Quality of life in leprosy patient with neuropathic pain in Donorojo hospital

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Original Article

Quality of life in leprosy patient with neuropathic pain in Donorojo hospital

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Abstract

Background Leprosy disease in the community is usually mistaken as a cursed disease. Leprosy disease is a chronic granulomatous infection caused by Mycobacterium leprae. Quality of life in leprosy patients with neuropathic pain in every region is varied.

Objective To determine the quality of life in leprosy patients with neuropathic pain by using the SALSA Scale and VAS.

Methods The research used analytic observational, a cross-sectional design and an interview technic. 37 subjects of 19 to 59 years age had leprosy with neuropathic pain at Donorojo Hospital.

Results SALSA score explains that 62.2% of the research subject has limitation of activity and has a correlation with leprosy disease with p 0.012. There is no correlation between VAS score and leprosy disease with p 0.034. SALSA score and VAS score in this research explain there is no correlation with p 0.458. The number of other medical conditions with limitation activity has a correlation score of 0.870 which has a very good correlation power. The number of used tools with limitation activity has a correlation score of 0.716 which has a good correlation power.

Conclusion There is activity limitation in leprosy patients with neuropathic pain at Donorojo Hospital Jepara District. The other aspect that affect activity limitation is the number of other medical conditions. Multibacillary type has more limitation than a Paucibacillary type.

Key words
Quality of life, leprosy, activity limitation, neuropathic pain.

Introduction

Leprosy is a chronic granulomatous infection caused by Mycobacterium leprae[1] affecting peripheral nerves, skin, upper respiratory tract, or eyes of which peripheral nerves are the most affinity location.[1-4] Leprosy is transmitted from human to human through droplet or close contact with leprosy patient.[1,5-9] World Health Organization (WHO) has divided leprosy into 2 types; Paucibacillary leprosy (PB) and Multibacillary leprosy (MB).[10]

According to WHO, the prevalence of leprosy in the world in late 2015 has 176.176 cases or 0.2 cases for 10.000 population.[11] Leprosy new cases in 2017 have 210.973 patients. India, Brazil and Indonesia have the highest cases of leprosy.[12] Indonesia has to reach elimination

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status with a prevalence score of 0.7 cases for 10,000 population.[4,12] Central Java Province has to reach leprosy elimination with prevalence 0.58 cases for 10.000 population in 2017.[4,13]

Neuropathic pain in leprosy affects daily activities, even worse disability, which causes a low quality of life.[14-17] Quality of life is individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns.[18]

Factors that affect the quality of life are physical health, psychological, social relationships, and environment.[18] Quality of life for leprosy patient with neuropathic pain has been researched before in leprosy endemic region in Brazil.[19]

In this research, quality of life was measured by using the SALSA Scale questionnaire which focuses on activity limitation and VAS that measures pain. The research is carried out at Donorojo Hospital, one of the leprosy hospitals in Indonesia, located in Jepara Region, Central Java Province. Several aspects that affect activity limitation and comparison of quality of life from each type of leprosy from WHO also been researched.

Methods

Subjects

Research subjects were leprosy patients at Donorojo Hospital, Jepara Region, Central Java Province with age from 19 to 59 years old and neuropathic pain caused by leprosy. Those who did not agree with informed consent would not be part of the research. Research subjects were selected by using consecutive sampling technique until there are 37 subjects.

Procedure Research

Ethical clearance was published by Health Research Ethics Commission Medical Faculty Diponegoro University with No. 356/EC/KEPK/FK-UNDIP/VII/2019. Analytic observational technique was used with a cross-sectional design and an interview technic. Patients were asked to be research subjects by agreeing to informed consent. Then, the subjects were interviewed and asked to choose the pain measurement.

Analysis

The data from the interview was characterized by its amount, mean, median, minimum, maximum, and 97% confidence interval. Numerical data must be tested by using the Shapiro-Wilk test first. Spearman Correlation test was used to show is there any correlation between VAS score, number of other medical conditions, as well as number of assistive devices and SALSA score. Mann-Whitney test was used to measure the relationship between SALSA score, SALSA category as well as VAS category and type of leprosy by WHO. Independent-Samples T-Test was used to measure the relationship between VAS score and type of leprosy by WHO.

Results

Subject characteristics are available on **Table 1**. Hypothesis analysis are available on **Table 2**.

Relationship between Activity Limitation and Leprosy Groups

Shapiro-Wilk test was conducted with result for PB (p 0.004) and MB (p 0.028) which means the data distribution was not normal, so Mann-Whitney test would be used and the result was p 0.012 For SALSA Category, Mann-Whitney test was conducted with p 0.023. It means there was a difference between PB and MB significantly.

Table 1 Subject characteristics.

Variables	*n (%)*	*Mean (s.d.)*	*Median (Min-Max)*	*CI 97%*
Gender				
Male	29 (78.4)			
Female	8 (21.6)			
Age		35.11 (8.33)	35 (23-58)	32.01-38.20
Classification of leprosy				
Paucibacillary (PB)	13 (35.1)			
Multibacillary (MB)	24 (64.9)			
VAS score		37.89 (27.13)	33 (1-100)	27.82-47.97
VAS category				
No pain	4 (10.8)			
Mild pain	20 (54.1)			
Moderate pain	8 (21.6)			
Severe pain	5 (13.5)			
SALSA score		33.89 (14.66)	29 (16-69)	28.45-39.34
SALSA category				
No significant limitation	14 (37.8)			
Mild limitation	10 (27)			
Moderate limitation	6 (16.2)			
Severe limitation	4 (10.8)			
Extreme limitation	3 (8.1)			
Number of other medical conditions				
0	10 (27)			
1	12 (32.4)			
2	10 (27)			
3	5 (13.5)			
Number of using assistive devices				
0	19 (51.4)			
1	11 (29.7)			
2	7 (18.9)			

Table 2 Hypotesis analysis.

Variable 1	*Variable 2*	*Methode*	*Result*
SALSA sore	Classification of leprosy by WHO	Mann-Whitney test	p = 0.012-0.011
SALSA category	Classification of leprosy by WHO	Mann-Whitney test	p = 0.023-0.028
VAS score	Classification of leprosy by WHO	Independent-Samples T test	p = 0.261-0.279
VAS category	Classification of leprosy by WHO	Mann-Whitney test	p = 0.190-0.236
VAS score	SALSA score	Spearman Correlation test	p = 0.004 r = 0.458
Number of other medical conditions	SALSA score	Spearman Correlation test	p = <0.000 r = 0.870
Number of using assistive devices	SALSA score	Spearman Correlation test	p = <0.000 r = 0.716

The difference of median between PB and MB was 13.5 which means there was a significant difference between both of them clinically. MB mean rank (21.85) was higher than PB (13.73) which indicated MB has more severe activity limitation.

Relationship between pain and leprosy groups

Shapiro-Wilk test was conducted with result for PB (p 0.068) and MB (p 0.092) which means the data distribution was normal, so Independent-Samples T-Test would be used and the results

were p 0.261 for PB and p 0.279 for MB. For VAS Category, the Mann-Whitney test was conducted with p 0.190. It means the difference between PB and MB was not significant. The difference of mean between PB and MB was 10.63 which means significantly there was a difference between both of them clinically. MB mean rank (20.56) was higher than PB (16.12) which indicated MB has more severe activity limitations.

Relationship between activity limitation and pain

Spearman Correlation Test was performed because the distribution of the VAS Score was normal and the distribution of the SALSA Score was not normal. Spearman Correlation result were p 0.004 and r 0.458 which means there was a moderate positive correlation between Activity Limitation and Pain.

Relationship between number of other medical conditions and activity limitation

Spearman Correlation Test was performed because the data were numeric and ordinal. Spearman Correlation result was p<0.000 and r 0.870 which means there was a very strong positive correlation between the number of other medical conditions and activity limitation.

Relationships between number of using assistive devices and activity limitation

Spearman Correlation Test was performed because the data were numeric and ordinal. Spearman Correlation result was p <0.000 and r 0.716 which means there was a strong positive correlation between the number of using assistive devices and activity limitation.

Discussion

Relationship between activity limitation and leprosy groups

There was a relation between activity limitation and type of leprosy. MB had more severe activity limitation than PB. According to SALSA Scale, there are 5 domains that affect activity limitation i.e. vision (eyes), mobility (feet), self-care, work (hands), and dexterity (hands).[20] If one or more of these domains is limited, it could cause difficulty for patients to do some activities.[19,21-24] Difficulty in activities can cause the quality of life of patient decline.[19]

Relationship between pain and leprosy groups

There was no relation between pain and type of leprosy, but had more severe pain than PB. The Pain score in this research was varied because of the administration of pain reliever medicine. At Donorojo Hospital, pain reliever medicine that had been used was Meloxicam. According to nurses in Donorojo Hospital, Meloxicam was given when the patient felt pain and asked health workers to given them the medicine. At Donorojo Hospital, Meloxicam administered only once a day.

Meloxicam has been confirmed to partially reverse existing allodynia and hyperalgesia that play a role in the maintenance of neuropathic pain.[25] According to Yamamoto *et al*. research, 5 out of 15 patients have significant reduction of sensory neuropathy, but there is no improvement in motor neuropathy even if meloxicam given for 2 months.[26] However, meloxicam could not be used for a long time because of the risk to cardiovascular system, gastrointestinal system, renal effect and skin reactions.[27]

Relationship between activity limitation and pain

There was a moderate positive correlation between Activity Limitation and Pain. SALSA

Score indicated activity limitation in which the score required a longer time to be changed, especially in leprosy cases. VAS Score could be changed depending on the medicine consumption, especially how pain reliever medicine distributed at Donorojo Hospital. Neuropathic pain can cause a patient to have limitation to do some activities.[28] It has been confirmed by other research where higher the VAS Score, the higher percentage of someone to have activity limitation.[29]

Relationship between the number of other medical conditions and activity limitation

There was a very strong positive correlation between the number of other medical conditions and activity limitations. The other medical conditions in this context can affect 5 domains that affect activity limitation according to SALSA Scale.[20] Leprosy patient in this research had grade 2 disability where the disability is permanent.[30,31] The examples from grade 2 disability are amputation of phalanges, ulcus pedis, and paralysis. There was also grade 1 of disability such as numbness. These problems might make the patient having a limitation in activities.[30,31] According to WHO, impairment is a problem in body function or structure.[32] The result is similar in which there is an association between activity limitation from leprosy patient and disability that occurred from leprosy.[19]

Relationships between number of using assistive devices and activity limitation

There was a strong positive correlation between the Number of Using Assistive Devices and Activity Limitation. The number of using assistive devices increased due to the same problems that cause activity limitation. The more someone has activity limitation, the more likely the person to use assistive devices.[33] The assistive device might help someone to overcome activity limitation.[34] Patient with an assistive device found no stressor because there is no stigma, attend social activities, and improve self-care, compared to the patient that get help from someone that triggers stressor.[35,36] Using assistive devices also improve independence and confidence for the patient with activity limitation.[37]

Conclusion

Neuropathic pain and the number of other medical conditions affects activity limitation in leprosy patients. According to SALSA Scale, Multibacillary type of leprosy is associated with greater limitation of activity than paucibacillary type.

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