Characteristics And Complications of Patients with Parkinson's Disease at Sanglah General Hospital from November 2020 - November 2021

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ABSTRACT

Background: Parkinson's disease is a neurodegenerative disease characterized by progressive loss of dopaminergic neurons that occurs over the years. Neurological disorders are the main causes of disability in the world, and Parkinson's disease is one of the fastest growing diseases. The prevalence of the disease ranged from 100 to 200 per 100,000 people and the annual incidence is estimated at 15 per 100,000.

Method: This research is a retrospective descriptive study. This research was conducted based on data from medical records from inpatient installations at Sanglah General Hospital, Denpasar from November 2020 – November 2021 with a sample size of 36 cases. The inclusion criteria are medical record data which contains information regarding research variables, such as gender, age, stage of disease, length of time diagnosed, therapy and complications.

Results: A total of 36 patients with Parkinson's disease in the inpatient installation at Sanglah Hospital, Denpasar. There were 23 male patients (63.9%) and 13 female patients (36.1%) (ratio 1.5:1). There were 4 people aged ≤55 years old (11.1%), 8 people aged 55-65 years old (22.2%), 13 people aged 65-75 years old (36.1%) and 11 people aged >76 years old (30.6%). Hoehn and Yahr stage I were 1 person (2.7%), stage II were 5 people (13.9%), stage III were 3 people (8,3%), stage IV were 12 people (33%) and stage V were 15 people (41.7%). The combination therapies of levopar, pramipexole and Trihexyphenidyl were administered in 9 people (25%), Levopar and Pramipexole were 7 people (19.4%) Levopar and Trihexyphenidyl were 6 people (16.7%), Levopar only were 4 people (11.1%) and other therapy were 10 people (27%). The duration of diagnosis was <5 years for 24 people (66.7%) and >5 years in 12 people (33.3%). The most common complications in patients were pneumonia in 21 people (58.3%), hyponatremia in 6 people (16.7%), immobilization in 3 people (8.3%), and no complications in 6 people (16.7%).

Conclusion: Parkinson's disease is more common in men than in women. The most common age group was 65-75 years old. The highest number of Hoehn and Yahr staging was stage V. Therapy for most patients was the combination of 3 drugs, namely levopar, pramipexole and trihexyphenidyl. The most common duration of diagnosis was <5 years. And the most common complication in patients was pneumonia.

Keywords: Parkinson's disease, neurodegenerative disease, Sanglah General Hospital.

INTRODUCTION

In 1817, James Parkinson conducted a study entitled "Essay on the Shaking Palsy", which later became known as Parkinson's Disease, with characteristics of resting tremor, bradykinesia, rigidity, and postural instability and several variations of motor and non-motor symptoms (Jankovic, 2008; Obeso *et al*, 2017; Armstrong, 2020). Parkinson's disease is a neurodegenerative

disease characterized by progressive loss of dopaminergic neurons occurring over many years. Parkinson' is the second most common neurodegenerative disease worldwide with incidence and prevalence increasing along with changes in population demographics (Priya, 2020).

Neurological disorders are the main causes of disability in the world, and Parkinson's disease is one of the fastest growing diseases. Global Culture of Disease Study (2018), Parkinson's Disease cases will double, where in 2015 there were 7 million patients, and will be 13 million in 2040. Jorge *et al*, 2022, in their research stated that the prevalence of Parkinson's Disease will increases at age 65 years and over. The prevalence of women is smaller than men.

The prevalence of the disease is generally accepted to range from 100 to 200 per 100.000 people and the annual incidence is estimated at 15 per 100.000. In industrialized countries it is generally estimated that Parkinson's Disease reaches 0,3% of the entire population and around 1% in people over 60 years. This prevalence will increase with increasing age. The onset of the disease is usually at the age of 65 to 70 years. Onset before age 40 years is seen in less than 5% of cases. In Europe, the prevalence in those aged 85-89 has been reported as 3,5%. Parkinson's Disease is known to be a cause of morbidity affecting 1-2 per 1.000 of the population at any time, and is clearly most common in older age groups (Scott *et al*, 2017; Tysnes, 2017).

In Indonesia, it is estimated that 10 people every year experience Parkinson's disease. Currently, there are around 200.000-400.000 Parkinson's sufferers. Parkinson's disease is estimated to attack 876.665 people in Indonesia out of a total population of 238.452.952 people. The total number of deaths due to Parkinson's disease in Indonesia is ranked 12th in the world or 5th in Asia with a prevalence reaching 1.100 deaths in 2002 (Kasandra, 2017).

Parkinson's disease greatly affects the quality of life of sufferers, starting from the symptoms of motor disorders to non-motor disorders, plus the effects of long-term drug therapy. And as time goes by, Parkinson's disease can cause several complications for sufferers, such as depression, dementia, motor disorders and autonomic disorders, which can further reduce the patient's quality of life (Silitonga, 2007).

Based on the data above, researchers want to conduct research on patient characteristics and complications of patients treated at Sanglah General Hospital, Denpasar, Bali for the period November 2020 – November 2021.

METHODS

The research was conducted in November 2020 – November 2021 at Sanglah General Hospital, Denpasar, Bali. The research used a descriptive retrospective method. Research data was taken from medical records of patients with Parkinson's disease who were hospitalized at Sanglah General Hospital. Data included in the inclusion criteria are medical record data which contains information regarding research variables, namely gender, age, stage of diagnosis, duration of diagnosis, therapy and complications in patients. The research sample was all cases of Parkinson's disease who had been hospitalized at Sanglah General Hospital based on medical record data for the period November 2020 – November 2021.

The weakness in this research is the research design which is descriptive and retrospective. This study does not specifically differentiate Parkinson's disease by symptoms or the relationship between the stage of disease and the therapy given. Because the data source for this study was taken from medical records of Parkinson's disease patients, incomplete medical records caused various limitations of this study, thus the number of samples in this study did not correspond to the actual number of cases. The sample size of this study is very minimal, causing the results of this study to be less generalizable. Further research is needed with a larger sample and more detailed and clear sample data.

RESULTS

The results of the research obtained research samples that met the research inclusion criteria, so that the total samples collected were 36 patients. Table 1 shows the characteristics of patients based on gender in the inpatient installation at Sanglah General Hospital, Denpasar, Bali.

Table 1. Distribution of Parkinson's Disease Patients in the Inpatient Installation of Sanglah Central General Hospital Based on Gender

Gender	Frequency (n)	Percentage (%)
Male	23	63.9
Female	13	36.1
Total	36	100

Table 2 shows the distribution of patients based on age.

Table 2. Distribution of Parkinson's Disease Patients in the Inpatient Ward of Sanglah Central General Hospital Based on Age

Age	Frequency (n)	Percentage (%)
≤ 55 years	4	11.1
56 - 65 years	8	22.2
66 - 75 years	13	36.1
≥ 76 years	11	30.6
Total	36	100

Table 3 shows the distribution of patients based on Hoehn and Yahr stages. In this study, the Hoehn and Yahr stages were divided into 5 stages, namely I, II, II, IV and V.

Table 3. Distribution of Parkinson's Disease Patients in the Inpatient Ward of Sanglah Central General Hospital Based on Hoehn &Yahr Staging

Degre	Frequency (n)	Percentage (%)
Stage I	1	2.7
Stage II	5	13.9
Stage III	3	8.3
Stage IV	12	33
Stage V	15	41.7
Total	36	100

Table 4 shows the distribution of patients based on the therapy used. In this study, the research divided the therapy group variables into 5, namely Pramipexole, Trihexyphenidyl, and Levopar therapy; Pramipexole and Levopar therapy; Trihexyphenidyl and Levopar therapy; Levopar therapy; and others.

Table 4. Distribution of Parkinson's Disease Patients in the Inpatient Ward of Sanglah Central General Hospital Based on the Therapy

Therapy	Frequency (n)	Percentage (%)
Levopar, Pramipexole, Txp	9	25
Levopar, Pramipexole	7	19,4
Levopar, Txp	6	16,7
Levopar	4	11,1
Others	10	27
Total	36	100

Table 5 shows the distribution of patients based on the length of time diagnosed. In this study, group variables were divided into 2, which is ≤ 5 years and ≥ 6 years.

Table 5. Distribution of Parkinson's Disease Patients in the Inpatient Ward of Sanglah Central General Hospital Based on the length of time diagnosed

Time	Frequency (n)	Percentage (%)
≤ 5 years	24	66,7
≥ 6 years	12	33,3
Total	36	100

Table 6 shows the distribution of patients based on complications that arise during treatment. In this study, the variables were divided into Pneumonia, Hyponatremia, Immobilization and no complications.

Table 6. Distribution of Parkinson's Disease Patients in the Inpatient Ward of Sanglah Central General Hospital Based on complications

Complications	Frequency (n)	Percentage (%)
Pneumonia	21	58,3
Hyponatremia	6	16,7
Immobilization	3	8,3
No complication	6	16,7
Total	36	100

DISCUSSIONS

In this study, there were 36 cases of patients with Parkinson's disease. The patient was treated in the inpatient ward of Sanglah Hospital, Denpasar, Bali during the period November 2020 – November 2021.

Gender

The majority of patients with Parkinson's disease were found to be men. According to research by Frederic *et al*, 2015, the ratio of men is more often affected than women. Marzieh *et al*, 2022 conducted research on 1393 patients with Parkinson's disease, and found that the gender ratio was 1.8: 1, with majority were male. From the studies conducted it was concluded that men have a tendency to have a higher risk of developing

Parkinson's disease than woman. These results are said to be related to the combined effects of genetics, lifestyle exposure, reproductive and hormonal factors, as well as differences in the structure or function of the brain dopaminergic pathway (Marzieh *et al*, 2022).

Age
From the research above, it was found that the highest frequency of patients with Parkinson's disease was aged 66 - 75 years old, namely 13 people (36.1%). Meanwhile, the lowest number of patients aged <55 years old was 4 people (11.1%). According to the California Parkinson Disease Registry 2021, the number of people with Parkinson's disease will increase with age. According to Jankovic, 2007, Parkinson's disease is most often found at the age of 55-75 years old.

It was stated that the most common age for Parkinson's disease is 65 years. It is rare to find patients aged <50 years, usually also called "early onset". Due to increasing life expectancy, the number of people with Parkinson's disease is said to continue to increase in the coming decades (Kasandra, 2017).

Stage of Disease (Hoehn and Yahr's Staging)
This study found that the highest stage of disease was grade V (41.7%). Meanwhile, the fewest patients were grade I (2.7%). This can be related to patients who are hospitalized, who have a possible tendency to have other diseases or indeed have an emergency reason for being hospitalized. According to Hiroshi's research, 2021, there is a relationship between fatigue and Hoehn and Yahr stages, patients with fatigue increase the likelihood of worsening progress, and obtain higher grade results. This can be correlated with the condition of the patient being hospitalized, this could be due to the disease process or disease that accompanies the patient.

Therapy and Time to Diagnose
In the study, it was found that the highest number of patients used 3 drugs, which is Levopar, Pramipexole and Trihexyphenidyl (25%). This could be due to the patient already being an hospitalized with numerous other diseases, hence needing more advanced therapy due to the first line being inadequate. In this study, the maximum length of time diagnosed was <5 years.

Complications
The most common complication in patients with Parkinson's disease in this study was pneumonia (58.3%). According to research by Yang Pei, 2016, pneumonia is the highest risk factor suffered by patients with Parkinson's disease (19%) and it is the cause of patients being hospitalized. This research also shows that men have more risk factors for developing pneumonia than women, because the number of men suffering from Parkinson's disease is greater. However, this increase occurred over time and experienced a significant increase in both men and women.

CONCLUSIONS
Based on the research results, it was found that men had more in number than women (ratio 1.5:1). The most common age group was 65-75 years old, namely 36.1%. From the results of this study, the higher the age, the higher the incidence of patients suffering from Parkinson's disease. The highest number of Hoehn and Yahr stages obtained in inpatients was grade V. These results were obtained possibly because the patients studied were inpatients, where inpatients were patients with emergencies or who had other comorbidities.

Therapy for most patients was the use of 3 drugs, namely levopar, pramipexole and Trihexyphenidyl. The most common duration of diagnosis was <5 years. The most common complication in patients was pneumonia. This research does not relate one characteristic to another, further

research is needed with a larger and more specific research sample.

Declaration by Authors
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