

CHAPTER 1

INTRODUCTION

1.1 Background

Congenital Heart Disease (CHD) is one of the most frequently found congenital anomalies. The incidence is approximately 8 to 10 out of 1,000 births in nearly all countries (Hoffman & Kaplan, 2002). Approximately, every year 4,000 babies were born with Congenital Heart Disease. This number contributes to the high incidence of newborn mortality in Indonesia, with 34 for every 1,000 live birth (Indonesian Ministry of Health, 2011).

Tetralogy of Fallot is a congenital heart disease that involved in interventricular communication, there is a ventricular septal defect (VSD), obstruction of the right ventricular outflow tract (RVOT), overriding of the ventricular septum by the aortic root, and also there is right ventricular hypertrophy (RVH). The incidence of this malformation is quite rare, around 3 of every 10,000 live births, it is the commonest cause of cyanotic heart disease in patients beyond the neonatal age and contribute for around 7-10% of all congenital heart disease. The prevalence of Tetralogy of Fallot in each country is different. In the United States TOF occurred approximately 3.9 for every 10,000 live births, in Nigeria TOF contributed for around 10%-26.2% from all Congenital Heart Disease (Animasahun, 2015; Bailliard, 2009). However in Indonesia, there is no specific number of incidence of ToF. In the year 2016, in Soetomo Hospital Surabaya, TOF is the most common type of cyanotic congenital anomalies with a total 30 out of 44 patients or around 68.2% (Wulandari et al., 2018).

The Management of TOF differs into two methods, the medical and surgical one. The surgical is further divided into Palliative with Blalock-Taussig shunt and also Complete/Total Repair Surgery (Park, 2008). The level of safety of total correction is well documented in the literature with several studies showing that the procedure is safe even in neonates. Therefore, a total correction has been used as a standard for early repair in patients with symptomatic Tetralogy of Fallot. According to retrospective study on 99 patients with ToF that was all carried out by total repair, the mortality was only 3% (3 of 99), and the survival rates were 94% at 1 year and 91.6% at 5 years (Pigula, 2015).

The total correction procedure for TOF has been performed for more than 40 years with the long-term outcome and quality of life have been considered excellent. The research conducted nowadays was to determine the optimal age for the total correction surgery with a short and long outcome. The predominant trend for the timing of surgical was an earlier intervention within the first 4-6 months of life, although some advocated earlier repair in symptomatic neonates (Atik et al, 2004). Complete repair during infancy or neonatal period is considered as the best time for surgery. The benefits of early repair are considered many, such as: to prevent end-organ damage due to cyanosis, preserving myocardium, prevention of right ventricular hypertrophy, fibrosis and also in some cases failure by removing the stimulus and improved development of pulmonary arteries (Waqar et al, 2017).

Despite all the benefits mentioned before, we still need to consider some complications of varying severity that occur almost invariably after TOF total repair that leads to remarkable morbidity or even mortality. Some of the most commonly found complication post total repair surgery includes; pulmonary regurgitation, residual RVOT obstruction, VSD patch leakage, arrhythmias, hypoxemia, dysfunction of the

heart, and even sudden death. On the other hand, the morbidity and mortality treatment in the Intensive Care Unit (ICU) post operation is still high. (Woon Ho et al, 2007). Medical centers in developed countries made successful total corrections without premature death, while in developing countries the mortality rate was as high as 6.9% to 15.3% (Hashemzadeh et al, 2008).

In addition to that, there are some preoperative factors that might affect the mortality of patients undergoing TOF repair include the age at the time of surgery, gestational age, gender, weight, hypercyanotic spells, saturation, and comorbidities. Some postoperative factors such as length of ICU stay, duration of mechanical ventilation, duration of inotropic support, and postoperative complications. All of these factors are used as predictors for the mortality and morbidity in TOF repair (Egbe., 2014).

This shows that despite total repair surgery has been used as a standard procedure for early repair in TOF patients, the morbidity and mortality should still be considered, especially in developing countries. This research is determined to analyzed pre and post operative risk factors that contribute to the mortality of TOF patients performed total correction.

1.2 Research Question

What are the factors that affect the mortality of patients with Tetralogy of Fallot being performed total correction surgery at Sutomo Hospital ?

1.3 Research Objectives

1.3.1 General Objectives

To Identify factors that affect the mortality of patients with Tetralogy of Fallot being performed total correction surgery at Sutomo Hospital.

1.3.2 Specific Objectives

1. To Identify pre-operative factor that affect mortality on patients with TOF after being performed total correction surgery at Sutomo Hospital
2. To Identify post-operative factor that affect mortality on patients with TOF after being performed total correction surgery at Sutomo Hospital

1.4 Research Benefits

1.4.1 Theoretical Benefits

1. To provide an overview of what factors influence the total correction of postoperative TOF patient mortality in Soetomo General Hospital as a basis for further scientific development.
2. This research is expected to provide scientific information about the mortality factors from pre and post surgery of total correction TOF patients in Soetomo General, therefore that it can reduce the morbidity and mortality of TOF patients.

1.4.2 Clinical Benefits

1. Helping medical staffs to find out the factors that cause mortality of TOF patients after total correction is done so that it can provide better treatment.
2. Hopefully, this research can be a reference for the government and health workers regarding the description of TOF mortality in Indonesia and also

carry out appropriate management for TOF patients who have done the total repair.