

## Characteristics of Leprae Lesions Based on the Ridley Jopling Classification: Literature Review

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Article Info	ABSTRACT
<b>Keywords:</b> Characteristics, Description of Leprosy Lesions, Ridley Jopling Classification	Morbus Hansen (MH), also known as leprosy or leprosy, is an infectious disease that causes health problems throughout the world. There were 127,558 new cases of leprosy detected globally in 2020, based on data from 139 countries from 6 World Health Organization regions. Ridley-Jopling classified leprosy based on the patient's immune response into intermediate (I), tuberculoid (TT), borderline-tuberculoid (BT), borderline-borderline (BB), borderline-lepromatous (BL) and lepromatous (LL). This literature aims to look at the characteristics of leprosy lesions based on Ridley Jopling's classification. This research uses a literature review method with the Preferred Reporting Items for Systematic Reviews & Meta-Analyses (PRISMA) protocol. Scientific articles or journals are downloaded from PubMed, Garuda Portal, and Google Scholar with SINTA IV and V standards in the 2018-2023 period. The keywords in the search for this article were characteristics, description of leprosy lesions, Ridley Jopling classification, 937 articles were obtained in the search results. All articles were selected based on the inclusion criteria, resulting in 20 research articles that would be reviewed. In this literature, there were 20 research articles that reported the characteristics of leprosy lesions based on the Ridley Jopling classification. E4 Characteristics of the appearance of leprosy lesions based on the Ridley Jopling classification, it was found that the borderline category was the most frequently reported with borderline tuberculoid as the most common subtype followed by borderline lepromatous, intermediate leprosy, tuberculoid leprosy and lepromatous type.
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### INTRODUCTION

Morbus Hansen (MH) what is called leprosy or leprosy is an infectious disease that causes health problems throughout the world. MH is a chronic infection in humans caused by the bacterium *Mycobacterium leprae* which first attacks the peripheral nerves, then affects the skin, oral mucosa, upper respiratory tract, reticuloendothelial system, eyes, muscles, bones and testicles but never the central nervous system. (Fitria et al, 2023).

There were 127,558 new cases of leprosy detected globally in 2020, based on data from 139 countries from 6 regions of the Word Health Organization. New cases of leprosy

are detected every year in (sub)tropical areas such as India, Brazil, Indonesia, Bangladesh and Ethiopia. In 2017, there were 15,920 new cases in Indonesia, including 70 new cases in Bali Province (I Gusti Ayu et al, 2023). Indonesia is one of the countries that has the highest rate of exposure to leprosy. South Sulawesi Province had 735 cases of leprosy in the recapitulation of provincial level leprosy data at the beginning of 2022 (Natasya Widiyana, 2023).

Ridley-Jopling classified leprosy based on the patient's immune response into indeterminate (I), tuberculoid (TT), borderline-tuberculoid (BT), borderline-borderline (BB), borderline-lepromatous (BL) and lepromatous (LL). In addition, there is another classification by WHO based on the number of skin lesions and disturbed nerves, namely paucibacillary (PB) or multibacillary (MB) which was created to facilitate treatment regimens. (Handelia Phinari dkk, 2022).

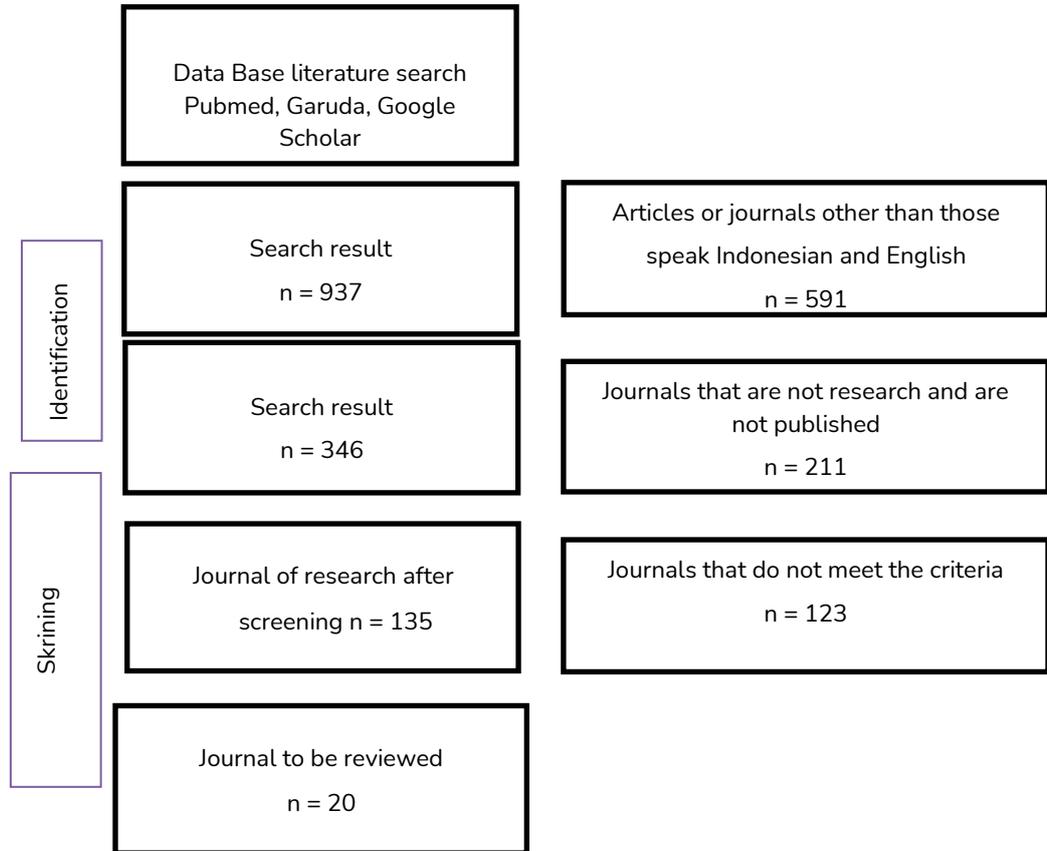
Early diagnosis and rapid treatment of all new cases of leprosy treated with multidrug (MDT) is a recommendation from the World Health Organization (WHO) and is still a key strategy in controlling leprosy and subsequently preventing nerve damage and disability (Riski Amaliah, 2023).

In borderline lepromatous (BL) type leprosy, lesions can be macules, papules, plaques and nodules with a symmetrical distribution and there are more than 5 lesions. Nerves may be enlarged, tender or both and nerve involvement occurs symmetrically. Patients generally do not show symptoms of lepromatous leprosy (LL) such as madarosis, keratitis, nasal ulceration, and leonine facies. In LL leprosy, pale macules or diffuse infiltration of the skin can form. In this type of leprosy, there is a possibility that it will get worse if treatment is not given. Another sign that can occur in lepromatous type leprosy is progressive loss of the eyebrows from the outer 1/3 of the eyes, followed by loss of eyelashes and then hairs throughout the body, however, head hair usually remains intact (Wizar Putri, 2022).

Based on the description above, it can be seen that the prevalence of leprosy is still high in Indonesia due to a lack of public education about this disease so that it is treated too late and it spreads to other people. Many studies have shown the incidence of leprosy based on classification. Therefore, it is necessary to conduct a literature study so that a conclusion can be drawn from these various studies. This is what makes researchers interested in conducting this literature review. This literature review aims to look at the characteristics of leprosy lesions based on the Ridley Jopling classification.

## METHOD

This research uses a literature review method. Literature was obtained by reviewing scientific articles or journals downloaded from PubMed, Garuda Portal and Google Scholar with the SINTA IV and V standards listed in Figure 1. Articles were screened based on provisions including articles published in 2018-2023, published articles can downloaded in full text and has open access, articles with qualitative, quantitative, mixed method designs and literature reviews regarding the characteristics of leprosy lesions based on the Ridley Jopling classification. Key words in the article search include description of leprosy lesions, Ridley Jopling classification.



Picture. PRISMA Flow Research Article Characteristics of Leprosy Lesions Based on the Ridley Jopling Classification

### JOURNAL ANALYSIS RESULTS

No	Writer	Research purposes	Location	Number of Samples	Research design	Results	Determinant Factors
1.	Billy Jiwandono (2021)	This study aims to describe and analyze the profile of new leprosy in children at the Skin and Venereology Health Sciences clinic at RSU Dr. Soetomo General Hospital Surabaya from 2014-2018	At the Skin and Venereology Health Sciences clinic at RSU Dr. Soetomo General Hospital Surabaya from 2014-2018	There are 49 patient medical records	<i>This research uses a descriptive study and retrospective design with a quantitative approach.</i>	The results showed that most of the age groups occurred at the age of 12-14 years (42.6%). Men have a higher risk than women (53.2%). Most patients do not know whether they have had close contact with leprosy sufferers. However, 7 of 14 patients (50%) had contact with leprosy from family and neighbors. Most of the lesion types based on the WHO classification are dominated by Multibacillary (40.4%) and most of the lesion types based on the Ridley-Jopling classification are Borderline-borderline (BB). The majority of patients came from Surabaya (55.3%). Most patients received Vit B1 Tab 50mg supplementation (46.8%).	Leprosy, Child, Profile, Descriptive
2.	Mala Mukherjee, Dhimoyee Ghatak, Deblina Bhunia, Dipmala Das, Ranwir K. Sinha, Nikhil Kumar, Asitava Deb Roy (2023)	The aim of this study was to describe the spectrum of histopathological profiles of leprosy and compare their correlation with clinical diagnosis in this post-elimination era.	in the Pathology Department of a tertiary care facility in North Bihar	220 kasus	<i>Prospektif</i>	A total of 220 cases were included in this study. On histopathology, the borderline category is the most frequently reported with borderline tuberculoid as the most common subtype. The most common clinical picture is hypopigmented plaque, followed by erythematous skin lesions, nodules, macules, etc. Bacteriological indices were studied on 192 excised skin smears. Moderate agreement between clinical and histopathological diagnoses with a kappa measure of inter-rater agreement of 0.457 was noted.	Clinical diagnosis, histopathological diagnosis, leprosy
3.	G. Moronta	The aim of this	in DR.	100	<i>Observation</i>	The results of this study showed that the research group	Characteri

	Castellano, M. Villarroel-Dorrego, L. Crespo Lessmann (2023)	writing is to describe the characteristics of oral lesions in patients with Hansen's disease.	Jacinto Convit Institute of Biomedicine in Caracas, Venezuela.		<i>al</i>	consisted of 67 men and 33 women, with a mean ( $\pm$ standard deviation) of $48.1 \pm 16.4$ years. Oral lesions were observed in 34 patients. Leprosy-related oral lesions, present in 9 patients, were located on the hard palate and upper lip. These lesions were significantly more common in lepromatous leprosum, borderline lepromatous leprosum ( $p=0.029$ ) and erythema nodosum leprosum ( $p=0.031$ ).	stics of Oral Lesions, Hansen's Disease.
4.	Francisca Victoria, Sweetly Pribadi (2023)	This study aims to examine the characteristics of patients diagnosed with squamous cell carcinoma arising from Morbus Hansen (leprosy).	Dr. Central Hospital Sitanala	21	<i>Retrospektif</i>	In this study, of the twenty-one patients, the majority were men (86%), and the most commonly affected age group was between 46 and 55 years, accounting for 43% of cases. Most patients suffer from Morbus Hansen type BL (borderline lepromatous) and have lived with the condition for an average of 23 years. In addition, a significant number of patients had a normal body mass index (52%) in the range of 20–24.9. Anemia was the main comorbidity observed, affecting 46% of patients.	Squamous cell carcinoma, Morbus Hansen (leprosy).
5.	Yuli Arisanti <sup>1</sup> , Melda Suebu (2020)	This study aims to determine the clinical characteristics of leprosy cases in the community and the differences between the two communities	Jayapura City, Bintuni Bay, Manokwari, Sorong City, Raja Ampat, Ternate, West Halmahera and Morotai.	271	<i>This research is a descriptive and cross-sectional study</i>	We found 114 and 157 cases of leprosy in rural and urban areas, and 28 cases of childhood leprosy in rural areas, 40 cases in urban areas. Most cases were multibacillary (82%). BTA positive with a Bacteriological index of 1+ to 4+. Overall, we found several defects in the hands and one defect in the eyes. The clinical characteristics of leprosy cases in the community indicate a problem in the community, recent active transmission, and highlight the implications for individual patients and society.	characteristics, leprosy, society and the differences in the two communities
6.	Anita Sanker, P. S.	This study aims to	Department	40	<i>Studi</i>	A total of 40 patients with clinically diagnosed	Borderline

	Mathew, G. Nandakumar, Sandhya George, V. G. Binesh (2020)	correlate the clinical and histopathological spectral correlation of newly diagnosed cases of multibacillary leprosy over a period of 1 year.	of Dermatology and Venereology, Government Medical College, Thiruvananthapuram		<i>deskriptif dengan pendekatan cross-sectional</i>	multibacillary leprosy were studied. The largest number of leprosy patients studied were in the 40-49 year age group. The maximum clinical and histopathological correlation was found in 75% (9/12) in lepromatous leprosy and the minimum correlation of 44.44% was found in borderline leprosy (4/9).	, Histopathological correlation, Leprosy, Multibacillary leprosy, Tuberculosis
7.	Krutika Patel, Prashant R Patel, Jhanvi Vyas, VM Bhagat (2022)	To evaluate the importance of skin biopsy in detecting and diagnosing and subtyping leprosy.	Department of Pathology, in a primary care hospital	113	<i>Prospektif</i>	A total of 113 cases were studied, 73.45% of whom were men and 26.54% women. The majority of them 32% fall in the age group of 21-30 years. Lepromatous leprosy type leprosy was recorded to occur most frequently in 35.39% of cases.	Leprosy, Mycobacterium leprae, Hansen's disease
8.	Felicia Aviana, I Made Birawan, Ni Nyoman Ayu Sutrini (2022)	The aim of this research is to determine the profile of MH sufferers in the Skin and Venereology Polyclinic at Bali Mandara District Hospital and it is hoped that this will be useful as basic data for further	Poliklinik Kulit dan Kelamin RSUD Bali Mandara	55	<i>Deskriptif retrospektif</i>	There were 55 MH sufferers with 492 (1.6%) visits out of 30,587 total visits; consisting of 39 (71%) men and 16 (29%) women, mostly from the 25-44 year age group (45.5%). Based on the MH type, the multibacillary (MB) type was 92.7%. Based on MH reactions, 14.5% of patients had erythema nodosum leprosum (ENL) reactions, but no reversal reactions were found. The majority of MH sufferers at the Skin and Venereology Polyclinic at Bali Mandara Hospital for the period January 2018-December 2020 were men, age group 25-44 years, multibacillary type with erythema nodosum leprosum (ENL) reactions.	Morbus Hansen, profil, RSUD Bali Mandara

		research.					
9.	Madana Padma, Ramya Katta (2023)	This study was conducted to calculate the correlation between cytology and histopathology of skin lesions in leprosy.	Department of Pathology, Rangaraya Medical College and Government General Hospital, Kakinada, Andhra Pradesh	49	<i>This research is a retrospective observational study</i>	A total of 49 clinically suspected cases of leprosy were included in this study. Age of occurrence ranged between 9 and 72 years. There is male dominance. The overall diagnostic accuracy of syringe aspiration smears was 83.3% and slit skin smears was 62.1%.	Hansen's disease. Fite staining. Zeihl–Neelsen staining. Ridley–Jopling scale
10.	Naveena Gvl, Suresh Kumar Kuppuswamy, Rajashekar Talari Srinivas, Hanumanthayya Keloji (2021)	This study aims to analyze the prevalence and clinical spectrum of leprosy in children and highlight the importance of examining close contacts and the impact of leprosy detection and treatment in the community.	Department of dermatology, venereology and leprosy at primary care, R.L Jalappa Hospital, Kolar	223	<i>Retrospektif</i>	Two hundred and twenty-three leprosy patients were analyzed, of which 201 were adults and 22 children. Children constitute 9.87% of all patients (approximately one child with leprosy for every 10 adults with leprosy). Of the 22 pediatric patients with leprosy, 13 (59.09%) were boys and 9 (40.90%) were girls, with a ratio of 1.4:1. Twelve of twenty-two pediatric patients (54.54%) had one spot, while 10 of 22 (45.45%) had more than one skin lesion. Fourteen patients (63.63%) were clinically diagnosed with tuberculoid leprosy (BT), and six patients (27.27%) had lepromatous leprosy (PB). Of the fourteen patients with BT leprosy, 10 patients (71.4%) had a single lesion. Eleven patients (50%) were diagnosed with multibacillary leprosy, and eleven patients (50%) were diagnosed with paucibacillary leprosy. Clinicopathological correlation was found in 16	Childhood leprosy, deformity, contagion

11. Yuni Nurul Aeni, Tony S Djajakusumah & Deis Hikmawati (2020).	This study aims to: (1) determine the incidence of leprosy in the Batangsari Community Health Center, Sukasari Subdistrict, Subang Regency in the 2014-2018 period, (2) determine the characteristics of leprosy sufferers based on gender, age, history of household contact and type of leprosy at the Batangsari District Health Center Sukasari Subang Regency in the 2014-2018 period.	Puskesmas Batangsari Kecamatan Sukasari Kabupaten Subang	49	<i>This research uses a descriptive method, with a cross sectional design.</i>	patients (72.72%). Contact with family was found in four children with leprosy. Of the 49 leprosy sufferers, 42 (85.7%) had no history of household contact, 29 (59.2%) were women, 37 (75.5%) were over 35 years old and 36 (73.5%) were of the leprosy type. multibacillary leprosy.	Incidence rate, characteristics of leprosy patients, leprosy.
12. Meki Pranata, Atma Rulin Dewi Nugrahaini, Nurul Fajariah (2022)	This study aims to determine the characteristics of leprosy sufferers	Tugurejo Hospital, Semarang City	138	<i>Retrospective with analytical descriptive</i>	The results of the study showed that the characteristics of leprosy type had a significant relationship with the number of drug administrations in patients with a p value <0.05	Leprosy; amount of medication; leprosy

					<i>methods</i>		type
		and the drug therapy they consume.					
13.	Anak Agung Ayu Mutiara Wikaputri, Herman Saputra, Ni Putu Ekawati, & I Wayan Juli Sumadi	This study aims to determine the clinical and pathological profile of leprosy at Prof. Hospital. Dr. I. G. N. G. Ngoerah Denpasar, in 2017 - 2022.	RS Prof. dr. I. G. N. G. Ngoerah Denpasar	63	<i>Descriptive retrospective study.</i>	The highest number of cases was found in the group of patients aged 19-64 years, namely 55 cases (87.3%), especially in male patients with 36 cases (57.1%). The most common main complaint was red spots, with 43 cases (72.8%) showing erythematous skin lesions, especially plaques, in 24 cases (42.8%).	Leprosy, profile, clinicopathology
14.	Khushbu K. Tilva, Deepa Jethwani, Gauravi Dhruva	The aims and objectives of this research are 1) study the histopathological spectrum of various subtypes of leprosy, 2) study the age- and sex-specific incidence of subtypes different leprosy, and 3) assess suitability between clinical and histological	P.D.U. Medical College and Hospital, Rajkot, Gujarat.	126	<i>Observational retrospective study.</i>	In this study, the majority of cases occurred in the age group (21-40) years (50.8%) and showed a male predominance with a M:F ratio = 2.7:1. Lepromatous leprosy (40.5%) is the type of leprosy with the most common histopathological features. Maximum clinicopathological correlation was seen in HL (100%), LL (90%) and TT (71.4%).	Clinicopathological correlation, Leprosy, Modified FF stain, Skin biopsy

		diagnosis in leprosy cases using the Ridley- Jopling scale.					
15.	Shah Bhagyesh , Nisha Chavda, Padhiyar Khyati, Kareliya Yogita Gidwani Roopam K	The aim of this study was to study the correlation of histomorphological findings with bacteriological indices in various types of leprosy, and to examine the histopathological spectrum of leprosy.	in the Department of Dermatolog y at a tertiary care center and reported in the histopathol ogy section of the Department of Pathology	121	<i>Retrospectiv e research</i>	Among a total of 121 skin biopsies examined histopathologically, the most commonly seen type was Borderline Tuberculoid (BT) Leprosy (32.23%), followed by Lepromatous Leprosy (LL) (20.66%), Borderline Lepromatous Leprosy (BL) (16.52%), Histoid Leprosy (HL) (12.39%), Tuberculoid Leprosy (TL) (9.91%), Erythematous Leprosy (ENL) (6.61%), and Neuritic Leprosy (NL) and Central Border Leprosy were diagnosed with 1 case each (0.82%). Fite-Faraco staining to identify acid-fast bacilli (AFB) was performed in all 121 cases, which was positive in 64 (52.8%) cases. No bacilli were found in all cases of TT leprosy, whereas all cases of the Histoid type showed the presence of acid-fast bacilli. Correlation of histopathological diagnosis and bacteriological index was seen in 52.8% of cases. The highest correlation was seen in Histoid Hansen's disease (100%), LL (80%), ENL (75%), BL (70%), followed by BT (23%), TT (0%), Neurite Leprosy (0%), and BB (0%).	Bacteriolo gical Index, Fite- Faraco Stain, Hansen's Disease, Leprosy, Ridley Jopling Classificat ion
16.	Hosalli Amrutha, Suga Reddy, Nadiga Rajashekhar, Anirudh M. Reddy	This research was conducted to see the number of patients who experienced reactions, onset, presentation,	at the JJM Medical College tertiary care hospital in Davanagere	178	<i>Research retrospektif</i>	Over a 2 year period, 178 cases of leprosy were recorded. The majority of patients were seen in the spectrum of borderline tuberculoid (BT) leprosy i.e. in 29.2% of patients, followed by lepromatous leprosy (LL) which was seen in 26.4% of patients. Leprosy reaction was seen in 41 (23.03%) patients. Type 2 reactions (T2R) were more common in 27 patients (65.8%), type 1	Leprosy, Leprosy Reaction, Prevalenc e

	disease course and response to treatment.				reactions (T1R) were seen in 14 patients (34.1%). T2R is more frequently found in the LL spectrum.	
17. Monicaescamilla - Tilch (2019)	The aim of this study was to analyze the association between the rs2476601 polymorphism of the PTPN22 gene and susceptibility to developing leprosy in Mexican patients, using a polymorphism genotyping test. TaqMan pre-designed single nucleotides (SNPs).	Sinaloa, Guadalajara, Michoacán, Oaxaca, Guanajuato, Mexico City dan Guerrero,	189	<i>Research retrospektif</i>	The genotypic (P=0.44) and allelic (P=0.45) frequencies of the rs2476601 polymorphism were similar between patients and controls; genotype frequencies were 91 vs 94% for CC and 9 vs 6% for CT, and the TT genotype was absent in both groups. Allelic frequencies were 96 vs 97% for C, and 4 vs 3% for T. Similarly, the genotypic (P = 0.46) and allelic (P = 0.47) frequencies of MB patients and controls were similar. In conclusion, there is no relationship between the PTPN22 gene	polymorphism rs2476601, PTPN22, leprosy
18. Nur Rakhmat Mulianto, Fatimah Fitriani, Rieska Widyaswari, Sesia Pradestine (2023)	The aim of this study is to investigate risk factors that may influence occurrence of ENL in leprosy patients.	Dr. Moewardi Hospital, Surakarta, Indonesia	98	<i>A descriptive case-control study</i>	There were 98 subjects who were predominantly male (69.4%). Leprosy mostly occurs in subjects aged between 26 and 45 years (41.8%). Most of our subjects were elementary school graduates (47%). Farmers dominate our research subjects. Bivariate analysis showed there was no significant relationship between gender and age and ENL (p=0.738 and p=0.244). ENL was significantly associated with WHO leprosy type, LL type and BL type, ENL onset, duration of MDT use, and bacterial index	Risk factors, erythema nodosum leprosum, multibacillary.

19.	Bellinda Dwi P, Ika Kartika, Indri Seta Septadina	This study aims to determine the prevalence of leprosy sufferers who were examined histopathologically at RSMH Palembang.	di RSMH Palembang.	35	<i>Descriptive observational with cross sectional design.</i>	(p=0.000; p=0.000; p=0.013; p=0.009; and p=0.014). Of the 29,175 cases, 35 cases were diagnosed with leprosy and met the inclusion criteria. The prevalence of leprosy sufferers in the Anatomy Pathology Department of RSMH Palembang in 2009-2013 was 1.19/1000 samples and the majority of patients were aged 32-41 years (34.3%). The majority (80%) of leprosy sufferers are men. On histopathological examination of leprosy, type I (2.9%), TT (20%), BT (20%), BB (8.6%), BL (31.4%), and LL (17.1%) were found. . This research shows the prevalence of leprosy in the Anatomy Pathology Department of RSMH in 2009-2013	Leprosy, Ridley-Jopling, Histopatologi
20.	Icha Aisyah, Indropo Agusni	Evaluating the description of new leprosy patients in the Skin and Venereology Outpatient Unit (URJ) Dr. RSUD. Soetomo Surabaya for the 2011-2015 period.	in the Leprosy Division, URJ, Skin and Venereology and Venereology Health Sciences, RSUD Dr. Soetomo Surabaya	713	<i>Research retrospektif</i>	The number of leprosy patients is 713 patients. The largest age group is 15-34 years (45.1%), the largest gender is male (67.7%). Most of the patients came from the Surabaya area (60.3%). Patients with leprosy reaction type 1 (15.6%) and leprosy reaction type 2 (23.8%). The majority of new leprosy patients were discovered from referrals (56.6%) and the reason for referral was for acid-fast bacilli (BTA) examination (59.2%). A total of 671 patients (94.1%) had no history of contact with leprosy patients. The most patients with type 1 leprosy reactions were Mid Borderline (BB) type (71.2%). The most patients with type 2 leprosy reactions were Lepromatous Leprosy (LL) (68.2%).	leprosy, epidemiology, retrospective.

## Discussion

Leprosy is a chronic infectious infection caused by *Mycobacterium leprae*. Leprosy attacks several parts of the body, including the skin, eyes and limbs. Leprosy is a chronic granulomatous infectious disease which can cause disability and peripheral neuropathy if not treated immediately. (Wizar Putri, et al, 2022).

According to the World Health Organization (WHO), the number of new cases of leprosy sufferers in the world in 2015 was around 210,758, most of which were in the Southeast Asia region (156,118) followed by the Americas (28,806) and Africa (20,004) and the rest were in the region. others (Apria Wilinda, 2022). The Health Profile of the Republic of Indonesia stated that the number of leprosy cases had reached leprosy elimination status in 2000, namely a prevalence rate of less than 10/100,000 population. The incidence of leprosy is difficult to reduce because it is relatively slow. In 2016 the leprosy prevalence rate was 7.1/100,000 population. New cases in 2016 had an incidence rate of 6.5/100,000 population (Ahmad Fahri, et al, 2020). In the journal analysis, it was found that the most common gender was male and most came from the 25-44 year age group. Men have a higher risk than women (53.2%).

Symptoms of leprosy appear during activities, starting with the appearance of reddish spots on the upper arms and calves, after a few days the reddish spots begin to increase and spread to several other parts of the hands and feet. Other symptoms felt include weakness, fever and some parts of B's skin turning black as if it were burning. Apart from that, he experiences weight loss and is unable to carry out activities effectively because his wrists and feet feel stiff and difficult to move. Based on the symptoms of leprosy experienced, it can be classified into the Lepromatous or MB type of leprosy according to Ridley and Jopling (Intan Safira et al, 2023). In an analysis of the research journal Anak Agung Ayu Mutiara Wikaputri et al., the main complaint most frequently found was red spots, with 43 cases (72.8%) showing erythematous skin lesions, especially plaques, in 24 cases (42.8%).

Leprosy treatment is standardized throughout the world and is based on WHO recommendations issued in 1982. Similar to tuberculosis, leprosy treatment involves multi-drug therapy (MDT). The first three drugs of choice are: dapson, rifampin, and clofazimine. Monotherapy using only one of these drugs is no longer used due to resistance (Fahrani Yossa et al, 2023). Leprosy reactions can occur before starting treatment and after treatment is completed. In the analysis of research journals by Hosalli Amrutha et al, it was found that 23.03% of patients had leprosy reactions. Type 2 reactions (T2R) were more common in 27 patients (65.8%), type 1 reactions (T1R) were seen in 14 patients (34.1%). T2R is more frequently found in the LL spectrum. In the results of the analysis of Icha Aisyah's journal, Indropo Agusni found that the most patients with type 1 leprosy reactions were the Mid Borderline (BB) type (71.2%). The most patients with type 2 leprosy reactions were Lepromatous Leprosy (LL) (68.2%).

Based on the above results in 1962 Ridley and Jopling classified MH into 5 types in a clinical spectrum, namely polar tuberculoid leprosy (TT), bordeline tuberculoid type (BT),

mid borderline type (BB), bordeline lepromatous type (BL) and polar lepromatous type (LL) (Fitria dkk, 2023).

#### **Type tuberculoid polar (TT)**

In the polar tuberculoid type, patients have a good cellular immune system, with patients experiencing single skin lesions or a small number of asymmetric lesions. In the Madana P 2023 study, in his research, it was not possible to differentiate BT and TT Hansen with certainty using cytological criteria. The findings are similar to those obtained by other studies recommending that it is simpler to use a three-level classification on cytology (tuberculoid, midborderline, and lepromatous) to obtain better histological (Madana Padma, 2023).

#### **Type bordeline tuberculoid (BT)**

In the tuberculoid bordeline type, like TT, but the lesions are more numerous and smaller in size. In Mala Mukherjee's 2023 study, the cases were classified histologically, and borderline tuberculoid, around 88 cases and 40% of the total cases, was the most common histological subtype of leprosy, followed by borderline lepromatous, around 55 cases and 25% of the total case (Mala Mukherjee, 2023).

#### **Type mid borderline (BB)**

In the mid borderline type, the lesion is between TT and LL with asymmetrical distribution and moderate nerve damage. A new case of MH was reported which was clinically diagnosed as MH type BB with histopathological features in the form of MH type BT in a 56 year old man who was treated at the Dermatology and Venereology polyclinic at Dr. Central General Hospital. Mohammad Hoesin Palembang. The ideal type of MH cannot be determined by clinical features alone or histopathological parameters alone (Reza Mayasari, 2019).

#### **Type bordeline lepromatosa (BL)**

In the bordeline lepromatous type, it is similar to LL, but with greater numbers, asymmetry and loss of sensation in some parts of the skin. In Francisca Victoria's research, it was found that the majority (62%) of the Morbus Hansen type (the term used for leprosy) was not recorded, the distribution of leprosy classification based on the Ridley-Jopling criteria was as follows: borderline tuberculoid (BT) 14% (3 cases) , borderline lepromatous (BL) as much as 19% (4 cases), and lepromatous (LL) as much as 5% (1 case) (Francisca V dkk, 2023).

#### **Type lepromatosa polar (LL)**

In the polar lepromatous type, bacteria multiply and spread through the blood vessels because there is no cellular immune response to the bacteria. Multiple and symmetrical skin lesions, hypopigmentation and poorly defined borders. In the advanced stages, patients experience leonine facies, madarosis, and edema of the legs (Kou-Huang, 2022).

## **CONCLUSION**

Based on the results of identification and several studies in this literature review, it can be concluded that the characteristics of leprosy lesions based on Ridley Jopling's classification

found that the borderline category is the most frequently reported with borderline tuberculoid as the most common subtype followed by borderline lepromatous, intermediate leprosy, tuberculoid leprosy, , and lepromatous type. Type 1 leprosy reactions are most common in the Mid Borderline (BB) type, type 2 leprosy reactions are most common in the Lepromatous Leprosy (LL) type. In terms of gender, the majority were found in men and most came from the 25-44 year age group. Suggestions from the author to make efforts to actively screen people suspected of leprosy in the field and provide fast and appropriate treatment to sufferers who have been diagnosed with paucibacillary or multibacillary types of leprosy so that they do not become a source of infection for other healthy people.

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