

Original Article

## Quality of life in post-herpetic neuralgia in the dermatology department of Hospital Luis Vernaza

### *Calidad de vida en neuralgia postherpética en el servicio de dermatología del Hospital Luis Vernaza*

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### Abstract

**Introduction:** Shingles (HZ) is the result of the reactivation of the varicella zoster virus. The main complication of HZ is post-herpetic neuralgia (PHN), pain that appears in the affected dermatome 3 months after the resolution of the cutaneous lesions. Despite the limited evidence, PHN significantly influences the patient's quality of life (QL), affecting their functional capacity, emotional state and work capacity in the active population. The objective of the present investigation was to evaluate the quality of life in NPH. Previous studies have not been done in this institution and statistics on the subject are nil in Ecuador. **Materials and Methods:** The study was descriptive, observational, retrospective with a non-experimental and transversal level. The universe consisted of 141 patients with a diagnosis of PHN treated at the outpatient clinic of the dermatology service of the Luis Vernaza hospital during the period from January 1 to December 31, 2016, with a sample of 92 patients, who underwent an interview and a physical examination, using a data sheet that included the DN4 and EQ-5D-5L questionnaires. Excel tables were used to record the data. **Results:** Of the total of 92 patients who participated in the study, tingling was the most frequent symptom. Regarding the symptomatic load related to QL in PHN, the friction pain and numbness with P values of 0.00 show a strong statistical significance followed by a puncture with a P value of 0.03. The scatter plot to assess the level of PHN severity and its relation to quality of life indicates that QL is related to neuropathic pain (NP). The average DN4 was 4/10. 82 % of cases, with or without neuropathic pain, had a better QL; 18 %, accompanied by NP, reported affectation in their QL. The average index value of the EQ5D5L was 0.814. **Conclusions:** It was concluded that the quality of life is affected in patients with postherpetic neuralgia.

**Keywords:** Herpes zoster, Post-herpetic neuralgia, Neuropathy, Quality of life.

## Resumen

**Introducción:** El herpes zóster (HZ) es el resultado de la reactivación del virus de la varicela zóster. La principal complicación del HZ es la neuralgia post-herpética (NPH), dolor que aparece en el dermatoma afectado 3 meses después de la resolución de las lesiones cutáneas. A pesar de la limitada evidencia, la NPH influye significativamente en la calidad de vida (CV) del paciente que la padece, afectando su capacidad funcional, estado emocional y capacidad de trabajo en la población activa. El objetivo de la presente investigación fue evaluar la calidad de vida en la NPH. Estudios previos no se han realizado en esta institución y la estadística sobre el tema es nula en Ecuador. **Materiales y Métodos:** Se realizó un estudio descriptivo, observacional, retrospectivo con nivel no experimental y transversal. El universo lo constituyeron 141 pacientes con diagnóstico de NPH atendidos en la consulta externa del servicio de dermatología del hospital Luis Vernaza durante el período 1 de enero a 31 de diciembre de 2016, con una muestra de 92 pacientes, a los cuales se les realizó una entrevista y un examen físico, mediante una hoja recolectora de datos que incluyó los cuestionarios DN4 y EQ-5D-5L. Para registrar los datos se usaron tablas de Excel. **Resultados:** Del total de 92 pacientes que participaron en el estudio, el hormigueo fue el síntoma más frecuente. Con respecto a la carga sintomática relacionada con CV en NPH, el dolor por roce y el entumecimiento con valores P de 0.00 presentan una fuerte significancia estadística seguidos del pinchazo con valor P 0.03. El diagrama de dispersión para valorar el nivel de gravedad de NPH y su relación con la calidad de vida, indica que la CV sí se relaciona con el dolor neuropático (DN). El promedio del DN4 fue de 4/10. El 82 % de los casos, acompañándose o no de dolor neuropático, presentaron una mejor CV; el 18 %, acompañándose de DN, reportó afectación en su CV. El valor índice promedio del EQ5D5L fue 0,814. **Conclusiones:** Se concluyó que la calidad de vida sí se ve afectada en los pacientes aquejados con neuralgia postherpética.

**Palabras clave:** Herpes zóster; Neuralgia post-herpética; Neuropatía; Calidad de vida.

## Introduction

Infection by Herpes zoster is a neuro-cutaneous disease caused by reactivation of the Varicella Zoster Virus. It is recognized to be an important cause of morbidity, especially among the elderly (1). After an episode of herpes zoster, pain of more than three months duration is regarded as post-herpetic neuralgia (PHN). This disease affects the quality of life of people presenting the disease; most affected areas are capacity to function, emotional state, and ability to work in the active population (2) (3). Execution of this investigation had as a goal to associate the clinical characteristics of post-herpetic neuralgia with the analysis of impact on quality of life in patients that present this disease.

## Methodology

An observational, descriptive, retrospective and transversal study was conducted. Population consisted of patients that had consultations at the off-patient clinic of the Dermatology service of the Hospital Luis Vernaza. The studied period was January through December of 2016 and a universe of 141 patients was obtained; the size of the sample was calculated with a confidence interval of 95%, 5% margin of error and heterogeneity of 50%, obtaining 104 patients of which 12 declined participation, for a total of 92 patients who signed the informed consent.

Among the inclusion criteria was taken into account: patients of age equal or older than eighteen, who have been diagnosed with post-herpetic neuralgia.

As to the data collection, an interview and a physical examination were performed. The answers were provided by the patients regarding the timing and disease evolution, previous antiviral or neuropathic treatment, as well as a detailed questionnaires where implemented: Douleur Neuropathique en 4 Questions (DN4), which is formed by 10 items, allows to distinguish by scales the dimensions of nociceptive and neuropathic pain. Another scale used was the European Quality of Life - 5 Dimensions - 5 Levels of Severity (EQ-5D-5L) which is useful to assess Quality of Life in five dimensions (Mobility, Self-Care, habitual activities, pain/discomfort, anxiety/depression).

To register the data, a statistical analysis software was used. Results are presented in frequency and percentage tables.

## Results

Out of the 92 patients (N) in the study, 58% (53N) were female and 42% (39N) were male. Of the total of patients with PHN (Post-herpetic neuralgia) 57% (52N) are to be included within the age range between 50 and 79 years of age, 27% (25N) are between 20 and 49 years of age and 16% (15 N) were older than 80 years old. 71% (65 N) did receive antiviral treatment and 29% (27 N) did not receive any antiviral treatment. All of the patients did receive previous neuropathic treatment.

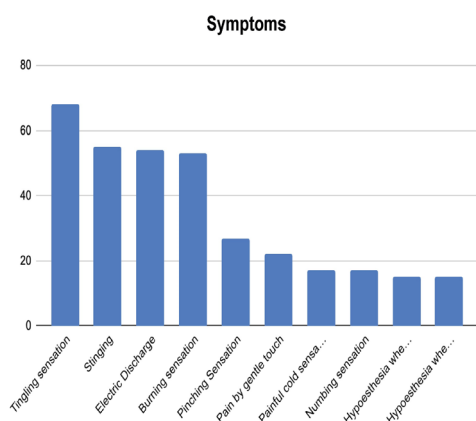
Out of the total of patients, 57% (52N) presented a range of evolution of post-herpetic neuralgia

spanning from 13 to 24 months, in 25% (23 N) the duration was greater than 24 months and 18% (17 N) had a duration and evolution in between 1 and 12 months.

Out of the total of symptoms that present themselves in PHN, 68 N presented tingling sensation, 53 N burning sensation, 27 N pinching sensation, 22 N pain by touch, 17 N painful cold, 17 N numbing sensation, 15 N touch hypoesthesia and pinching hypoesthesia. (View Table 1)

| Response | Burning sensation | Painful cold | Electric discharge | Pinching sensation | Numbing sensation | Tingling sensation | Stinging | Hypoesthesia when touched | Hypoesthesia when pinched | Pain by gentle touch |
|----------|-------------------|--------------|--------------------|--------------------|-------------------|--------------------|----------|---------------------------|---------------------------|----------------------|
| Yes      | 53                | 17           | 54                 | 27                 | 17                | 68                 | 55       | 15                        | 15                        | 22                   |
| No       | 39                | 75           | 38                 | 65                 | 75                | 24                 | 37       | 77                        | 77                        | 70                   |
| Total    | 92                | 92           | 92                 | 92                 | 92                | 92                 | 92       | 92                        | 92                        | 92                   |

Most frequent symptoms in post-herpetic neuralgia and the number of patients which presented them.



Most frequent symptoms in post-herpetic neuralgia, represented in a histogram

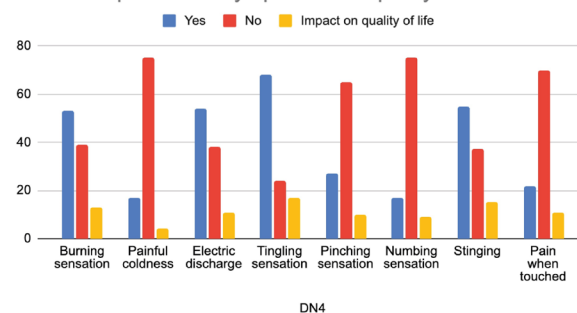
Table 1 and Graphic No. 1 by: Authors. Source: Hospital Luis Vernaza

In relation to impact on quality of life: out of 22 N who presented pain by touch, 11 cases showed an effect on quality of life, with a P value of 0.00; in 17 N with numbing sensation, 9 had their quality of life affected with a P value of 0.00; out of 27 N with pinching pain, 10 cases presented an effect in quality of life with a P value of 0.03; out of 68 N with numbing sensation, 17 cases presented an effect on their quality of life with a P value of 0.07; in 55 N with stinging sensation, 15 presented alterations in quality of life with a P value of 0.08; in 17 N with painful cold, 4 cases had affectation in their quality of life with a P value of 0.55; in 54 N with electrical discharge, 11 cases presented alteration in quality of life, with a P value of 0.57; in 53 N with burning sensation, 13 cases had affectation of quality of life with a P value of 0.81. (View table 2)

| DN4                | Symptoms |    | Impact on Quality of life | Chi squared |
|--------------------|----------|----|---------------------------|-------------|
|                    | Yes      | No | Number of cases           | P Value     |
| Burning sensation  | 53       | 39 | 13                        | 0.81        |
| Painful coldness   | 17       | 75 | 4                         | 0.55        |
| Electric discharge | 54       | 38 | 11                        | 0.57        |
| Tingling sensation | 68       | 24 | 17                        | 0.07        |
| Pinching sensation | 27       | 65 | 10                        | 0.03        |
| Numbing sensation  | 17       | 75 | 9                         | 0.00        |
| Stinging           | 55       | 37 | 15                        | 0.08        |
| Pain when touched  | 22       | 70 | 11                        | 0.00        |

Relationship between symptomatic burden with impact in quality of life in NPH

Relationship between symptoms and quality of life



Relationship between symptomatic burden and impact in quality of life that NPH represented by grouped columns

Table 2 and Graphic No. 2 by: Authors Source: Hospital Luis Vernaza

When using a dispersion diagram with Pearson's correlation, using the total score in the DN4 questionnaires in the X axis, and EQ-5D-5L in the Y axis, a cloud of points was obtained, which turned around a line's axis, showing a negative correlation between both scores. (View Table 3).

|                    |                     | EQ5D5L Value index | DN4 Scoring |
|--------------------|---------------------|--------------------|-------------|
| EQ5D5L Value index | Pearson correlation | 1                  | -.774**     |
|                    | Sig. (Bilateral)    |                    | .000        |
|                    | N                   | 92                 | 92          |
| DN4 Scoring        | Pearson correlation | -.774**            | 1           |
|                    | Sig. (Bilateral)    | .000               |             |
|                    | N                   | 92                 | 91          |

\*\* . Correlation is significant in the 0.01 level (two tails). Bivariable Pearson's correlation analysis.

Table 3 by: Authors Source: Hospital Luis Vernaza

Out of the total of 92 patients diagnosed with NPH and evaluated by the questionnaire EQ-5D-5L: 38 cases presented a score between 1 and 0.89 (better quality of life), 28 obtained a value between 0.89 and 0.75 (good quality of life), 11 N presented a score between 0.75 and 0.61, 11 N had a score of 0.61 and 0.47 (quality of life affected), 1 N presented a score between 0.33 and 4.47 (quality of life affected) and 3 N obtained values between 0.33 and 0.19 (the worst scores for quality of life). Mean index value was 0.814.

## Discussion

Out of the 92 total patients, 58% were female and 42% were male; American and European literature report a mild to moderate predominance of the female gender in PHN, similar results to those found in our data (6) (7).

Out of the total of patients with post-herpetic neuralgia, the majority belonged to a range of age between 50 and 79 years of age, data which was similar to that found in previous European studies (8).

71% of patients that were involved in the study did receive previous antiviral treatment, while nevertheless, Asian literature indicates previous use of antiviral agents represents 61% (9) (10).

All of the patients in the study received some type of neuropathic treatment, in comparison to a French study that reports use of pain medication in 83% of cases and a report in the United Kingdom in which pain medication is indicated in 54% of the cases (11) (12).

Out of the total patients, 57% presented a lapse of time for the evolution of PHN from 13 to 24 months; similar data was found in an english report that indicates that the majority of patients (59%) suffered PHN for a lapse of time of more than a year, with a mean time greater than 36 months. In this study, tingling sensation at 74% was the most frequent symptom that accompanied postherpetic neuralgia, a percentage that almost doubles that of a french study where tingling sensation occupies 40% of cases and burning sensation representing 51% is the most frequent symptom. In our study, a burning sensation presented itself in 57% of the cases. A Spanish report about neuropathic pain indicates the most frequent symptoms to be tingling sensation, burning sensation, pinching pain, electric discharge and numbing, data which corresponds with our results except regarding numbness (13).

As to the symptomatic burden's relationship with quality of life in post-herpetic neuralgia, both pain by touch and numbing presented P values of 0.00 indicating strong statistical significance, which is aligned with current literature where values of  $P < 0.001$  are reported in pain by touch and numbness. In this paper pinching had a P Value of  $P 0.03$ , a value that lies close to that of European literature

with a P Value of  $P < 0.001$ . Symptoms such as tingling sensation presented a P value of 0.07 and stinging a P value of 0.08, electrical discharge with a P value of 0.57 and burning sensation with a P value of 0.81, presented in that order the slightest evidence or statistical significance. However current literature differs in these points as tingling sensation, stinging sensation, electrical discharge and burning sensation all have P Values of  $P < 0.001$  (14).

As to the assessment of severity of PHN and its relationship with quality of life, a dispersion diagram with Pearson correlation coefficient was performed, using the scores of the DN4 (Neuropathic Pain Evaluation) questionnaires in the X axis and the EQ-5D-5L (Quality of life) in the Y axis. A cloud of points was obtained, which turns around the line's axis, and which demonstrates that a mild negative correlation exists between the scores obtained by the patient. When performing the dispersion diagram to value the level of severity of the PHN and its relationship with quality of life, it is observed that Quality of Life is indeed related with Neuropathic Pain. The state of bibliography about assessing the level of PHN and its relationship with Quality of life via the Questionnaires DN4 and EQ-5D-5L is non existent, thus, there is no information with which to compare or correlate the Patient Obtained results, or discuss the results obtained in this study.

Taking as value the referential index of the EQ-5D-5L questionnaire, which was 0.651, we can conclude that 82% of the cases, being accompanied or not by neuropathic pain, obtained values superior to that of reference. This is to say they presented a better state of health or a better quality of life. 18% of cases, accompanied by neuropathic pain, had scores lower to the one of reference, reporting a worse state of health or affectionation of their quality of life. The mean index value in our study was 0.814, value that corresponds to a better state of health in the patients; being a value superior to that of a canadian study which indicates that quality of life was highly correlated with gravity of pain and in participants that informed about clinically significant pain, mean punctuation of quality of life was 0,67, value which remained constant while the neuropathic pain persisted (15).

After performing the dispersion diagram to evaluate the level of severity of the

Post-Herpetic neuralgia and its relationship with quality of life, it is observed that this condition is indeed related to neuropathic pain.

## Conclusions

The gender most affected by Post-Herpetic Neuralgia was female. The most affected age range was 50 to 79 years of age. Belonging to this age group implies greater deterioration in quality of life.

The majority diagnosed with Post-Herpetic Neuralgia did receive previous antiviral treatment, due to the fact that this type of treatment provides great benefit to the patient's state of health.

More than half of the patients presented a time of evolution of PHN that went from 13 to 24 months. This group was followed by the group with time of evolution greater than 24 months of evolution.

The most important symptom that accompanied PHN was tingling sensation, followed by other symptomatology such as stinging pain, electric discharge and burning sensation.

In regards to the symptomatic burden related with quality of life in PHN, we can conclude that symptoms like pain by touch and numbness registered a strong statistical significance, being followed by pinching sensation.

The mean value of PRO DN4 was 4/10, being this the minimum necessary to consider a result as neuropathic pain, and the mean value index in this investigation demonstrated a good state of health in the participants.

After performing the dispersion diagram to evaluate the level of severity of the post herpetic neuralgia and its relationship with quality of life, it was determined that quality of life is indeed related with neuropathic pain.

Analyzing the mean referential value obtained in the PRO EQ-5D-5L, one can reach the conclusion that the majority of cases, with or without neuropathic pain, presented values well over the referential one, showcasing a very good quality of life. Another percentage, accompanied by neuropathic pain, presented values below the referential one, and showed affectation of their quality of life, which shows that quality of life is indeed affected in patients with post-herpetic

neuropathy.

## Peer review

The manuscript was peer reviewed and approved by the INSPILIP Journal

## Data Availability and Materials

Data presented in this manuscript is available under request to the author

## Financing

This study is self-financed

## Ethical Aspects

Previous to the writing of this study, informed consent was voluntarily signed by the patients, respecting bio-ethical norms as well as identity protection.

## Conflict of interests

There are no conflicts of interests, be them personal, professional, financial or of any other kind.

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