

PREVALENCE AND CHARACTERISTIC OF POSTHERPETIC NEURALGIA PATIENTS TREATED WITH LOW LEVEL LASER THERAPY AT SANGLAH GENERAL HOSPITAL IN 2017-2020

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Abstract: Post Herpetic Neuralgia (PHN) is a neuropathic pain that persist in 3 months after the onset of herpes zoster (HZ). It is commonly found on older age people 60 years old and above. It is generally predisposed to the female gender more than the male gender. Several treatments for PHN are available however, the result remains unsatisfactorily. The use of low-level laser therapy (LLLT) has been effectively used in reducing pain among PHN patients. This study aims to determine the prevalence of Post Herpetic Neuralgia patients treated with LLLT by age, sex, clinical manifestation, and treatments. Sources of data come from medical records of patients at Dermato-Venereology Outpatient Clinic RSUP Sanglah for a period of 4 years from 2017-2020. A total of 4 research variable were identified for this study: age, sex, clinical manifestation, and treatment. The data was then analysed and interpreted and further presented in forms of description, tables and graphs in this study. A total of 30 patients were identified as having PHN and being treated by LLLT from the period of 2017 – 2020. Of this there was higher prevalence in the female gender (60.0%) compared with male gender (40.0%). The highest prevalence of the disease was found in the age group 60 years old with 60.0%. The majority LLLT session was undergone by one single patient (3.33%) which was 46 times. The least number of LLLT session is undergone by 2 patients (6.67%) which was only 1 time. The highest number of sites treated by LLLT is 2 sites for 16 patients (53.33%). The patients that were undergoing LLLT were almost all treated with oral Gabapentin, Amitriptyline and B Complex.

Keywords: Post herpetic neuralgia (PHN), LLLT, prevalence, age, gender, clinical manifestation, treatment.

1. INTRODUCTION

Postherpetic neuralgia (PHN) is a neuropathic pain disorder in the form of chronic pain (>3 months) that happens following after the skin symptoms in Herpes Zoster (HZ) improve. Neuropathic pain in PHN is often found in the elderly and immunosuppressed conditions. Postherpetic neuralgia (PHN) is a neuropathic pain disorder described by pain that perseveres for quite a long time to years after goals of the herpes zoster (HZ) rash.

Its annual occurrence in the general population is around 3-5/1,000 person-years and rises to 6-8/1,000 and 8-12/1,000 person-years among subjects aged 60 and 80 years respectively.¹ Among these, the most certain and generally accepted risk factor is older age, although the position of sex continues to be contentious. Indeed, some studies showed no sexual association, others showed a higher risk among women, and still others showed a higher risk among men.²

Some 4-6 weeks after the herpetic eruption, postherpetic neuralgia may develop in a dermatomal distribution in the partially anaesthetic skin. The pain has two components: a deep burning or aching feeling that acts as a persistent backdrop, and a transient one that is marked by dysesthesia and sharp spontaneous lancinating bursts, and touch-induced bursts.³

There are various therapies available for PHN, some of which include anticonvulsants, tricyclic antidepressants, antibiotics, nerve block injection, and physiotherapy. For decades, Low Level Laser Therapy (LLLT) has been effectively used in reducing pain, such as trigeminal neuralgia, neuropathic pain, and PHN. LLLT is a non invasive, painless, light-based therapy. To overcome the progression of inflammation and to reduce discomfort in PHN patients, LLLT uses infrared.

When compared to other therapies, LLLT was found to be strongly related with 51 % pain relief on the visual analogue scale and 62.5 overall pain reduction in trigeminal neuralgia, according to a systematic review. It was also utilized to treat PHN that had become resistant to other treatments, resulting in a considerable reduction in pain intensity.⁴

LLLT seems to play a role in neuropathic pain relief, and indirect virus deactivation, we hypothesized that LLLT will be able to reduce PHN incidence during the early stage of herpes zoster.⁴

From this study it is known that the LLLT biolaser machine is available at Sanglah General Hospital to treat PHN patients whereby from there is able to reduce pain intensity of patients suffering from PHN through the LLLT treatment.

This retrospective study was conducted to determine the prevalence of Post Herpetic Neuralgia in RSUP Sanglah and characteristics in various ages and genders, number of low level laser therapy, number of sites treated, and combined therapy given to PHN patients who is being treated with LLLT within a period of 4 years (2017-2020) in the Dermato-Venereology Outpatient Clinic RSUP Sanglah in Denpasar.

2. MATERIALS AND METHODS

This study uses secondary data from LLLT Patient Registration Logbook and is a descriptive study using cross sectional approach which aims to determine the prevalence & characteristic of postherpetic neuralgia patients treated with low level laser therapy according to age, gender, clinical manifestation and treatment given based on patients from Dermato-Venereology Outpatient Clinic RSUP Sanglah in Denpasar from January 2017 until December 2020.

Samples in this study were chosen collected of all the patients with Post Herpetic Neuralgia who are treated by LLLT, patients from Dermato-Venereology Outpatient Clinic RSUP Sanglah in Denpasar from January 2017 until December 2020. Researcher choose a sample based on subjective considerations and practical, in this case LLLT Patient Registration Logbook of patients that fit into the inclusion criteria based on age, gender and the diagnosis of Post Herpetic Neuralgia. The inclusions criteria, include patients that were diagnosed with PHN and treated with LLLT, aged above 18 years old, and registered between January 2017 until December 2020 at Dermato-Venereology Outpatient Clinic Sanglah Hospital in Denpasar. The patient with incomplete data or lost to follow-up were exclude from this study.

The collection of data was conducted during the COVID-19 pandemic conditions so that there were several changes. Where the researcher makes sure to follow all the Health Protocols while in Dermato-Venereology Outpatient Polyclinic in RSUP Sanglah for data collection. Data for this study will be collected as part of a descriptive study using data that has already been provided and recorded. The data were collected from Patient LLLT Registration Logbook of all patients with postherpetic neuralgia who has been treated by LLLT and are registered as patients between January 2017 until December 2020 at Dermato-Venereology Outpatient Clinic RSUP Sanglah in Denpasar. Researcher will tabulate data and researcher will analyse the data that has been collected. To maintain the confidentiality of data that obtained from the logbook will be stored in a computer with a password that only the researcher knows and the data will be destroyed after 2 years after reporting the research results. The data collected will be interpreted and tabulated with a computer system. Data will be analysed descriptively. Result will be showed as tables and graphics.

This research has received ethical eligibility permission from the Research Ethics Commission (KEP) of the Faculty of Medicine, Udayana University with letter number 2667/ UN14.2.2.VII.14/ LT/2021.

3. RESULTS

A total of 30 research samples were obtained that met the inclusion and exclusion criteria at Dermato-Venereology Outpatient Clinic RSUP Sanglah from the period January 2017 to December 2020. This data is secondary data, which is taken from Patient LLLT Registration Logbook. The samples that have been obtained are then grouped and processed to determine the prevalence and characteristics of postherpetic neuralgia patients treated with low level laser therapy at RSUP Sanglah in 2017-2020 and also processed based on their characteristics, gender, age, number of low-level therapies given, number of sites treated and combined treatment given to the patients.

Prevalence of Post Herpetic Neuralgia patients in 2017 - 2020 in RSUP Sanglah

Data collection was carried out at the Rumah Sakit Umum Sanglah from January 2017 – December 2020. In 2017, 12 PHN patients were recorded. The number increased to 20 visits in 2018. And there was a significant reduction in the visit of PHN in the year 2019 and 2020 which was 6 patients were recorded in the 2019 and 7 patients were recorded on in 2020. The total number of cases recorded in number of patient visits in General Dermatology Polyclinic RSUP Sanglah from 2017 – 2020 are 3364 cases. As seen in table the population size used for this research was based on the General Dermatology Polyclinic Report of that visit RSUP Sanglah in the year 2017 it was recorder 1060 patients and 1045 patients were recorded in the year 2018. In the year 2019 and 2020 there were 801 and 458 patients visit respectively. The prevalence recorded in the year 2017 was 1.132% and in 2018 was 1.913%. And followed by 2019 the prevalence rate recorded in the year 2019 and 2020 is 0.749% and 1.528% respectively.

Table 1: Prevalence of Post Herpetic Neuralgia patients in 2017 – 2020 in RSUP Sanglah

Year	Number of PHN Patients	Number of Patient Visits in General Dermatology Polyclinic RSUP Sanglah	Prevalence (%)
2017	12	1060	1.132
2018	20	1045	1.913
2019	6	801	0.749
2020	7	458	1.528

PHN is estimated to occur in 8-27% people with herpes zoster and the risk increases markedly with age. About 10%-20% herpes zoster patients with age over 50 years old will develop PHN. The prevalence of PHN in Indonesia is reported to vary in each hospital or medical centers. Based on a study by Yang et al of the 2803 patients with HZ, 835 (29.8%) had PHN. The overall estimated prevalence of PHN was 2.3%.

Distribution of Post Herpetic Neuralgia patients treated with LLLT in RSUP Sanglah 2017-2020

From the total patient with Post Herpetic Neuralgia and got treated with LLLT that fulfill or are within the inclusion and exclusion criteria of the study from January 2017 – Desember 2020 a total of 30 patients were included in this study from RSUP Sanglah records. The number of patients with reported Post Herpetic Neuralgia and got treated with LLLT differed year on year from 2017 – 2020. In the year 2017, a total number of 8 cases of Post Herpetic Neuralgia and got treated with LLLT were recorded representing (26.67%) in percentage terms of the total cases in 4 consecutive years. In 2018, 14 cases (46.67%) were recorded showing a increase compared to the year before. For the year 2019, a total of 4 cases were recorded showing a decrease from the years before and representing (13.33%). For the 12 months of 2020, only 4 cases (13.33%) were recorded being as same the previous X 100 % 23 year. Where the cases from 2019 and 2020 recorded the least number of cases being reported in the 4 consecutive years of 2017 – 2020. The number of cases got recorded on the year 2019 and 2020 has dropped significantly due to the COVID-19 pandemic situation which have decrease the number of outpatients visit.

Distribution of Post Herpetic Neuralgia patients treated with LLLT based on age

Based on table 2, it can be seen that the patients with PHN and treated by LLLT is higher in patients aged ≥ 60 total of 18 cases representing (60.0%). And the least found in the 40-44 year age group, which was only 1 representing (3.3 %). For the age ranges of 45-49 years old and 55-59 years old there were 3 cases for each equating (10.0%) respectively. And total of 5 cases was recorded in 50-54 years old range by representing (16.67%).

This is in accordance with research conducted by Munoz-Quiles which states that the risk of suffering from PHN will increase by two times in the 60-69 year age group, compared to the 50-59 year age group, and even increases up to three times in patients aged 70-79 years. Patients older than 80 years had a 3.67-fold risk of suffering from PHN.⁵

Several factors were thought to contribute in increasing risk of PHN in elderly, some of them are: elderly have bigger nerve fibers decreasing immunity may cause elderly become more susceptible to herpes zoster infection; and varicella-zoster virus, which attacks the nerves, causes an imbalance proportion of damaged nerves and healthy nerves.⁶ These results agree with Mellaratna et al, who found that the majority of their PHN patients were ≥ 60 years old (53.3%) in their study.⁷

Table 2: Distribution of Post Herpetic Neuralgia patients treated with LLLT based on age in RSUP Sanglah

Characteristic	Amount	Proportion (%)
40-44 years	1	3.3%
45-49 years	3	10%
50-54 years	5	16.67%
55-59 years	3	10%
≥ 60 years	18	60%

Distribution of Post Herpetic Neuralgia patients treated with LLLT based on gender

Based on Table 3, it shows that there were more female cases recorded compared with male cases. A total of 18 cases recorded were of female dominance while only 12 were of male gender. These corresponded to 60.0% female cases and 40.0% male cases.

Table 3: Distribution of Post Herpetic Neuralgia patients treated with LLLT based on gender

Characteristic	Amount	Proportion (%)
Male	12	40%
Female	18	60%

This is in accordance with a study conducted by Munoz-Quiles which stated that the incidence of PHN in women was almost two times higher than in men.⁵ The results of this study were also supported by a multicenter study by Nahm which explained that of 1,412 PHN patients, 886 were women.⁸ The research of Thomas et al also stated that of the 54 PHN patients studied, 36 PHN patients were female and only 18 were male PHN patients.⁹ These results agree with Mellaratna et al which stated that there were more female PHN patients than male from 30 PHN patients, namely 17 women (56.7%) and 13 men (43.3%).⁷

Number of Low-Level Laser Therapy Session for PHN patients in RSUP Sanglah Hospital 2017-2020

Of the 30 recorded patients with PHN and treated by LLLT from 2017– 2020 in RSUP Sanglah. The highest number LLLT session is undergone by one single patient (3.33%) which was 46 times. Whereby the least number of LLLT session is undergone by 2 patients (6.67%) which was only for 1 time. The mean for number of LLLT session by PHN patients in RS Sanglah Hospital 2017-2020 is 12.3 in total. Besides that from the 30 recorded patients in RSUP Sanglah from 2017 – 2020 there were only one single patient got treated (8x, 11x, 12x, 14x, 24x, 43x and 46x) times respectively. It has been recorded that 5 patients got treated 2 times with LLLT. Whereby 2 patients had undergone (4x, 10x, 13x, 18x and 35x) of LLLT sessions respectively. Total of 3 patients has undergone LLLT for 6 and 7 times individually. Based on Vernon and Hasbun study they found LLLT is very effective in pain relief after 12 sessions. Research conducted by Moore et al stated that LLLT demonstrated a significant reduction in the intensity and distribution of pain after 4 consecutive laser treatments.¹⁰

Distribution of patients with PHN treated by LLLT based on number of sites treated

Of the 30 recorded patients with PHN and treated by LLLT from 2017– 2020 in RSUP Sanglah. Based on the table it shows that most of the patients got treated on 2 sites by LLLT which represents a total of 16 patients (53.33%). Whereby a total of 13 patients got treated only on 1 site by LLLT which represents (43.33%). While, extracting the date from the patient registration logbook it was noticed that the total number of location treated for per patients has been recorded but not the dermatomes sites treated by LLLT.

Table 4: Distribution of Post Herpetic Neuralgia patients treated with LLLT based on number of sites treated

Characteristic	Amount	Proportion (%)
1	13	43.33%
2	16	53.33%
≥ 3	1	3.33%

Ranjan et al has said that localized herpes zoster affecting a single unilateral dermatome is the most common presentation of HZ with thoracic dermatomes (45%), cervical (23%) and trigeminal (15%) being most affected. Herpes zoster affecting multiple adjacent dermatomes is known as multidermatomal herpes zoster and is a quite rare phenomenon.¹¹

Combined therapy for patients with PHN and treated by LLLT in RSUP Sanglah

Of the 30 recorded patients with Post Herpetic Neuralgia and treated by LLLT from 2017– 2020 in RSUP Sanglah all the patients were treated according to the treatment module of RSUP Sanglah Dermato-Venereology Outpatient Clinic. All 30 patients were treated with Low Level Laser Therapy in Dermato-Venereology Outpatient Clinic RSUP Sanglah has given Gabapentin and Amitriptyline per oral and a single patient received 0.9% NaCl compress as topical treatment. And two patients has received B Complex per oral. LLLT was considered to increase treatment efficacy for the patient with combined medications.⁶ Wang et al study has said that Vitamin B12 has been proven to be effective in pain relief and appears to be an attractive complementary therapy for PHN patients.¹² The guidelines for the management of PHN in Indonesia based on the Buku Pedoman Herpes Zoster 2014 stated that the main purpose of providing therapy is to improve the quality of life of patients so that they can carry out daily activities optimally. First-line pharmacological therapy for PHN patients is tricyclic antidepressants, gabapentin, pregabalin. By treating with both LLLT and oral medications respectively have been shown to be more effective than monotherapy among patients who got treated in Dermato-Venereology Outpatient Clinic RSUP Sanglah.

4. CONCLUSION

The prevalence rate of PHN patient was (1.132%) in 2017, (1.339%) in the year 2018. Whereby for the year 2019 and 2020 the prevalence were recorded (0.749%) and (1.528%) respectively. Based on the total patients with Post Herpetic Neuralgia and got treated by Low Level Laser Therapy in the Dermato-Venereology Outpatient Clinic RSUP Sanglah a total of 30 patients were identified and used in this study based on the inclusion criteria from the year January 2017 to December 2020.

The most number of patients with Post Herpetic Neuralgia and got treated by Low Level Laser Therapy are patients aged ≥ 60 total of 18 cases representing (60.0%). In this study PHN was more common in female than the male. There were 18 female patients which represents (40.0%) recorded patients from January 2017 to December 2020.

The highest number of LLLT session is undergone by one single patient which represents (3.33%) from January 2017 to December 2020. Of these, this study shows that most of the patients got treated on 2 sites by low level laser therapy which represents the total of 16 patients (53.33%). In common, the combined treatment for patients who got treated by LLLT were also given oral Gabapentin, Amitriptyline and B Complex for better recovery.

5. RECOMENDATION

Suggestions that the author can put forward in accordance with this research are the type of dermatomes that is being treated by Low Level Laser Therapy must be recorded and counselling for PHN patients is also very necessary to motivate the patients emotional in dealing with his illness because it is noticed that the patients that is suffering from PHN is mainly from the age group >60 .

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