The Characteristics and Distribution of Congenital Heart Disease in Outpatient Clinic and Inpatient Ward of RSUD Dr. Soedono Madiun East Java in Year 2015

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ABSTRACT

Background: Congenital heart disease is a heart abnormality that presents at birth and fatal in the majority of the case. Congenital heart disease affecting up to 8-10 in every 1,000 newborn.
Methods: This study was a descriptive research about the characteristics and distribution of congenital heart disease at ward and clinic of a government hospital in East Java for a year, by investigating medical record from 1 January 2015 – 31 December 2015. We classified and analyzed the patients based on the different groups of age, gender, type of congenital heart disease, the age of first diagnosed, nutritional status, co-morbidities of the disease, medical intervention, and the funding.
Result: Total sample from this research was 49 subjects, consist of 53% male and 46% female. CHD was mostly diagnosed in the first year of life (75%), with acyanotic CHD as the most common type. Malnutrition was found in 51% of the subjects. Nonsurgical medical intervention was the most common management performed to treat the condition (97%). The funding with National Health Insurance (PBI or non-PBI) was used in more than half of the subjects (51%).
Conclusion: As the conclusion, CHD was commonly found in the first year of life with non-cyanotic type dominated the CHD patients. As the highly cost of this disease, it was surprising that only half of the subjects were covered by National Health Insurance. A good funding resource was really needed to make sure the treatment plan of the diseases was well executed.

Keyword: congenital heart disease; characteristic distribution; children

INTISARI

Latar Belakang : Penyakit Jantung Bawaan (PJB) adalah kelainan jantung yang dibawa sejak lahir dan merupakan cacat bawaan yang paling sering menyebabkan kematian. Angka kejadian PJB berkisar pada 8-10 dari 1000 bayi lahir hidup.
Metode: Penelitian ini dilakukan secara deskriptif mengenai karakteristik dan distribusi penyakit jantung bawaan yang terdapat di instalasi rawat inap dan rawat jalan anakdi sebuah rumah sakit di Jawa Timur selama 1 tahun, mulai dari 1 January 2015 – 31 December 2015. Pasien dikelompokkan menurut kelompok usia, jenis kelamin, tipe penyakit jantung bawaan, usia saat pertama terdiagnosis penyakit jantung bawaan, status gizi, penyakit yang menyertai penyakit jantung bawaan, tindakan dalam penanganan penyakit jantung bawaan dan metode pembiayaannya.
Hasil : Didapatkan total sampel pada penelitian ini sebanyak 49 sampel yang terdiri dari 53% laki-laki dan 46% wanita. Penderita PJB ditemukan terbanyak pada tahun pertama kehidupan sebanyak 75% dengan PJB asianotik sebagai kelainan yang paling banyak ditemukan sebanyak 75%. Kekurangan gizi ditemukan sebanyak 51% pada penderita PJB dalam penelitian ini. Penanganan non-surgical merupakan penatalaksanaan terbanyak yang dilakukan sebanyak 97%. Pembiayaan pengobatan pada penderita PJB dengan menggunakan BPJS (PBI maupun non-PBI) melebihi setengah penderita PJB pada penelitian ini yaitu sebanyak 51%.

Kesimpulan : Penyakit jantung bawaan banyak ditemukan pada tahun pertama kehidupan. Penyakit jantung bawaan asianotik lebih banyak ditemukan daripada penyakit jantung bawaan sianotik. Cakupan jaminan kesehatan nasional oleh BPJS baru mencapai 51.02% pada penderita penyakit jantung bawaan. Hal yang cukup mengejutkan mengingat penanganan penyakit jantung bawaan ini membutuhkan biaya yang cukup besar.

INTRODUCTION

Congenital Heart Disease (CHD) is a structural abnormality of the heart that presents at birth with a high fatality rate. The incidence of CHD ranges between 8 and 10 per 1,000 live births. In Indonesia, it is estimated that 40,000 babies are affected with CHD.[1] However, the development of the diagnostic tool, medication, non-surgical and surgical intervention in the last 40 years have increased the life-expectancy of neonates with CHD in critical condition.[2]

According to Mitchell et al. (1971), CHD is defined as an abnormality of the heart's macroscopic structure or large intrathoracic blood vessels that has a definite or potential function.[3] There are 2 general types of CHD, which are cyanotic and non-cyanotic CHD, in which each type holds different signs and symptoms as well as different management course.[1] In certain types of CHD, early diagnosis is crucial so that proper life-saving treatment and intervention could be given.[1] Around 25% of CHD is categorized as critical, which means that immediate surgical or non-surgical intervention within the neonatal period or the first year of life is vital. Babies or neonates, who suffer from critical CHD, have increased risk of morbidity and mortality when the diagnosis or referral to tertiary pediatric cardiologist is delayed.[1]

Data fromThe Nothern Region Paediatric Cardiology Database estimated the incidence of CHD in the United Kingdom was 6.9 per 1,000 birth, or 1 in 145 births. A previous study in Beijing, China found the incidence of CHD was 8.2 per 1,000 birth, in which 168.9 per 1,000 was still-births and 6.7 per 1,000 was live births. The Asian race has bigger incidence rate compare to non-Asians due to high consanguine marriage rate. World Health Organization (WHO) reported the incidence of CHD among other cardiovascular diseases was as follow: Bangladesh (6%), India (15%), Burma (6%), and Srilanka (10%). The incidence rate in Indonesia is still undetermined, however a previous research in Dr. Sutomo Hospital, Surabaya, Indonesia between 2004-2006 showed an increase of mortality rate of CHD each year which was 11.64%, 11.35%, and 13.44%, respectively. [4]

In developed countries, CHD can be detected from infancy, while in developing countries most patients are brought to health practitioners when they are older. This means that there are a lot of neonatus and infants with CHD who are undiagnosed before death or have mild CHD but are underdiagnosed.[4]

The lack of data regarding the characteristic and incidence of CHD in Indonesia provokes a necessity of current researche to supplement this data deficiency. This study may provide a base for further research about CHD. This study was conducted in Pediatric Department of RSUD dr. Soedono Madiun, East Java, Indonesia. This study aims to determine the characteristics and distribution of CHD in inpatient ward and outpatient clinic of Pediatric Department of RSUD dr. SoedonoMadiun, East Java in year 2015. Furthermore, it can function as an epidemiological database for CHD in Indonesia.

METHODS

This study was a descriptive study about the characteristic and distribution of CHD in inpatient ward and outpatient clinic of Pediatric Department of RSUD dr. Soedono Madiun, a public hospital owned by district government

of Madiun, East Java, Indonesia, during 1 year period. The data was collected through patient's medical records from January 1, 2015 to December 31, 2015.

The subject of this research was all patients in inpatient ward and an outpatient clinic of Pediatric Department of RSUD dr. Soedono Madiun, East Java who was diagnosed with CHD within the research period. The characteristics observed in this study were age, gender, the types of CHD, the age when patients were first diagnosed, nutritional status, co-morbidities, intervention, and funding. The data of each variable were secondary data, i.e. medical records and its related documents, from RSUD dr. Soedono Madiun, East Java. The obtained data were analyzed and presented in distribution and frequency diagrams. This research has been reviewed by Ethics Committee of Medical and Health Research Faculty of Medicine Universitas Islam Indonesia and granted permission of research from RSUD dr. Soedono Madiun, East Java, Indonesia.

RESULTS

The data from the accessible medical records showed that 49 paediatric patients were diagnosed with CHD. The characteristics of the subjects were shown in table 1.

Based on gender, the result showed that among subjetcs there were 26 male children (53.06%) and 23 female children (46.94 %). Age groups were divided into three subgroups, which were 0 – 28 days old where in 16 children (32.65%), 29 days – 1 years old where 21 children (42.86%), and age > 1 years old where 12 children (24.49%). Based on CHD subtypes, 12 children (24.49%) had cyanotic type CHD and 37 children were diagnosed with acyanotic type CHD. This study also found 18 children were severely undernourished (36.73%), 7 children (14.29%) were undernourished, 18 children (36.73%) were normal, 1 child (2.04%) was overweight and 5 children (10.20%) was undetermined because of incomplete data. Based on the intevention, this study found that 1 child (2.04%) had surgical intervention and 48

Table1. The characteristics and distribution of subjects with CHD in RSUD dr. Soedono Madiun

Characteristics		Total (n)	Percentage (%)
Gender	Male	26	53.06
	Female	23	46.94
Age	0 – 28 days	16	32.65
	29 days – 1 years old	21	42.86
	> 1 years old	12	24.49
Types of CHD	Cyanotic	12	24.49
	Acyanotic	37	75.51
Nutritional status	Severe undernutrition	18	36.73
	Undernutrition	7	14.29
	Normal	18	36.73
	Overweight	1	2.04
	No data	5	10.20
Intervention	Surgical	1	2.04
	Non-Surgical	48	97.96
Funding	Private	24	48.98
	BPJS Non-PBI	22	44.90
	BPJS PBI	3	6.12

CHD: congenital heart diseases, BPJS:*badan penyelenggara jaminan sosial* (national health insurance funding agency), PBI : *penerima bantuan iuran* (social health insurance beneficiary)

children (97.96%) had non-surgical intervention. Based on the funding used by patients during treatment period, this study found 24 children (48.98%) were privately funded, 22 children (44.90%) were funded by non-social national health insurance (BPJS Non PBI) and 3 children (6.12%) were funded by social national health insurance (BPJS PBI).

We also observed the age when the children were first diagnosed with CHD and the comorbidities accompanying the disease. However due to incomplete data in the medical record, these data could not be presented thoroughly. Only 18 children whose first diagnostic age was documented, in which most patients were diagnosed when they were 0 days old and 7 months old was the oldest when diagnosed first time. We did not find any children whose first diagnostic age was more than 1 years old.

Unfortunately, the data regarding comorbidities of CHD was also incomplete. Within the obtained data, respiratory tract diseases, including pneumonia and upper respiratory tract infection, were the most commonly found comorbidities, in which there were 12 cases of pneumonia and 9 cases of acute upper respiratory tract infection.

DISCUSSION

In our study, among subjects with CHD, 26 children (53.06%) were male and 23 children (46.94%) were female. This result was different from a previous research by Ain et al. (2015) in RSUP Dr. M. Jamil, Padang, West Sumatra, Indonesia, in which the majority of patients were female, as much as 61.80% and male 38.20% with the ratio almost 2:1.[5]

The age group ofour subjects mostly within the age group of 29 days – 1 years old, amounting to 21 children (42.86 %), followed by the age group of 0-28 days as much as 16 children (32.65%). Therefore, in total, there were 75.51% patients who suffered from CHD within their first year of life. This finding is similar with previous study conducted by Tank et al (2004) in Mumbai Center India,which showed most patients with CHD was diagnosed within their first year of life, amounting to 50.34%.[4] Acyanotic CHD was the most commonly found types of CHD, in which 37 children (75.51%) were diagnosed with this subtype. This result is similar with a previous study by Haryanto (2012), in which acyanotic CHD acyanotic was found in 64.60% of subjects.[3] Due to incomplete secondary data from the medical records, the specified anatomical abnormalities of the disease were hard to determine.

There were 51.02 % CHD patients who were undernourished in this study, in which 36.73% is severely undernourished. The measurement of noutritional status was done using W.H.O and N.C.H.S graphic of body weight/age. Similar result was found in a previous research conducted in Dr. Cipto Mangunkusumo Hospital, Jakarta, Indonesia where the prevalence of undernutrition was 51.10%, in which 22.30% was severely undernourished.[6] In this study, there were 10.20 % samples who did not have sufficient data, so the nutritional status could not be determined. Most of these samples were those whose age were 5 years old and above, where there were no data of height so that nutritional status could not be measured

Non-surgical intervention was the most commonly found management in this research. In which, 48 children (97.96 %) with CHD were found to have non-surgical intervention. The management course of CHD depends heavily on its abnormalities and severity of the case. The availability of surgical facilities in a hospital is also a factor that will influence what management will be preferred.[7] There was only 1 child (2.04%) who was given surgical intervention in this study, in which the intervention was done in a referral hospital with more complete facilities.

The most commonly used funding was private funding, which was found as much as 48.98%. However, if both types of national coverage insurance or BPJS were combined, its total was larger than private funding, which amounted to 51.02%. The utilization of private funding might influence the choice of the management course of CHD, because the cost is very high if privately funded. This assumption ofcourse would need to be verified further by another research. It is hoped that the use of national coverage insurance or BPJS funding can be expanded, as the universal coverage of the government will be launched in 2019.

The age when CHD patients were first diagnosed and the comorbidities accompanying the disease could not be obtained because the data documented in the medical records were incomplete. Incomplete data in the medical records was one of the limitations of this research.

LIMITATIONS

There are some limitations of this study that could be improved in the next study about congenital heart diseases. Sample size is small and research periode also short. Used of secondary data in this study also give some limitations. There are so many incomplete data in the medical record that we could use as sample of this study. For example, the age when CHD patients were first diagnosed and the co-morbidities accompanying the disease could not be obtained because the data documented in the medical records were incomplete. Collaboration with cardiology department in the next study could give an improvement boost of the study.

CONCLUSION

Congenital heart disease was mostly found at the first year of life. Number of acyanotic type congenital heart disease more than cyanotic type congenital heart disease. More than half of the subjects were in malnutrition state. Non surgical intervention was the most commont management to treat the condition. National Health insurance by BPJS only cover up half of the subjects. A good funding resource was really needed to make sure the treatment plan of the diseases was well executed. Further research with a larger sample and bigger resources are needed to enrich data of congenital heart disease epidemiology in Indonesia.

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