OBJECTIVES

Post cardiac surgery morbidity and mortality has decreased over the last decades in congenital heart disease (CHD) patients. In America survival is 97.1% for those with complex CHDs in the first year of life. There is a growing body of research on what the longer term functional impact of cardiac surgery on patients with congenital heart disease from a neurodevelopmental and an exercise capacity point of view. However, little is known on the acute post surgical impact of cardiac surgery on the patient’s functional status and multidisciplinary rehabilitation requirements. Our objective was to better understand what types of rehabilitation therapy was required and what functional status and multidisciplinary rehabilitation requirements.

METHODS

This was a retrospective observational cohort study. Consecutive patients who underwent cardiac surgery at a tertiary level center between 01/2015 to 01/31/2015 were included in our study. A chart review was performed: demographic, clinical, surgical and rehabilitation therapy (including physical, occupational, speech, feeding therapy and neurodevelopment intervention) data were collected. Our primary outcome was need for RT. Other variables analyzed were age at surgery, prematurity, genetic syndrome, heart/lung transplant, extracorporeal membrane oxygenation (ECMO), ventricular assist device (VAD), palliative vs. complete repair, Congenital Heart Surgery Mortality Categories (STAT), Technical Performance Score (TPS 1: optimal- no residua, 2: adequate- minor residua and 3: inadequate, major residua or need for reintervention for residua), neurological events (intraventricular hemorrhage, hypoxic ischemic encephalopathy or stroke), pre and post operative ICU length of stay. Association between need for therapy and other variables were assessed using Student T Tests for continuous and Chi Square for categorical variables.

RESULTS

Total number of patients was 2091, patient population is described in Table 1. Therapy needs differ depending on the subgroup of patients ranging from 93% in post complex CHD patients vs. 97.1% for those with noncomplex CHDs in the first year of life. Therapies are provided early in CHD patients. In America survival is 75.2% for those with complex CHDs in the first year of life. Impact of cardiac surgery or surgical complications, facilitate the child’s development and even decrease length of stay. Early ICU rehabilitation therapy in adult post cardiac surgery patients has been shown to decrease LOS, complications and readmission rates. Early ICU rehabilitation therapy in adult post cardiac surgery patients has been shown to decrease LOS, complications and readmission rates. The need for rehabilitation in the acute setting could be secondary neurologic insult/injury, deconditioning and prolonged ventilation with/without use of paralytics. Feeding difficulties are specially common and relevant in patients under a month of age. Injury of the recurrent laryngeal nerve, deconditioning, prolonged intubation, breathing difficulties and neurodevelopment have correlated with feeding difficulties. Physical therapy is more common in older populations. The ability to provide early rehabilitation therapies such as physical, occupational, speech or feeding, as well as a neurodevelopment assessment might decrease the initial treatment needs. This was a retrospective observational cohort study. Consecutive patients who underwent cardiac surgery at a tertiary level center between 01/2015 to 01/31/2015 were included in our study. A chart review was performed: demographic, clinical, surgical and rehabilitation therapy (including physical, occupational, speech, feeding therapy and neurodevelopment intervention) data were collected. Our primary outcome was need for RT. Other variables analyzed were age at surgery, prematurity, genetic syndrome, heart/lung transplant, extracorporeal membrane oxygenation (ECMO), ventricular assist device (VAD), palliative vs. complete repair, Congenital Heart Surgery Mortality Categories (STAT), Technical Performance Score (TPS 1: optimal-no residua, 2: adequate- minor residua and 3: inadequate, major residua or need for reintervention for residua), neurological events (intraventricular hemorrhage, hypoxic ischemic encephalopathy or stroke), pre and post operative ICU length of stay. Association between need for therapy and other variables were assessed using Student T Tests for continuous and Chi Square for categorical variables.

DISCUSSION

It is remarkable that almost half of cardiac surgery patients required some type of RT. The type of therapy required varies depending on the age range and subgroup. Certain factors, not surprisingly, are significantly related to increased use of rehabilitation therapy such as higher complexity, palliative repair, younger age, genetic syndrome, longer preoperative (LOS) and surgical residua (TPS). The need for rehabilitation in the acute setting could be secondary neurologic insult/injury, deconditioning and prolonged ventilation with/without use of paralytics. Feeding difficulties are specially common and relevant in patients under a month of age. Injury of the recurrent laryngeal nerve, deconditioning, prolonged intubation, breathing difficulties and neurodevelopment have correlated with feeding difficulties. Physical therapy is more common in older populations. The ability to provide early rehabilitation therapies such as physical, occupational, speech or feeding, as well as a neurodevelopment assessment might decrease the initial impact of cardiac surgery or surgical complications, facilitate the child’s development and even decrease length of stay. Early ICU rehabilitation therapy in adult post cardiac surgery patients has been shown to decrease LOS, complications and readmission rates.

CONCLUSIONS

Almost half of post cardiac surgery patients required rehabilitation therapy services. Certain demographic, clinical and surgical characteristics seemed to correlate to higher therapy requirements. This information is important to be able to provide quality rehabilitation care after cardiac surgery in CHD. The effect of early rehabilitation intervention on acute post cardiac surgery on CHD patients is yet to be studied.

Table 1. Patient characteristics

Table 2. Therapy type by subpopulation