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Major Article

Effectiveness of neurolysis as a treatment for complications of leprosy neuritis: a systematic review

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ABSTRACT

Background: Complications of leprosy neuritis are considered serious and apparent, with the potential to disable and/or limit individuals. These complications affect not only a patient's physical functioning, but also their family and social lives, while directly impacting the ability to work and/or maintain financial independence, subsequently interfering with their overall quality of life. The present review, therefore, aimed to analyze the effectiveness of neurolysis as an alternative treatment for the complications associated with leprosy neuritis.

Methods: The present review was performed based on the Joanna Briggs Institute methodology, in an effort to answer the following research question: what is the effectiveness of neurolysis as a treatment for leprosy neuritis complications? This research question was defined using the patient-intervention-outcome (PIO) framework, where leprosy represents 'P', neurolysis for 'I', and neuropathic pain/motor function/sensorial function/physical disability/quality of life for 'O'. Randomized and non-randomized clinical trials and prospective observational cohort studies were included in the present review, with no time or date restrictions.

Results: The present review included 1 randomized clinical trial and 10 prospective studies, published between 1976 and 2020. All of the outcomes showed improvement, with relief from neuropathic pain being the primary finding.

Conclusions: The evidence obtained in the present review suggested that neurolysis is an effective alternative for the treatment of physical disabilities, the recovery of sensory and motor function, the restoration of quality of life, and neuropathic pain relief.

Keywords: Leprosy. Neuritis. Nerve Block. Systematic Review.

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INTRODUCTION

Despite the efforts made by health agencies to address it, leprosy remains an ongoing public health problem in Brazil. Considered a neglected tropical disease (NTD) with the potential for eradication, leprosy, unfortunately, persists, for multiple reasons, including a high number of infected individuals, pervasive prejudice, disease-associated stigma, and most significantly, the demyelination of affected nerve trunks. Demyelnation leads to profound disabilities and significant neurological degeneration, which occasionally results in irreversible neural damage[1].

Neuritis complications, therefore, have multifaceted consequences, as they affect not only an individual's physical well-being, but also have ripple effects on their family and social lives, including limitations in performing daily activities, reduced work capacity, diminished self-efficacy, and limited social engagement, due to fear and shame arising from changes to body image[2]. Among the guidelines for treating the complications of leprosy neuritis, pharmacological treatment with corticosteroids is recommended to control potential complications, such as pain, permanent neural damage, and inflammatory processes[2–4]. In cases of therapeutic failure or absolute contraindications, neurolysis, a medical surgical technique, may be indicated as a possible treatment[5,6].

Neurolysis involves the decompression of the affected nervous trunks in a given region, reducing intraneural pressure and aiding in the treatment of neural, sensorimotor, and neuropathic pain, and, ultimately enhancing a patient's overall quality of life[7,8]. The assessment of the effects of neurolysis as an alternative method with which to treat complications from leprosy neuritis, in lieu of non-surgical interventions, such as drug therapy with corticosteroids, fills an important gap in the available knowledge of this technique, due to the paucity of research on this topic.

The importance of the present study, therefore, stems from the need to condense the available data on the effectiveness of neurolysis as a treatment option for leprosy neuritis, and encourage the implementation of this treatment option in clinical practice, when applicable. To that end, the present study aimed to analyze the effectiveness of neurolysis as an alternative treatment for the complications of leprosy neuritis.

METHODS

The present systematic review of effectiveness was performed using the Joanna Briggs Institute (JBI) methodology and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) recommendations. The protocol for the present study was registered with the International Prospective Register of Ongoing Systematic Reviews (PROSPERO) on February 4, 2021 (no. CRD42020203114).

Our initial search was performed by two independent researchers (P1 and P2) on November 15, 2020, with an update performed on October 12, 2021, and included two interdisciplinary electronic databases, Scopus and Web of Science (WoS), as well as the following health sciences databases: Medical Literature Analysis and Retrieval System Online (MEDLINE) via the US National Library of Medicine; National Institutes of Health (NIH); Excerpta Biomedical Database (EMBASE); Cochrane Library; Virtual Health Library (VHL); Latin American and Caribbean Literature on Health Sciences (LILACS); Search Portal for Life Sciences (LIVIVO); and Cumulative Index to Nursing and Allied Health Literature (CINAHL).

The research question was defined using the patient-intervention-outcome (PIO) framework, where 'P' represented patients with leprosy, 'I' represented neurolysis, and 'O' represented neuropathic pain, motor function, sensory function, physical disability, and quality of life. Studies were identified based on search strategies adapted specifically for each database, using Medical Subject Headings (MeSH; PubMed) and Health Science Descriptor (DeCS) search terms. The identified terms were the combined using the Boolean operators "OR" and "AND."

Ideally, the outcomes were measured through preoperative clinical and physical assessments, and compared with the immediate and delayed (15, 45, 90, and 180 days) postoperative outcomes. The present review, therefore, aimed to answer the following question: what is the effectiveness of neurolysis in the treatment of the complications seen in individuals affected by leprosy neuritis?

Randomized and non-randomized clinical trials (RCTs) were included in the present review, in addition to prospective observational cohort-type studies, with no language or time restrictions, including patients with neuropathy in any nerve who underwent internal or external neurolysis as a treatment for the complications of leprosy neuritis, patients with no response to pharmacological treatment with corticosteroids or with formal contraindications to these drugs, patients with sub- and re-entrant neuritis, patients with a subluxing ulnar nerve, or patients with chronic neuropathy with delayed neural deficit and/or pain, without restrictions based on sex, age, or nationality.

Studies involving individuals with neuropathies not originating from leprosy, patients who had undergone other surgical procedures on the evaluated limbs (such as amputations), and individuals with neurological sequelae after traumatic brain injury (TBI), stroke, trauma to the evaluated limbs, or vascular disease of the lower limbs, and studies that could not be found online in the full format were excluded from the present review.

Data extraction and analysis

The relevant articles were exported and identified from the databases using the EndNote Basic (Clarivate Analytics, Philadelphia, PA, USA) web application, and then transferred to the State of the Art through Systematic Review (StArt) software for reference management and duplicate removal[9]. The records were then overwritten and arranged in a Microsoft Excel spreadsheet to organize the selection process.

Screening, eligibility, inclusion, and exclusion determination were performed independently by two researchers (LCG and NB) in two phases. In the first phase, titles and abstracts were screened to identify potentially eligible studies based on the pre-established inclusion and exclusion criteria. In the second phase, the full texts were screened, and those that met the eligibility criteria for study design, population, outcome, and type of intervention were included in the review. Any disagreements were evaluated by a third researcher (FMP) to reach a consensus, and any additional studies that did not meet eligibility criteria were excluded from the present review.

Data from the studies included in the final sample were independently extracted based on the criteria recommended by the JBI-MAStARI tool by two researchers (NMAF and FMBF), and the following data were compiled in an Excel spreadsheet: author name(s); year of publication; country; design and level of evidence; sample; follow-up time; comparison group (if applicable); outcomes; study analysis; and conclusion(s).

The level of evidence of the studies was classified based on *Melnyk and Fineout-Overholt's guidelines*[10], *which consist of the following* seven levels: Level 1, systematic review or meta-analysis of relevant RCTs or clinical guidelines based on systematic reviews of RCTs; Level 2, at least one well-designed RCT; Level 3, controlled trial without randomization; Level 4, case-control or cohort study; Level 5, systematic review of descriptive and qualitative studies; Level 6, single descriptive or qualitative study; and Level 7, expert opinion or report of expert committees.

Two independent researchers (LCG and NB) evaluated the methodological quality of the eligible studies via a critical evaluation of cohort studies, RCTs, and non-RCTs using the appropriate evaluation checklists for RCTs and cohort studies, as mentioned in the JBI manual (2020): the JBI Critical Appraisal Checklist for RCTs[11] and the JBI Critical Appraisal Checklist for Cohort studies[12]. In case of any disagreement, a third reviewer (FMP) was consulted to reach a consensus.

The JBI appraisal tool for RCTs consists of 13 questions with 4 possible answers (yes, no, uncertain, or not applicable) each, aiming to assess the methodological quality and the approach to possible biases, evaluating domains such as randomization, allocation, blinding, treatment groups, follow-up, and statistical analysis, among other factors[11].

The JBI appraisal tool for cohort studies contains 11 questions with the same response options mentioned above, and assesses group recruitment and homogeneity, exposure measurement, confounding factors, validity and reliability of outcomes, follow-up time, and statistical analysis, among other factors[12].

For each domain, a critical evaluation was performed using a methodology that assessed the risk of bias of each study, and judgments were made in a network analysis, resulting in a single classification. This step was performed independently by two reviewers (LCG and NB), and a third reviewer (FMP) was consulted when there was a disagreement.

When categorizing the methodological quality of the RCTs and cohort studies based on the instruments utilized, those with ≥ 70% "yes" answers were classified a low risk of bias, 50–69% a moderate risk of bias, and ≤ 49% a high risk of bias. All eligible studies underwent data extraction, regardless of methodological quality.

RESULTS

A total of 622 studies were initially identified, of which 253 duplicates were immediately excluded, leaving 369 to be analyzed, 349 of which did not meet the inclusion criteria. Those remaining 20 studies were evaluated for eligibility, resulting in 11 studies that comprised the final sample, as shown in **Figure 1**.

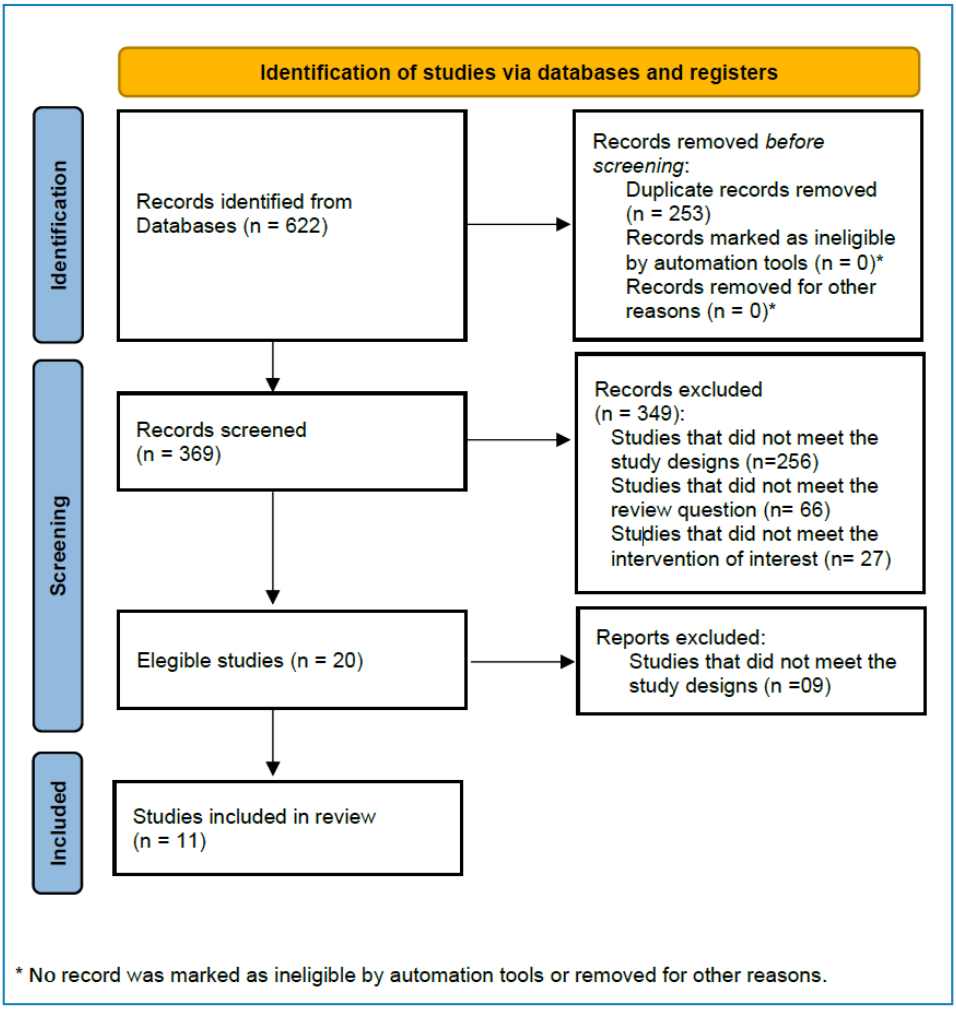

FIGURE 1: Study selection steps for the systematic review based on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

The 11 studies included in the final sample were comprised of a single RCT[13], classified as level II evidence, and 10 prospective cohort studies, classified as level IV evidence, published between 1976 and 2020, and written in English and French[7,14–22]. Four studies were conducted in India[7,13,18,20], one in Ecuador[14], one in Nepal[16], one in Madagascar (Africa)[17], and one in France[19], while three studies did not provide information regarding the study site[15,21,22]. The sample sizes ranged from 10–500 participants, and the follow-up time ranged from 15 months[7,13–22] to 20 years[15,18], as shown in **Table 1**.

One study was classified as having a high risk of bias[13] due to potential fragilities, such as noncompliance with the allocation of groups, blinding of participants and evaluators in the various stages of the study, group monitoring, and study design, as seen in **Table 2**.

TABLE 1: Characteristics of the studies, based on year, location, design, level of evidence, sample, and follow-up time.

Study characteristics				Sample description	
Reference	**Year**	**Location**	**Design; Level of evidence**	**Sample**	**Follow-up time**
7	2020	India	Cohort; IV	S: 10 CG: 5 EG: 5	IPP, 3, 12, and 24 months
14	2017	Ecuador	Cohort; IV	S: 19 CG: none EG: 19	24 months
15	2013	Not mentioned	Cohort; IV	S: 500 CG: none EG: 60 median nerves + 386 ulnar nerves + 54 posterior tibial nerves	5–20 years at different intervals
16	1998	Nepal	Cohort; IV	S: 10 CG: none EG: 10	3, 6, 12, and 24 months
13	1996	India	RCT; II	S: 75 CG: 28 EG: 29	12–24 months
17	1995	Madagascar	Cohort; IV	S: 123 CG: none EG: 123 (466 nerves)	15 months
18	1989	India	Cohort; IV	S: 84 CG: 25 EG: 59	IPP, 4 weeks, 6 months to 20 years .
19	1987	France	Cohort; IV	S: 50 (90 neurolysis) CG: 21 nerves EG: 56 +13 = 69 nerves	36 months
20	1984	India	Cohort; IV	S: 62 CG: 31 EG: 31	2 weeks, 6 months, 12 months, and 18 months
21	1978	Not mentioned	Cohort; IV	S:45 CG: none EG: 45	3–36 months, with an average of 25 months
22	1976	Not mentioned	Cohort; IV	S: 33 CG: none EG: 33	3–24 months

Source: Authors

CG: control group; **EG:** experimental group; **S:** sample; **IPP:** immediate postoperative period.

TABLE 2: Critical evaluation of the randomized controlled trial using the Joanna Briggs Institute (JBI) critical appraisal checklist.

	Critical appraisal													
Reference	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Total "Yes"
13	N	N	U	U	N	N	N	U	U	Y	Y	Y	U	3

Source: The authors

Y: yes; **N:** no; **U:** unclear. JBI Critical Appraisal Question: Q1. Was true randomization used for the assignment of participants to the treatment groups? Q2. Was allocation to the treatment groups concealed? Q3. Were the treatment groups similar at the baseline? Q4. Were the participants blinded to treatment assignments? Q5. Were those who delivered the treatment blind to the treatment assignment? Q6. Were the outcome assessors blinded to treatment assignment? Q7. Were the treatment groups treated identically other than the intervention of interest? Q8. Was the follow-up complete, and if not, were differences between groups in terms of their follow-up adequately described and analyzed? Q9. Were the participants analyzed in the groups to which they were randomized? Q10. Were the outcomes measured in the same manner in the treatment groups? Q11. Were the measured outcomes reliable? Q12. Was the appropriate statistical analysis used? Q13. Was the trial design appropriate, and were any deviations from the standard randomized control trial design (individual randomization, parallel groups) accounted for in the conduct and analysis of the trial?

Of the 10 cohort studies included and submitted for methodological quality analysis, three were considered to have a low risk of bias[7,16,17], three a moderate risk[18,20,22], and four a high risk[14,15,19,21]. Studies classified as having a high or moderate risk of bias showed methodological weaknesses in terms of group recruitment, exposure measures, reliability of exposure measures, confounding factors, follow-up time, and statistical analysis, as seen in **Table 3**.

The primary outcomes regarding neuropathic pain, motor and sensory function, physical disability, and quality of life are summarized in **Table 4**. Neuropathic pain was discussed in eight studies, with pain relief considered as one of the primary advantages of neurolysis[7,13–15,17,20–22]. Among the studies that evaluated pain intensity, only one showed significant improvement over the preoperative period, while 35.7% of the monitored population reported worsening pain at 12 months post-op[14].

All of the studies evaluated sensory function[7,13–22], with no beneficial changes found in two[18,20]. Ten studies evaluated motor function[7,13–17,20–22], with positive effects observed in nine[7,13–17,21,22]. One study each evaluated areflexia[17] and flexibility[20], both corresponding to sensorimotor function, and two studies evaluated plantar perforating disease, representing nerve function[15,17]. Three studies reported improvement in physical disability after neurolysis[7,14,17], while two[14,17] supported the effectiveness of neurolysis in improving physical disabilities; however, one study[7] did not demonstrate significant results regarding this outcome.

The efficacy of neurolysis was found to be associated with surgical intervention in the early stages of leprosy-induced neuritis[19,21,22], although only three studies evaluated improvement in quality of life after neurolysis[14,16,22]. All studies indicated a more favorable state of health after the neurolysis procedure.

DISCUSSION

The present review evaluated the effectiveness of neurolysis as an alternative treatment for complications in individuals affected by leprosy neuritis and aimed to provide a more comprehensive understanding of the effectiveness of this procedure. The results were promising, including alleviation of neuropathic pain,

TABLE 3:. Critical evaluation of the studies using the Joanna Briggs Institute (JBI) critical appraisal checklist for cohort studies.

	Critical appraisal											
Reference	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Total "Yes"
7	Y	Y	Y	U	U	Y	Y	Y	Y	Y	Y	9
14	U	U	Y	N	N	Y	Y	Y	N	N	N	4
15	U	U	Y	U	U	Y	Y	Y	Y	U	N	5
16	U	U	U	Y	Y	Y	Y	Y	Y	Y	U	7
17	Y	Y	Y	Y	Y	Y	Y	Y	U	U	N	8
18	Y	Y	Y	N	N	Y	Y	Y	U	U	N	6
19	U	U	Y	N	N	Y	Y	Y	U	N	N	4
20	Y	Y	Y	U	U	Y	Y	Y	U	N	N	6
21	U	U	Y	N	N	Y	U	U	N	N	N	2
22	U	Y	Y	N	N	Y	Y	Y	Y	N	N	6

Source: The authors

Y: yes; **N:** no; **U:** unclear. JBI Critical Appraisal Question: Q1. Were the two groups similar and recruited from the same population? Q2. Were the exposures measured similarly to assign people to both exposed and unexposed groups? Q3. Was the exposure measured in a valid and reliable manner? Q4. Were the confounding factors identified? Q5. Were strategies used to deal with the confounding factors stated? Q6. Were the groups or participants free of adverse outcomes at the start of the study (or at the time of exposure)? Q7. Were the measured outcomes valid and reliable? Q8. Was the follow-up time reported and sufficient to be long enough for outcomes to occur? Q9. Was the follow-up complete, and if not, were the reasons for loss to follow-up described and explored? Q10. Were there strategies to address incomplete follow-up? Q11. Was the appropriate statistical analysis used?

TABLE 4: Characterization of the studies according to control group, experimental group, and main results.

Reference	Control Group (CG)	Experimental Group (EG)	Main results
7	Neural involvement inferior to 12 weeks and in the last 12 months	Neural involvement of more than 12 weeks	Effective for motor function in the CG compared to the EG after 24 months (P = 0.03). There was no statistical significance of PD in the EG. Effective for sensory function (P < 0.01 in the CG and 0.03 in the EG after 3–24 months). Effective for neuropathic pain based on the VAS score (CG: P = 0.02 and EG: P = 0.03 after 4 weeks to 24 months).
14	None	Ulnar, median, tibial, and peroneal nerve neurolysis	Effective for QoL (P = 0.03). Effective for PD (P = 0.02; 95% confidence interval [CI]: 4–37). Effective for neuropathic pain (P = 0.049), motor strength recovery, and sensory function recovery (81.3–86.7%) after 12–24 months.
15	None	Ulnar, median, and tibial nerve neurolysis	**Ulnar nerve:** Effective for neuropathic pain recovery after 5-20 years (100%), gradual for sensory recovery in 188 cases (48.70%) from 4 weeks – 24 weeks – 12 months. Effective for motor function in 260 cases (89.63%) but slow (after 24–50 weeks). **Medial nerve:** Effective for full sensory function (55%), neuropathic pain (100%). **Tibial nerve:** Effective for partial (66%) and total (44%) sensory function from 2–6 weeks.
16	None	Neurolysis of the facial nerves	Effective for QoL and motor function at soft eye closure (P = 0.0016).
13	On steroid use	Ulnar nerve neurolysis associated with steroid therapy	Effective for recovery and maintenance of motor function, sensory function, and neuropathic pain (CG, P < 0.05 and EG, P < 0.01) after 12 months. Changes were not observed between the CG and EG groups for motor and sensory function after 24 months.
17	None	Neurolysis of the medial, posterior tibial, ulnar, sciatic, and external popliteal nerves associated with steroids	Effective for neuropathic pain (100%), sensory function (97%), motor strength (61%), plantar perforating disease (80%), and PD (58-60%) of cases after 15 months.
18	Posterior tibial nerve neurolysis with combined steroid therapy	Posterior tibial nerve neurolysis without the combined steroids	Effective for complete sensory function (18%). Changes were not observed between groups.
19	None	Posterior tibial nerve neurolysis in: Group 1: total sensory involvement Group 2: partial sensory involvement Group 3: no involvement	Effective for patients who did not have advanced leprosy neuritis, acting as a prophylactic measure in group 3 (plantar sensitivity)
20	Clinical group, under drug treatment with steroids	Medial nerve neurolysis combined with steroid therapy	Changes were not observed between groups.
21	None	Neurolysis of the ulnar, popliteal, medial, and posterior tibial nerve	Effective for neuropathic pain (100%), sensory function (≥ 75%), and motor function (50%), with better results in the early stage of the disease.
22	None	Ulnar nerve neurolysis	Effective for sensory and motor function. Comparison of sensory function showed better results than motor function in the initial stage of the disease.

Source: Authors

restoration of motor and sensory function (partial or complete), reduction of disabilities, and improvement in overall quality of life. These findings indicate that neurolysis and corticosteroid use are neither competing nor mutually exclusive as optimal treatments.

Leprosy is one of the primary causes of peripheral neuropathy, as the disease compromises sensory, motor, and autonomic functions, resulting in visible deformities and impaired neural function, which may subsequently lead to physical disabilities requiring drug therapy or surgical intervention to improve the patient's quality of life[3,23,24]. To optimize the therapeutic choices for patients, it is essential to understand the pathogenesis of leprosy and how the disease affects the peripheral nervous system. *Mycobacterium leprae* causes peripheral neuropathy of an inflammatory nature, which can result in edema and local mechanical processes, as well as neural thickening that renders neural fibers susceptible to compressive effects. This, in turn, leads to edema of the nerve trunk, ischemic impairment, and localized nerve damage[23,25,26,27].

Neuropathic pain is a significant condition, relevant to its severity and negative impacts. It is considered a predictor of suffering, disability, and limitations in daily life and work activities, triggering serious economic and psychosocial consequences, along with an unsatisfactory quality of life[28–30]. Treatment of neuropathy, however, is complex. Currently, drug therapy and noninvasive surgical interventions, such as neurolysis and nerve blocks, are the primary courses of treatment[31,32].

Previous studies have shown similar results to those found in the present review, supporting the hypothesis that drug treatment, in association with neurolysis, reduces pain and physical repercussions in the affected limbs[33,34]. In the present review, eight studies[7,13–17,20–22] evaluated the reduction of neuropathic pain after

neurolysis, while four evaluated neurolysis in conjunction with corticosteroid treatment[13,17,18,20]. Two studies about the combined treatment also showed improvements in sensory and motor function, with postoperative neuropathic pain presenting the most satisfactory results[13,17].

A cross-sectional study conducted at the Brazilian Reference Center for Sanitary Dermatology and Leprosy in Minas Gerais evaluated patients in the late postoperative period after neurolysis (180 days). The study found that the procedure decreased the prevalence and intensity of pain, improved motor function, and reduced the dose of corticosteroids[23].

In addition to the aforementioned studies, pharmacological treatment should also be evaluated. A survey in Nepal analyzed the prevalence and impact of neuropathic pain years after the completion of multidrug therapy (MT) in 85 patients, 68% of whom were diagnosed with neuropathic pain. Of those diagnosed with neuropathic pain, 47% had a grade 2 physical disability at the time they were diagnosed with leprosy, and pain improvement was observed with medication in 50%–60% of individuals who reported moderate pain[32].

Despite being the treatment of choice for leprosy-related neuropathy, corticosteroids have serious adverse effects in the long-term[34]. Two RCTs showed that corticosteroid therapy resulted in common and serious adverse events, reinforcing the need to evaluate alternative therapies (such as neurolysis) for the treatment of leprosy-related complications, including neuritis. As an alternative, neurolysis may provide an additional treatment option for reversible complications while preventing irreversible ones, in addition to potentially reducing the risk of corticosteroid addiction and adverse side effects[35,36].

There is a similarity between the present study and other systematic reviews, in regard to motor and sensory functions. Individuals diagnosed 12 months after the onset of disease progression experienced greater involvement of sensorimotor functions, leading to an increased probability of developing neural, sensory, and functional impairments, in addition to physical disability[37,38].

A study conducted in Manaus, Brazil, showed that simultaneous administration of clinical treatment for leprosy neuritis improved the effectiveness of treatment for neuritis. This combined treatment contributed to the prevention of relapse and the development of chronic conditions, reducing the risk of progression to physical disability, improving sensory and motor function, and avoiding prolonged corticosteroid therapy and its associated consequences[6].

Individuals who underwent neurolysis showed partial regeneration of preoperative deformities[7,13,14,17]. One possible explanation for this rehabilitation is that surgical procedures reduce extrinsic compression allowing improvement in neural circulation, and are more effective in preventing the progression of nerve damage than other methods of recovery from physical disabilities[8,39].

Neurolysis allowed for a significant improvement in physical disabilities, especially in patients who received timely surgical treatment, that is, shortly after evidence of therapeutic failure with corticosteroids, evidenced by the absence of permanent sequelae and a greater chance of recovery[23]. The results of some of these studies reinforce the need for clinical follow-up during the post-operative period, owing to the high chances of new reactional episodes[23,40], corroborating the findings of the present review, in which the studies included follow-up periods of 15 months[7,13–22] up to 20 years[15,18].

Physical disabilities are important indicators for monitoring the incidence and prevalence of leprosy, making it possible to identify and evaluate the quality of healthcare services provided at varied levels of care. The occurrence of physical disabilities may suggest an early or delayed leprosy diagnosis, as the presence of this condition is linked to complications caused by the delayed elimination or underdiagnosis of *M. leprae*[4,41]. In this context, quality of life is closely correlated with social, emotional, and psychological fragility, resulting from worsening leprosy[42,43]. The World Health Organization (WHO) defines "quality of life" as an aspect that should be individually assessed through self-evaluation, considering a set of factors that include social status, culture, lifestyle, desires, dreams, aspirations, and achievements, among others[23,44,45]. In the present review, neurolysis played an important role in improving quality of life among individuals affected by leprosy-induced neuritis and its complications, evidencing benefits of neurolysis, including pain reduction, recovery of sensory and motor function, and improvement of various disabilities[14,16].

The effectiveness of neurolysis has been observed in studies evaluating the perceptions of individuals who underwent surgical procedures in the late postoperative period[39,46,47]. Most patients reported satisfactory results after surgery, largely due to a notable improvement in neuropathic pain. Additionally, they expressed personal satisfaction and improved quality of life and self-esteem, evidenced by their improved ability to perform activities of daily life.

The present review has some methodological limitations, including confounding factors, selection bias, loss of follow-up, and statistical analyses. We believe, however, that the longer follow-up periods of the included studies provides a balance for these limitations[18–22].

Given the evidence obtained from the present review, the effectiveness of neurolysis in treating the complications of leprosy neuritis should be considered well-documented, especially if surgical intervention is performed at the onset of worsening disease symptoms. The findings of our analysis reinforce the importance of technical knowledge regarding leprosy in addition to the typical characteristics of neuropathies, in order to intervene in a timely manner, which contributes to the recovery and maintenance of sensorimotor function following surgical treatment, either alone or in conjunction with corticosteroid use[40].

Due to the limitations of the literature available for the present review, it is suggested that future research, especially RCTs, be implemented to enable the performance of meta-analyses and, consequently, allow for robust clinical recommendations on the subject, helping in treatment-related decision-making. Gathering research evidence to guide clinical practice is one of the primary reasons for performing studies that provide valid scientific evidence. Therefore, the authors recommend that future primary research should include neurolysis in conjunction with other non-surgical techniques to ensure that reliable results are obtained.

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