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Malignant Brain Lymphoma Based on Age, Gender, Symptoms, Imaging Modality, Hiv Examination, And Histopathology at Dr. Kariadi Central General Hospital Semarang From January 2016 to December 2018

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ABSTRACT

Background: Primary CNS Lymphoma (PCNSL) is rare cancer from the brain or spinal cord lymphatic tissue. The incidence increased in patients over 60 years, with an incidence rate of 0.5/100,000 per year. PCNSL associated with poor survival. The aim of the study was to determine the incidence of Brain Malignant Lymphoma based on age, gender, symptoms, imaging modalities, HIV examination, and histopathological results at dr. Kariadi Semarang.
Methods: This is a retrospective descriptive study. We collected brain malignant lymphoma patient's medical records who came to the ER and the Neurosurgery Polyclinic of Dr. Kariadi Semarang from period January 2016-December 2018.
Results: There were 1,012 brain tumor patients, 6 patients were brain malignant lymphoma with the highest prevalence in the age range of 45-65 years (5 patients) and 66.67% male. The most common symptom was blurred vision 23.07%. The imaging modalities showed lesions on: right parietal lobe 14.29%, sella region 14.29%, parasella region 14.29%, cerebellum 14.29%, IV ventricle 14.29%, vertebrae sacrum 2-5 14.29 %, and the fronto-temporo-parietal region 14.29%. No HIV test data were obtained. According to histopathology, Diffuse large B cell Lymphoma Malignant non Germinal Center (DLBCL) and High grade, B cell Non Hodgkin Lymphoma (small type) each were 33.33%.
Conclusions: The prevalence of malignant brain lymphoma cases was highest in the 45–65 year age group and male, with blurred vision. Most of the results of imaging modalities show an even distribution of brain malignant lymphomas and generally do not do HIV testing. The most common histopathological diagnosis was DLBCL.

1. Introduction

Primary cerebral lymphoma is a rare cancer that begins in the lymph tissue of the brain or spinal cord. Primary cerebral lymphoma is also known as brain lymphoma or central nervous system lymphoma. Primary CNS Lymphoma (PCNSL) is a highly aggressive non-Hodgkin's lymphoma confined to the CNS, including the brain, spine, cerebrospinal fluid (CSF), and eyes. PCNSL may develop in patients with immunosuppressive conditions (HIV/AIDS, organ transplantation, immunosuppressive agents) or in immunocompetent patients. PCNSL in immunocompetent patients is rare and represents 4% of all intracranial neoplasms and 4% to 6% of all extranodal lymphomas.1 However, in recent years, an increased incidence has been recognized, especially in patients older than 60 years, with The incidence rate is 0.5 per 100,000 per year. Approximately 1,500 new patients are diagnosed each year in the United States.[2]

Patients with PCNSL develop neurologic signs over several weeks, including focal neurological deficits (56% to 70%), altered mental status and behavioral changes (32% to 43%), symptoms of increased intracranial pressure (headache, nausea, vomiting, papilledema, 32% to 33%), and seizures (11% to

14%), depending on the site of involvement in the CNS.[3]

PCNSL has historically been associated with poor survival. However recent studies provide some support that survival has improved, perhaps reflecting an intensification of treatment and new treatment options other than radiotherapy. Independent predictors among these patients were gender, HIV status, race and age at diagnosis.[4]

2. Methods

This research is a descriptive study with retrospective analysis. The study was conducted by collecting data based on observations of the medical records of brain malignant lymphoma patients who came to the ER or Neurosurgery clinic at Dr. Kariadi Hospital Semarang during January 2016 to December 2018. Patient data was collected by processing data from the medical record section of dr. Kariadi Hospital manually from written records in medical records and digital data. Data collection was carried out by a researcher. The collected data is checked for completeness and correctness of the data (data cleaning). The data was processed using Microsoft Excel 2016 software for Windows and presented in graphical form.

3. Results

This study was carried out retrospectively descriptively from medical records in patients with brain tumors and brain malignant lymphoma at RSUP dr. Kariadi Semarang in the period January 2016-December 2018 and obtained 1,012 cases. Of the 1,012 cases, data on age, sex, symptoms, imaging modalities, HIV examination, tumor type and histopathological results were obtained. There were some patients who could not be used as research samples due to incomplete data, no surgery or no histopathological results. After exclusion, 6 complete respondent data were obtained.

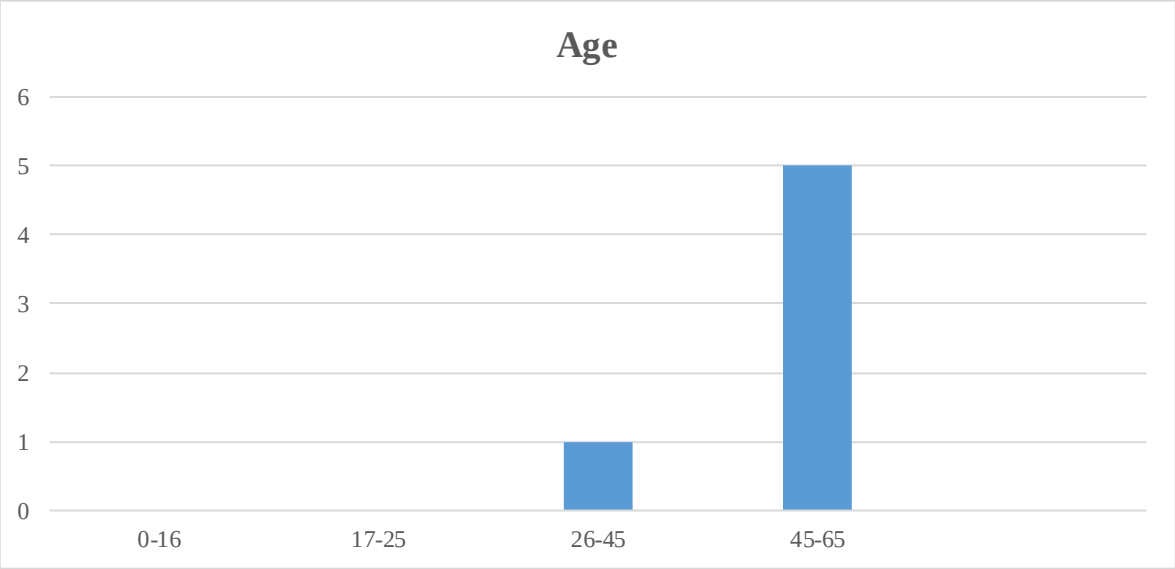

Figure 1. Age of Malignant Brain Lymphoma Patients

The graph above is a description of respondents with malignant brain lymphoma based on age, it is known that there are 6 respondents with the highest prevalence at the age of 45-65 years as many as 5 people and age 26-45 years as many as 1 person.

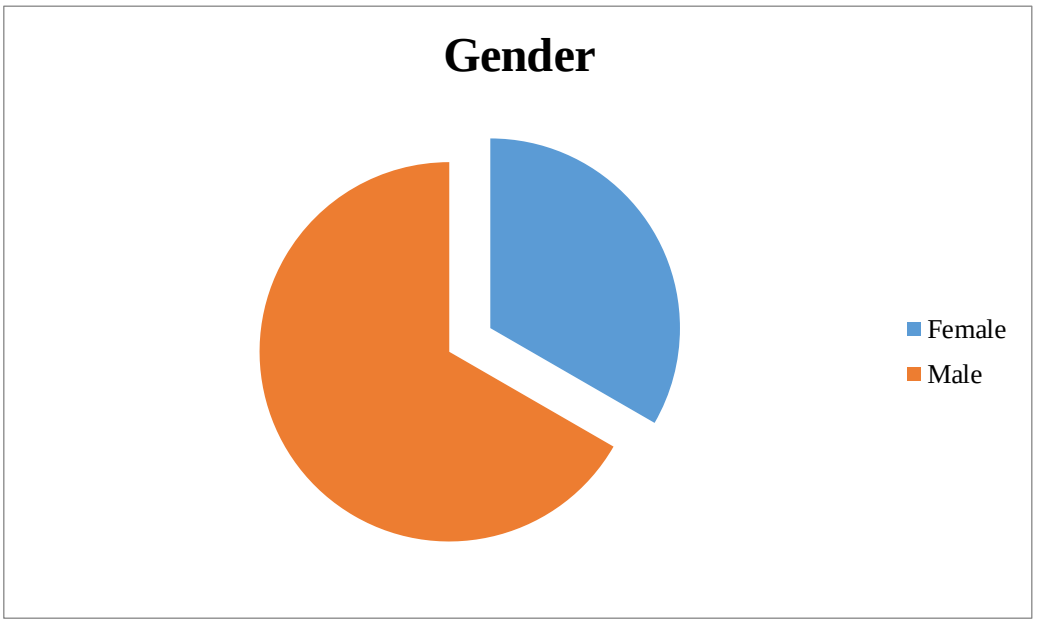

Figure 2. Gender of Malignant Brain Lymphoma Patients

Among the 6 respondents, it is known that the largest number of respondents are male respondents by 4 people (66.67%), while female respondents are 2 people (33.33%).

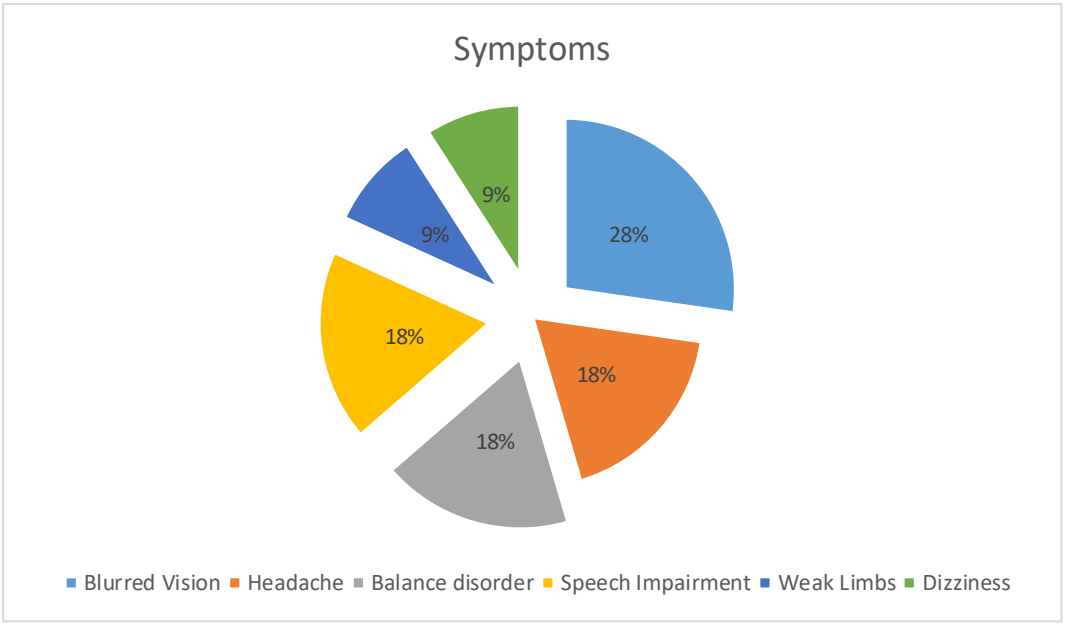

Figure 3. Symptoms of Malignant Brain Lymphoma Patients

Based on the diagram above, the sample symptom variations in this study are: blurred vision (3 samples; 23.07%), headache (2 samples; 15.38%), balance disorders (2 samples; 15.38%), speech impairment (2 samples; 15.38%), weak limbs (1 sample; 7.69%), spinning dizziness (1 sample; 7.69%), low back pain (1 sample; 7.69%), and lumps on the right temporal (1 sample; 7.69%).

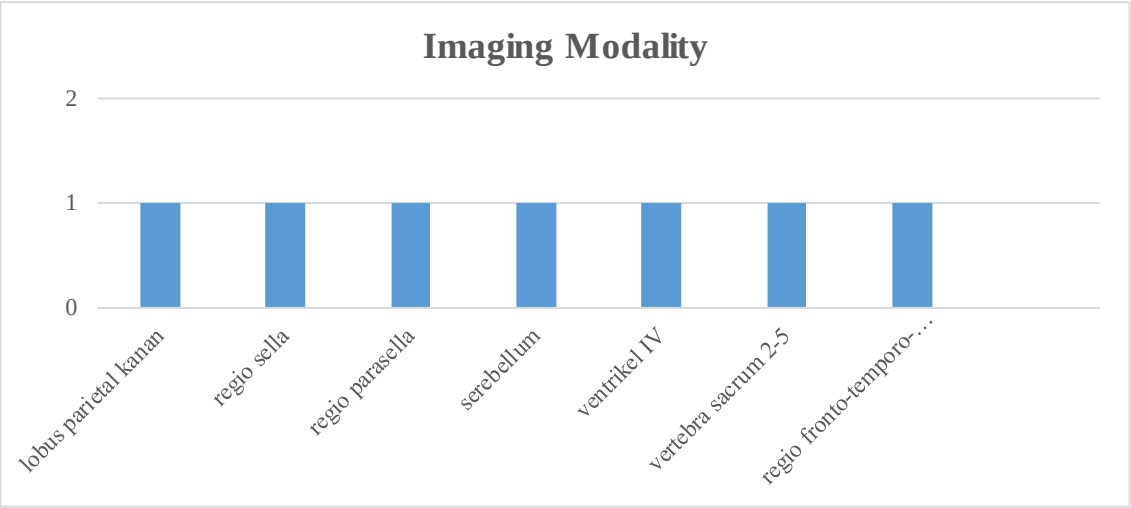

Figure 4. Imaging Modality Results of of Malignant Brain Lymphoma Patients

The graph above is a description of respondents with brain malignant lymphoma based on the results of imaging modalities, it is known that each respondent has different imaging modalities, namely in the right parietal lobe (1 sample; 14.29%), region sella (1 sample; 14 samples). .29%), parasella region (1 sample; 14.29%), cerebellum (1 sample; 14.29%), IV ventricle (1 sample; 14.29%), 2-5 sacral vertebrae (1 sample; 14 .29%), and the fronto-temporo-parietal region (1 sample; 14.29%).

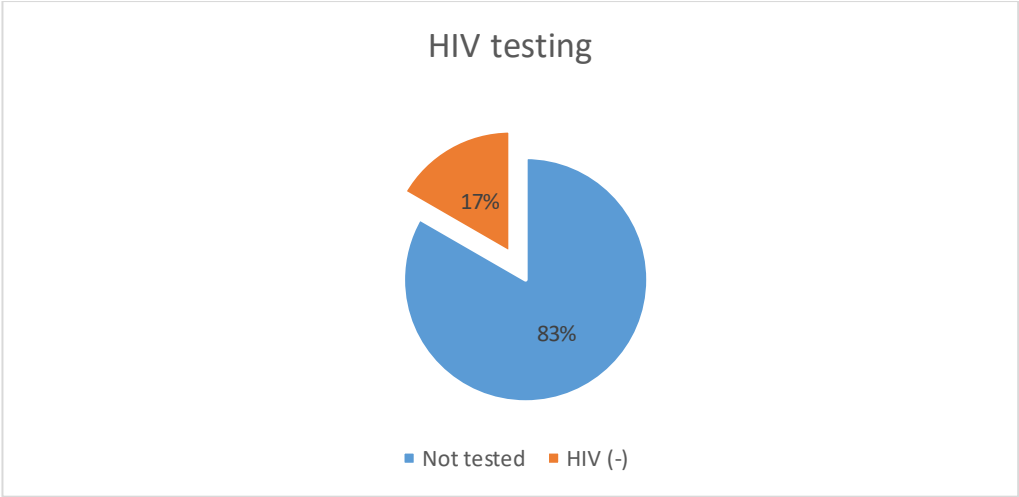

Figure 5. HIV testing on Malignant Brain Lymphoma

Based on the diagram above, of the 6 respondents who were diagnosed with brain malignant lymphoma, 5 (83.33%) were not tested for HIV, and 1 respondent (16.67%) was tested for HIV with an HIV result (-).

Tabel 1. Tipe Limfoma Maligna Otak berdasarkan hasil histopatologis

Histopathologic Examination	Frequency	Percentage
Diffuse large B cell Lymphoma Maligna non Germinal Centre	2	33,33 %
Lymphoplasma cytic lymphoma	1	16.67 %
High grade, B cell Non Hodgkin Lymphoma (small type)	2	33,33 %
Diffuse Small Type B cell Non Hodgkin Lymphoma	1	16,67 %

The table above shows the most common types of Brain Malignant Lymphoma based on histopathological examination, namely Diffuse large B cell Lymphoma Malignant non Germinal Center, which is 2 patients (33.33%), and High grade, B cell Non Hodgkin Lymphoma (small type), which is 2 patients. (33.33%).

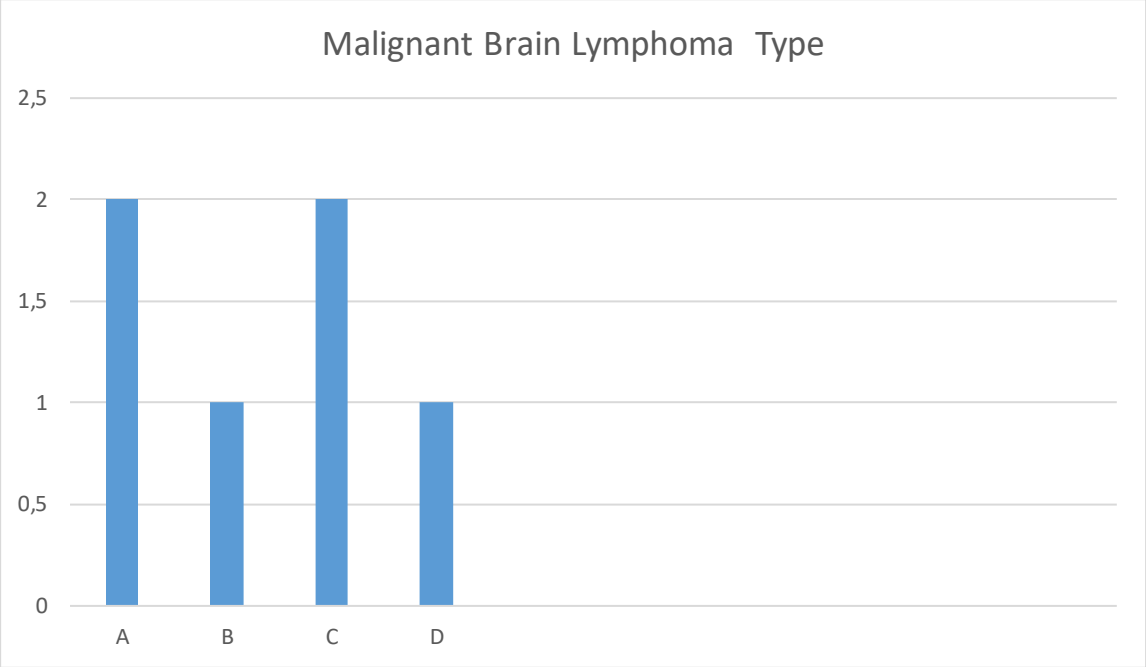

Figure 6. Types of Malignant Brain Lymphoma

Informations :
A : Diffuse large B cell Lymphoma Maligna non Germinal Centre
B : Lymphoplasma cytic lymphoma
C : High grade, B cell Non Hodgkin Lymphoma (small type)
D : Diffuse Small Type B cell Non Hodgkin Lymphoma

4. Discussion

This study was conducted on 1,012 subjects with brain tumors, of which 6 were patients with Brain Malignant Lymphoma, who had been treated and underwent surgery at dr. Kariadi Hospital Semarang in January 2016-December 2018 and met the research criteria. This study aims to compare the incidence of Brain Malignant Lymphoma and Brain Tumor based on age, sex and histopathological results at dr. Kariadi Hospital Semarang in the period between January 2017-December 2018.

Among 1,012 patients with Brain Tumors, 6 patients suffered from Brain Malignant Lymphoma, where the highest number of patients was in the age range of 45-65 years as many as 5 patients (0.99%) of the total 501 Brain Tumor patients in this age group. This is consistent with the theory that the overall incidence of these neoplasms increases, especially in people aged sixty-five years and over, where the median age at diagnosis is 56 years.[5]

Based on the gender group, it can be described from 6 patients with Brain Malignant Lymphoma, it is known that the largest number of male respondents is 4 people (66.67%), while female respondents are 2 (33.33%). Another study by Villano et al stated that the ratio of patients with Brain Malignant Lymphoma prevalence in males was higher than females with a ratio of 1.2:1 – 1.7:1.[1]

Based on the symptoms experienced, which can be described from 6 patients with Brain Malignant Lymphoma, the highest prevalence of symptoms was blurred vision, experienced by 3 patients (23.07%). This is in accordance with the theory which states that the presentation of intraocular symptoms is seen in 5-20% of PCNSL cases. Intraocular symptoms precede brain lesions in 95% of patients; both eyes are involved in 80% of cases. Diagnosis can be

difficult; Patients generally complain of floaters and blurred vision, which is caused by uveitis.[6,7]

Based on the results of imaging modalities, obtained from 6 respondents with malignant brain lymphoma, the results were varied and evenly distributed, namely: right parietal lobe (1 sample; 14.29%), sella region (1 sample; 14.29%), parasella region (1 sample; 14.29%), cerebellum (1 sample; 14.29%), IV ventricle (1 sample; 14.29%), 2-5 sacral vertebrae (1 sample; 14.29%), and fronto region - temporo-parietal (1 sample; 14.29%). This is in accordance with other research that there are variations in the results of imaging modalities[8]

In immunocompetent PCNSL patients, lesions are solitary in 65% of cases and located in the cerebral hemispheres (38%), thalamus or basal ganglia (16%), corpus callosum (14%), periventricular regions (12%), and cerebellum (9%)). HIV-associated PCNSL were solitary lesions in 48.6% of cases and localized to the cerebral cortex in 65%, periventricular region in 56%, basal ganglia in 33%, cerebellum in 7%, and brain in 4%.[6]

Based on HIV examination on 6 respondents with Brain Malignant Lymphoma, 5 (83.33%) of them were not tested for HIV, and 1 respondent (16.67%) was tested for HIV with the result that HIV (-). Therefore, these results cannot be concluded because of the limitations of HIV testing. However, PCNSL can develop in patients with immunosuppressed conditions (HIV/AIDS, organ transplantation, immunosuppressive agents) or in immunocompetent patients.9 HIV-associated PCNSL is usually a large cell lymphoma with immunoblastic features and is more aggressive.10 These patients are often severely immunocompromised with a CD4 count of fewer than 50 cells/mm3 at the time of diagnosis, and has had a previous AIDS-related illness.[6]

Based on the histopathological type, it can be described that Diffuse large B cell Lymphoma Malignant non Germinal Center and High grade, B cell Non Hodgkin Lymphoma (small type) is the most common type of Brain Malignant Lymphoma in patients treated at Dr Kariadi Hospital during January 2016-December 2018 as many as 2 patients or 33.33%. These results are in accordance with research from the Working Formulation which states that the most commonly identified types of Brain Malignant Lymphoma are Diffuse large B cell Lymphoma Malignant non Germinal Center and High grade (DLBCL)[1,11]

5. Conclusion

The prevalence of brain malignant lymphoma cases at dr. Kariadi Hospital Semarang in the January 2016 – December 2018 period was mostly at the age of 45 – 65 years, male sex, with symptoms of blurred vision, imaging modalities showed an even distribution and HIV testing was not carried out. Based on the results of histopathological examination, the most common types of Brain Malignant Lymphoma are Diffuse large B cell Lymphoma Malignant non Germinal Center and High grade (DLBCL).

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