass duration was detected as 87 ± 34 minutes in patients who were applied aortic cross clamp. The patient in the repair case of cardiac injury with a sharp object was 17 years old and the knife had entered through the third intercostal space on the right. Right internal mammarial artery was injured and right atrium apex was torn. Injured ends of right internal mammarial artery were ligated and right atrium primer was repaired. The patient was discharged in a healthy condition on postoperative fifth day. Average intubation duration of the patients followed up in intensive care unit after the operation was calculated as 8.1 ± 5.2 hours. None of the patients were re-operated due to postoperative bleeding. Peritoneum dialysis was required in three patients and hemodialysis was required in one patient. But the kidney function tests returned to the normal in all of these patients in a week and the dialysis catheters were removed. A single sided temporary strength loss was observed in two patients and supraventricular tachycardia attacks detected in five patients returned to sinus rhythm with medical treatment. One patient was followed up in intensive care unit with temporary pace maker support due to postoperative atrioventricular total blockage. The patient returned to sinus rhythm on the third day of the follow-up and temporary pace maker support requirement ended. Average intensive care hospitalization duration of the patients followed up in intensive care unit after the operation was calculated as 4.1 ± 2.5 days. Average hospitalization duration of the patients who had open cardiac surgery was detected as 7.1 ± 3.7 days. None of the patients had wound infection. Early period mortality was observed in two patients (3.3%). These two patients had aorta pulmonary shunt operation. None of the patients used ECMO (Extracorporeal Membrane Oxygenation) support.

DISCUSSION

The first successful patent ductus arteriosus closure operation made by Robert Gross in 1938 is regarded as the door to pediatric cardiac surgery (Örer, 1999). Alfred Blalock and Helen Taussing made the first shunt operation aiming the increase of the blood flow to pulmonary artery in 1944. Then in 1953, John Gibbon successfully used cardiopulmonary pump. Thus he closed the atrial septal defect in his 18 year old patient (Cooley, 1994)). This operation is regarded as the first successful open cardiac surgery made with extracorporeal circulation technique. Developments in the surgical treatment of congenital cardiac diseases gained speed after this. In our country, pediatric cardiovascular surgery minor specialty education has been provided since 2012 for the surgical treatment of congenital cardiac diseases (Ozbek, 2018). It is applied for two years after adult cardiovascular surgery specialty education. Pediatric cardiac surgery minor education programs last 6 months - 2 years in United States, Canada, Europe and Australia. With the spreading of health services, patient transfers decrease in the surgical treatments of congenital cardiac diseases (Köksal, 2002). Thus the patient comfort can be increased, labor force loss is decreased for their relatives and a severe economic saving can be provided. Newly established, equipped pediatric cardiovascular surgery clinics are required for this. Our aim in this study was to evaluate the first 60 cases in our newly established center. In our open cardiac surgery cases, autologous pericardial patch was used as long as possible since it is easy to reach when needed and safe. Blood cardioplegia was applied in every 20 minutes in post-aortic cross clamp cases in our study. Papers reporting the successful use of Del Nido cardioplegia solutions in pediatric cardiosurgery cases are available (Ozbek, 2018). In our study evaluating the first 60 cases in our newly established pediatric cardiovascular surgery clinic, we observed that the operations were completed successfully with low mortality values. But congenital cardiac diseases require a multidisciplinary approach. We consider that it would be appropriate to increase varieties of cases after providing the harmony and trust among the branches in newly established centers.

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