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Profile Of Retinoblastoma Patients At H. Adam Malik RSUP 2014-2017

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ABSTRACT

Retinoblastoma is a malignant tumor disease of intraocular children. Retinoblastoma is caused by hereditary or non-hereditary factors. The general incidence of retinoblastoma is 1 in 15,000 births. Overall, more than two-thirds of retinoblastoma patients have unilateral tumors, the remainder have bilateral tumors. In Indonesia, the epidemiology of retinoblastoma is not known with certainty due to the lack of related research reports in the Indonesian population. The most common clinical presentation is leukocoria, followed by strabismus, pseudohypopyon, hyphema, orbital cellulitis, and vitreous hemorrhage. Aim. The purpose of this study was to determine the complete profile of retinoblastoma patients at Haji Adam Malik General Hospital in 2014-2017. Method. This research was designed in the form of a descriptive study with a retrospective research design. This research was conducted at Haji Adam Malik General Hospital. The population studied were retinoblastoma patients who were hospitalized at Haji Adam Malik General Hospital and the sample used was total sampling. The data collection method was carried out by collecting secondary data, namely medical records for the period January 2014 – July 2017, then processed with SPSS for Windows. Data analysis was carried out descriptively with frequency analysis. Results. The results showed that the incidence of retinoblastoma patients in the 2014-2017 period was 48 people, the 2-3 year age group was the largest age group (39.6%), good nutritional status was the largest group (52.1%), the most tumors were unilateral tumors. (91.7%)

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1. INTRODUCTION

Retinoblastoma is a malignant intraocular tumor disease that often occurs in children. Retinoblastoma is generally detected in children aged 2 years (Nelson, 2011). Retinoblastoma is caused by hereditary or non-hereditary factors. Hereditary retinoblastoma can manifest multifocal and bilateral, nonhereditary retinoblastoma can manifest unifocal and unilateral. Clinical symptoms

of retinoblastoma can be in the form of leukocoria, strabismus, protopsis or uveitis (MOH, 2015). Retinoblastoma occurs because an individual inherits the retinoblastoma protein gene (RB1) (Robbins, 2015). Although the survival rate for retinoblastoma in the world is high, blurred vision and side effects of retinoblastoma therapy are still a concern for clinicians (Nelson, 2011).

Retinoblastoma accounts for 4% of all childhood tumors. The incidence of retinoblastoma in the world is approximately 1 in 15,000 births with an estimated 7,000 to 8,000 new cases, 90% of retinoblastoma cases are diagnosed before the child is 5 years old. Overall, two-thirds to three-quarters of children with retinoblastoma have unilateral tumors, and the remainder have bilateral tumors.

In Indonesia, the epidemiology of retinoblastoma is not known with certainty due to the lack of research reports on the Indonesian population. However, the results of research at Dr. Soetomo showed that there were 15 cases of retinoblastoma diagnosed through histopathology (Soebagjo et all, 2011). Data from the Department of Pediatrics FKUI/ Cipto Mangunkusumo Hospital in 2000-2005 ranged from 137 cases. Data at Dharmais Cancer Hospital in 2006-2010 showed 30 new cases (Ministry of Health, 2011). Data on the distribution of pediatric cancer at RSK Dharmais in 2014 showed that there were 7 cases of retinoblastoma out of 163 cases of childhood cancer (4.3%) (Depkes, 2015). Data at H. Adam Malik Hospital in 2005-2009 showed that there were 67 cases of retinoblastoma in children (Rosdiana, 2011).

Treatment options in children with retinoblastoma depend on the number, size, location, and type of intraocular tumor. Focal therapy in the form of laser and cryotherapy is performed if the child has a single discrete extramacular tumor, without tumor seeding. Plaque radiation therapy is done if the child has a medium-sized tumor in one or both eyes. Combined pharmacological therapy (Carboplatin IV) and chemotherapy is used if there is a large tumor and protruding eyes. External beam radiation therapy (EBRT), formerly the definitive treatment for bilateral retinoblastoma, is now used for residual Rb tumors or recurrent retinoblastoma (Vaughan & Ashbury 2013).

2. RESEARCH METHOD

This study was designed in the form of a descriptive study with an observational retrospective study design to determine the treatment options for retinoblastoma patients at HAM Hospital.

Data processing is carried out with the following steps. (1) editing, carried out to check the accuracy and completeness of the data; (2) coding, the collected data is corrected, then coded manually before being processed by a computer; (3) entry, enter data into a computer program; (4) data cleaning, checking data that has been entered into the computer to avoid errors; (5) saving, data storage; and (6) data analysis.

The collected data is then processed and analyzed with the help of the Statistical Package for the Social Science (SPSS) program for Microsoft Windows. Statistical analysis used is a descriptive study with frequency analysis.

3. RESULTS AND DISCUSSIONS

3.1 Description of Research Data

The samples obtained were from patient master data stored in the Medical Record Installation of H. Adam Malik Hospital, Medan for the period January 2014 to July 2017 as many as 48 children diagnosed with retinoblastoma. The following is a description of respondents with retinoblastoma, which is explained as follows.

The distribution of Retinoblastoma patients who became the study sample based on the age and sex of the child can be described in the table below.

Table 1. Distribution of Respondents by Gender

Information	Amount	Percentage
Man	28	58.3
Woman	20	41.7
Total	48	100

respondents		

Based on Table 1, it can be explained that the number of male samples of Rb patients was 28 people (58.3%) and the number of female samples of Rb patients was 20 people (41.7%). This is in accordance with the research of Al Hasan et al (2016) that the male/female ratio is 1.6. Likewise with the research of Gao et al (2016) that the number of men is more than women, namely 143 people (56.5%) compared to 110 people (43.5%). The ratio of men to women is not that far apart, especially in Europe.

Table 2. Distribution of Respondents by Age Group

0 - 1 year	5	10.4
12 years old	6	12.5
23 years	19	39.6
3 - 4 years	8	16.7
4-5 years	4	8.3
5 years and over	6	12.5
Total respondents	48	100

Based on Table 2, it can be concluded that the most Rb patients were in the age group of two to three years, namely 19 people (39.6%). Then followed by the age group of 3 to 4 years, namely 8 people (16.7%). Then the age group 5 years and over, namely 6 people (12.5%). After that group 1 to 2 years, namely 6 people (12.5%). After that, the group 0 to 1 year is 5 people (10.4%). And finally, the group of 4 to 5 years is 4 people (8.3%). This is not in accordance with the research of Al Hasan et al (2016) that the group of 4 months – 1 year is the group most exposed to retinoblastoma, namely 15 people (40.6%) of 37 people.

The following distribution of retinoblastoma patients by age can be seen in the descriptive table below.

Table 3. Overall Age Analysis (n=48 samples)

Average value	44.19 months (3 years 7 month)
Median Value	33.50 months (2 years 8
months) Shortest Age	2 month
Longest Life	13 year

In table 3 above, the average age of the entire sample is 3 years 7 months, higher than the study by Selistre et al (2016), which was 23.5 months. The median age value in all samples was 2 years and 8 months, higher than the study by Gao et al (2016), which was 25 months. However, the patient's median Rb value is consistent with Nelson (2011), which is 2 years. The age of the sample ranged from the shortest (2 months) to the longest (13 years).

The following is the distribution of Rb patients based on the distribution of age groups and sex in the table below.

Table 4. Distribution of Respondents by age group and gender

Age Group	Gender		Total
	Man	Woman	
0 – 1 year	3	2	5
12 years old	2	4	6
23 years	9	10	19
3 – 4 years	6	2	8
4-5 years	3	1	4
5 years and over	5	1	6
Total	28	20	48

Table 4 explains that in the 0-1 year group, there are 3 boys (10.7%) and 2 girls (10%). In the group of 1-2 years, there are 2 boys (7.1%) and 4 girls (20%). In the group of 2-3 years, there are 9 boys (32.1%) and 10 girls (50%). In the group of 3-4 years, there are 6 boys (21.4%) and 2 girls

(10%). In the group of 4-5 years, there are 3 boys (10.7%) and 1 girl (5%). In the group of 5 years and over, there are 5 boys (17.8%) and 1 girl (5%).

The distribution of Rb patients based on parents' occupations can be described in the following table.

Table 5. Patient Distribution by Parents' Occupation

Information	Amount	Percentage
Farmer	9	18.8
civil servant	4	8.3
entrepreneur	22	45.8
private employees	6	12.5
Honorary	1	2.1
Fisherman	1	2.1
Teacher	1	2.1
Does not work	4	8.3
Total respondents	48	100

From Table 5 above, Rb patients with parental occupations include 9 farmers (18.8%), Civil Servants (PNS) 4 (8.3%), entrepreneurs 22 (45.8%) , private employees are 6 people (12.5%), honorary is 1 person (2.1%), fisherman is 1 person (2.1%), teacher is 1 person (2.1%), and not working is 4 people (8.3%).

Thus, from the distribution of patients Rb based on the occupation of the parents. Patients whose parents have jobs are 44 people (91.7%) and the remaining patients whose parents do not work are 4 people (8.3%).

The distribution of Rb patients based on family history of having suffered from the same disease can be described in the table below.

Table 6. Distribution of Patients by Family History of Retinoblastoma

Information	Amount	Percentage
Yes	0	0
No	48	100
Total Respondents	48	100

From table 6 above, all Rb patients, namely 48 people, did not have a parental history of suffering from retinoblastoma. This is not in accordance with the research of Al Hasan et al (2016) that of 38 patients studied, three patients had a family history of suffering from the same disease. Lack of patient socialization and education is an obstacle in knowing the history of Rb in the patient's family. Family history in the history of retinoblastoma plays a role in determining the type of hereditary and non-hereditary (MOH, 2015).

The distribution of Rb patients based on the nutritional status of children can be seen in the table below.

Table 7. Distribution of Patients by Nutritional Status

Information	Amount	Percentage
Bad	11	22.9
Not enough	11	22.9
good	25	52.1
more	1	2.1
Total	48	100.0

In table 7 above, Rb patients with good nutrition are the largest number, namely 25 people (52.1%). Then the Rb patients with poor nutrition were 11 people (22.9%), after that the Rb patients

with less nutrition were 11 people (22.9%), and the remaining Rb patients with more nutrition were 1 person (2.1%). Nutrition in children with cancer is still a problem that has not been taken into account in pediatric oncology. Even though. Distribution of Rb patients based on tumor lateralization can be described in the table below.

Table 8. Patient Distribution by Tumor Lateralization

Information	Amount	Percentage
Unilateral	44	91.7
Multilateral	4	8.3
Total	48	100

In table 8 above, 44 patients (91.7%) of the Rb tumor lateralization developed unilaterally and the remaining 4 (8.3%) developed multilaterally. This is consistent with the research of Nabie et al (2012) that many Rb patients present with unilateral (57.7%) versus bilateral (42.3%) tumors and consistent with the Selistre et al. (2016) study that most tumors in Rb patients are unilateral. after diagnosis (65%). The following distribution of Rb patients based on the location of the tumor can be seen in the table below.

Table 9. Patient Distribution by Tumor Location

Information	Amount	Percentage
OS	20	41.7
OD	24	50
ODS	4	8.3
Total	48	100

Based on table 9 above, Rb patients where the tumor is located in Oculi Sinistra (OS) are 20 people (41.7%), while Rb patients with tumors in Oculi Dextra (OD) are 24 people (50%). The rest, Rb patients with tumors on Oculi Dextra Sinistra (ODS) with a total of 4 people (8.3%). This is not in accordance with the research of Nabie et al (2012) that Rb tumors in Unilateral Rb patients are more in the left eye (65.2%). The distribution of Rb patients based on the clinical features found can be seen in the table below.

Table 10. Distribution of Patients Based on Clinical Features

Information	Sum (from n=48)	Percentage
Leukocoria (Cat's Eye)	23	48
Prominent Eyes	23	48
Red Eye	12	25
Puffy Eyes	8	16.7
Fever	6	12.5
Painful	6	12.5
Weak	6	12.5
Eye Bleeding	4	8.3
Blurred Vision	2	4.2

In table 10 above, it is known that the patient has more than one clinical picture. Clinical features that are often found in Rb patients are leukocoria (Cat's Eye) and protruding eyes with 23 people (48%). Clinical features found in addition to leukocoria and protruding eyes were red eye in 12 people (25%), swollen eyes in 8 (16.3%), fever in 6 (12.5%), pain with 6 people (12.5%), weak with 6 people (12.5%), eye bleeding in 4 people (8.3%), and blurred vision in 2 people (4.2%). In leukocoria, the results are consistent with Pandey's (2013) study that leukocoria is the majority clinical picture with a percentage of 53%. Leukocoria is the most common clinical picture in Rb patients, which covers two thirds of all cases. Clinical features found in addition to leukocoria are strabismus, secondary glaucoma, protopsis (bulging eyes), signs of anterior aisle inflammation, and hyphema (Reddy et al 2010). The absence of clinical features of strabismus indicates that visual examination is needed in diagnosing retinoblastoma.

The distribution of Rb patients based on the results of the main blood labs can be seen in the descriptive table below.

Table 11. Overall Blood Lab Value (n=48 samples)

Information	Mean Value	Distance (min - max)
Hematocrit	33.133%	12.6 – 43.5
Hemoglobin	11.123 g/dL	4.2 – 15.7
Leukocytes	9432/mm3	2180 - 33480
Platelets	334.31 x 103/mm3	45 x 103 – 633 x 103

Based on Table 11 above, the average value of hemoglobin is 11.12 g/dL. This value is not much different from the results of research by Rosdiana (2011) that the hemoglobin value of all Rb patients is 10.7 g/dL, a low hemoglobin value is associated with malignancy because anemia is a sign of malignancy. The average value of leukocytes is 9432/mm3, this is not in accordance with the results of Rosdiana's (2011) study that the leukocyte value of all Rb patients is 14962/mm3. In the study of Garcia et al (2014), the count parameters for leukocytes and monocytes can be predictive factors, although a lower count than the stated number is not necessarily defined as an unsatisfactory result. It was also mentioned that patients with retinoblastoma had high CD34+ values.

The average value of platelets is 334310/mm3, this is not in accordance with the results of Rosdiana's research (2011) that the platelet value of all Rb patients is 416786/mm3. In the study of Suega (2011), platelets are an important component in the hemostasis process and thrombocytosis is associated with a poor prognosis in solid tumors. The distribution of Rb patients based on the choice of therapeutic action in the management of retinoblastoma can be seen in the table below.

Table 12 Distribution of Patients Based on Retinoblastoma Treatment Options

Information	Amount	Percentage
Chemotherapy	31	64.6
Enucleation	12	25
Radiotherapy	3	6.3
No data	2	4.2
Total	48	100

In Table 12 above, 31 patients were given Rb chemotherapy (64.6%), followed by enucleation 12 people (25%), radiotherapy 3 people (6.3%), and there was no data for 2 people (4, 2%). This is in accordance with the research of Rosdiana (2011) that the majority of retinoblastoma patients were treated in the form of chemotherapy (89.6%). It is well known that the management of Rb patients has changed over time, from enucleation, EBRT, and finally systemic chemotherapy which until now has been the main treatment option (Shields, 2012). Constraints in the management of retinoblastoma, especially in developing countries, include the management of extraocular disease, the management of retinoblastoma with high-risk anatomical pathology, and eye care therapy (Chantada et al, 2011).

4. CONCLUSION

The age group that suffered the most from retinoblastoma were 19 people (39.6%), 3-4 years as many as 8 people (16.3%), 1-2 years as many as 6 people (12.5%), 5 years and over as many as 6 people (12.5%), 0-1 years as many as 5 people (10.4%), 4-5 years as many as 4 people (8.3%). Men are the most patients with retinoblastoma (58.3%) than women (42.7%).

Most of the occupations of parents of retinoblastoma patients are entrepreneurs with a total of 22 people (45.8%), then farmers with a total of 9 people (18.8%), private employees with a total of 6 people (12.5%). The known occupations of parents are civil servants, private employees, honorary workers, fishermen, teachers. There are 4 patients with Rb whose parents do not work (8.3%). Rb patients with good nutritional status were 25 people (52.1%), poor nutritional status were 11 people (22.9%), less nutritional status was 11 people (22.9%), overweight status was 1 person (2 ,1%).

Based on the clinical features found, leukocoria and protruding eyes were clinical features found in 23 people (47.9%). Red eye was found in 12 people (25%), puffy eyes were found in 8 people (16.3%). Other clinical features found are fever, pain, weakness, eye bleeding and blurred vision. All retinoblastoma patients were noted to have no family history of the same disease. This is because there is no retinoblastoma gene screening tool in Indonesia.

Retinoblastoma patients based on tumor lateralization were more distributed unilaterally (91.7%) than multilateral (8.3%). In unilateral tumors, the right eye was more exposed (54.5%) than the left eye (45.5%). In males, the right eye was more exposed (60.7%) than the left eye. On the other hand, in women, the left eye was more exposed (55%) than the right eye.

Blood laboratory results in retinoblastoma patients showed that the average value of hematocrit was 33.133%, the average value of hemoglobin was 11.123 g/dL, the average value of leukocytes was 9432/mm3, and the average value of platelets was 334.31 x 103. /mm3. Treatment of retinoblastoma, namely chemotherapy is the main treatment option with a total of 31 cases (64.6%). Meanwhile, the other treatment options were enucleation which amounted to 12 people (25%), radiotherapy amounted to 3 people (6.3%), and there was no data amounting to 2 people (4.2%).

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