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ORIGINAL RESEARCH ARTICLE

Effect of Platelet-Rich Plasma Therapy on Radiological and Electrophysiological Parameters of the Ulnar Nerve in Patients of Leprosy: A Hospital-Based Prospective Comparative Study

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ABSTRACT

Introduction: Leprosy, a chronic disease caused by *Mycobacterium leprae*, often leads to ulnar neuropathy, causing sensory and motor impairments. Despite treatment, nerve damage may persist, and regenerative therapies like platelet-rich plasma (PRP) are being explored for their potential to enhance nerve regeneration.

Material and Methods: This prospective study aimed to evaluate PRP therapy's effects on ulnar neuropathy in leprosy patients. Conducted at Shri Ram Murti Smarak Institute of Medical Sciences, it included 24 patients with bilateral thickened ulnar nerves. PRP was injected into one ulnar nerve while the other received a sham saline injection. Sensory testing, nerve conduction studies, and ultrasound measurements of the ulnar nerve were performed pre- and post-procedure.

Results: Sensory and motor parameters showed no significant differences between PRP-treated cases and controls. Sensory function deteriorated more in some cases, but changes in monofilament values, latency, velocity, and amplitude were not statistically significant. A significant reduction in the ulnar nerve area was observed post-procedure, but the overall change and percentage change were not significant.

Conclusion: PRP therapy demonstrated a minimal impact on nerve function in leprosy-induced ulnar neuropathy. Further studies are needed to confirm its potential clinical relevance.

Keywords: leprosy, Ulnar neuropathy, Platelet-rich plasma, Nerve conduction study, Ultrasound, Sensory impairment.

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INTRODUCTION

Leprosy, also known as Hansen's disease, is a chronic infectious disease caused by *Mycobacterium leprae*, which primarily affects the skin, peripheral nerves, upper respiratory tract, and eyes.[1] One of the most debilitating complications of leprosy is peripheral neuropathy, particularly involving the ulnar nerve, leading to significant disability due to sensory and motor impairments along with claw hand deformity, muscle atrophy, and sensory loss, which severely impacts patients' quality of life.[2]

However, despite these measures, nerve damage often persists or progresses, leading to chronic disability. Recent advances in regenerative medicine, particularly platelet-rich plasma (PRP) therapy, offer a promising approach for nerve regeneration and functional recovery in peripheral neuropathies.[3]

PRP is an autologous blood product that contains a concentrated number of platelets, growth factors, and cytokines, which are known to promote tissue repair and regeneration.[4] The application of PRP in nerve injuries has been shown to enhance nerve regeneration, reduce inflammation, and improve functional outcomes.[3] However, its role in leprosy-induced ulnar neuropathy remains relatively unexplored.[5]

This study aims to evaluate the effects of PRP therapy on radiological and electrophysiological parameters of the ulnar nerve in leprosy patients. By analyzing these parameters, this research seeks to determine whether PRP can serve as a beneficial adjunct to current treatment strategies in restoring nerve function and improving clinical outcomes in leprosy patients with ulnar neuropathy. The findings may pave the way for new therapeutic approaches that may prevent further nerve damage and promote functional recovery.

MATERIAL AND METHODS

The study (CTRI/2023/06/054394) was conducted in the Department of Dermatology, Venereology, and Leprosy at Shri Ram Murti Smarak Institute of Medical Sciences,

Bhojipura, Bareilly. It was a prospective, hospital-based study carried out from July 20, 2023, to May 2024. The study population consisted of patients attending the leprosy clinic in the department, and the inclusion criteria were patients with bilateral palpable thickened ulnar nerves aged between 18 and 50 years. Patients unwilling to provide informed consent, those on anticoagulants or antiplatelet drugs, and those with a history of thrombocytopenia, platelet dysfunction, pregnancy, rheumatologic disorders, or other comorbidities were excluded.

A sample size of 24 was calculated using the formula: $n = z\alpha s^2/d^2$, where $z\alpha$ is 1.96, s^2 is 132.028, and d^2 is 4.88, based on past studies.[6] The materials used in the study included Semmes-Weinstein monofilaments, ultrasonography, a nerve conduction study machine, a centrifuge machine (R8C REMI), insulin syringes, and other necessary medical supplies for the preparation and administration of platelet-rich plasma (PRP).

Patients meeting the inclusion criteria were assessed using a detailed history, physical examination, and monofilament testing with Semmes-Weinstein monofilaments calibrated to specific pressures. Monofilaments were applied to the hands at ulnar nerve sites, with the lowest force consistently detected considered the threshold force. Nerve conduction studies were performed to evaluate sensory and motor parameters of the ulnar nerve, focusing on latency, amplitude, and conduction velocity, with stimulation at the wrist and elbow.

Ultrasound assessment was done by positioning the patient supine with the elbow flexed at 90°, and scanning the ulnar nerve bilaterally near the cubital tunnel. The cross-sectional area (CSA) of the nerve was measured by tracing inside the hyperechoic rim in a short-axis view. PRP was produced by drawing 10 mL of blood from each patient, followed by a double-spin centrifugation method to concentrate the platelets as per the method explained.[7]

At each visit, patients received a 1-mL PRP injection into the ulnar nerve on one side, while a sham injection of normal saline was given on the other side under ultrasonographic guidance. Sensory testing with monofilaments and nerve conduction studies were repeated after three PRP sittings. All patient data were recorded as per the study proforma.

Categorical variables were presented as percentages and qualitative variables were compared using the Chi-Square test or Fisher's Exact test. Quantitative variables with normal distribution were analyzed using paired t-tests, while non-normally distributed data were analyzed using Mann-Whitney or independent t-tests. Correlations between ultrasound area and electrophysiological parameters were assessed using Spearman's rank correlation coefficient. Data analysis was performed using SPSS version 21.0, with a *p-value* of <0.05 considered statistically significant. Ethical approval was obtained from the institutional ethical committee, and all participants provided written informed consent. A pilot study was conducted on three participants to validate the methodology ensuring feasibility, clarity, and relevance of the study procedures.

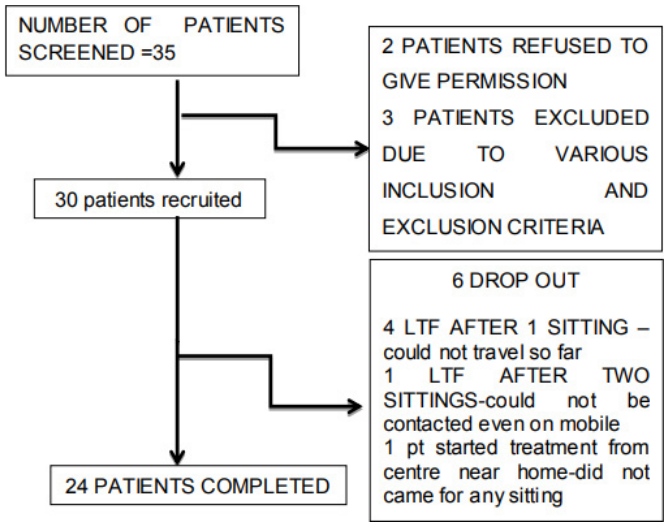


Figure 1: Study flowchart

RESULTS

The study encompassed a diverse range of patients, categorized by age, leprosy status, and monofilament distribution as per Table 1, showing that 54.17% were between 18 to 30 years old, 16.67% were between 31 to 40 years old, and 29.17% were between 41 to 50 years old. The average age of participants was 32.96 ± 9.92 years,

Table 1: Age group of patients and treatment duration

Variable	*Mean ± SD*	*Median (25^{th}–75^{th} percentile)*	*Range*
Age (years)	32.96 ± 9.92	30 (25.5–43.5)	18–50
Duration of treatment (months) of old patients (n = 11)	7.45 ± 3.72	7 (4–11)	3–12

Table 2: Status of leprosy in the study population

Status of patients	*Frequency*	*Percentage*
New	11	45.83
Old	11	45.83
Relieved from treatment	2	8.33
Paucibacillary	6	25
Multi bacillary	18	75
Type 2 reaction	8	33.33

Table 3: Distribution of monofilament in controls pre and post-procedure

Monofilament (gm)	*Pre-procedure (n = 24)*		*Post-procedure (n = 24)*	
	Case	Control	Case	Control
3.61	1	1	3	0
4.31	16	9	4	11
4.36	1	2	3	2
4.56	0	3	9	3
4.74	1	4	0	3
5.46	1	0	1	0
6.65	3	5	3	4

with a median age of 30 years, falling within the 25th to 75th percentile range of 25.5 to 43.5 years.

Out of the total, 45.83% were newly diagnosed, another 45.83% had old leprosy, and 8.33% had been relieved from treatment. The duration of treatment for patients with old leprosy was 7.45 ± 3.72 months, with a median duration of 7 months and a range from 3 to 12 months. (Table 2). In terms of sensory nerve assessment, the distribution of monofilament measurements pre and post-procedure for both cases and controls. For cases, the distribution ranged from 1 to 6.65 grams pre-procedure and varied post-procedure (Table 3) similarly.

Table 4 showed that the mean values for cases (41.02 ± 102.6) were lower than those for controls (64.68 ± 123.3), although the range for both groups was the same (0.4–300). After the procedure, the mean monofilament values remained similar for both groups, with cases showing 41.66 ± 102.31 and controls showing 64.67 ± 123.32. The median values post-procedure were slightly higher for cases[4] than controls[3], but no significant change was observed.

When analyzing the change in monofilament, (Table 5) cases had a mean increase of 0.64 ± 89.26, while controls had a slight mean decrease of -0.02 ± 152.04. However, this difference was not statistically significant (p = 0.298). The percentage change in monofilament showed a median improvement of 50% for cases and 0% for controls, with no significant difference between groups (p = 0.422). Regarding deterioration, a higher percentage of cases (58.33%) showed deterioration compared to controls (33.33%), but the difference was not significant (p =0.073). Similarly, improvement and stability rates were comparable between the two groups.

At baseline, the median latency in cases was 6.46 ms (5.83–7.08), while in controls it was 6.78 ms (6.128–7.498), with no significant difference (p = 0.395). Velocity was slightly higher in cases (60.46 ± 13.43 m/s) compared to controls (57.5 ± 18.71 m/s), but this difference was not statistically significant (p = 0.556). The amplitude showed median values of 5.5 (cases) and 4.9 mV (controls), with no significant difference (p = 1.0).

Post-procedure, the median latency increased in both groups, with cases at 7.2 ms (5.822–8.622) and controls at 6.72 ms (5.662–7.71), though the difference remained non-significant (p = 0.520). Velocity decreased slightly

Table 4: Descriptive statistics and comparison of monofilament measurements

Descriptive Statistics of Monofilament	*Cases (n = 23)*	*Controls (n = 24)*	*p-value*
At Baseline			
Mean ± SD	41.02 ± 102.6	64.68 ± 123.3	
Median (25th –75th percentile)	2 (2–2.5)	3.5 (2–4)	
Range	0.4–300	0.4–300	
Post Procedure			
Mean ± SD	41.66 ± 102.31	64.67 ± 123.32	
Median (25th –75th percentile)	4 (2–4)	3 (2–4)	
Range	0.4–300	2–300	
Change in monofilament			
Mean ± SD	0.64 ± 89.26	-0.02 ± 152.04	
Median (25th –75th percentile)	1 (-0.5–2)	0 (-2–2)	0.298
Range	-296–296	-298–298	
Percentage change in monofilament			
Median (25th –75th percentile)	50 (-16.667–100)	0 (-50–100)	0.422
Comparison of change			
Deterioration (%)	14 (58.33%)	8 (33.33%)	
Improvement (%)	6 (25%)	8 (33.33%)	0.073
Same (%)	3 (12.50%)	8 (33.33%)	

Table 5: Comparison of motor electrophysiological parameters between cases and controls

Parameter	*Cases (n)*	*Controls (n)*	*p-value*
Baseline			
Latency (ms)	6.46 (5.83-7.08)	6.78 (6.128-7.498)	0.395
Velocity (m/s)	60.46 ± 13.43	57.5 ± 18.71	0.556
Amplitude (mV)	5.5 (2.7-8.6)	4.9 (1.825-9.225)	1
Post procedure			
Latency (ms)	7.2 (5.822-8.622)	6.72 (5.662-7.71)	0.520
Velocity (m/s)	56.77 ± 17.57	57.35 ± 23.31	0.928
Amplitude (mV)	7.15 (2.45-9.325)	5.7 (2.175-8.675)	0.606
Percentage change post procedure			
Latency (%)	3.72 (-2.3-39.7)	-3.1 (-9.1-13.1)	0.170
Velocity (%)	-2.63 (-20.4-10.5)	-2.75 (-28.1-15.7)	0.917
Amplitude (%)	0 (-25.625-14.74)	5.92 (-21.95-49.823)	0.497

in both cases (56.77 ± 17.57 m/s) and controls (57.35 ± 23.31 m/s), with no significant difference ($p = 0.928$). The amplitude post-procedure was higher in cases (7.15 mV) compared to controls (5.7 mV), but again the difference was not statistically significant ($p = 0.606$).

In terms of percentage change post-procedure, latency increased by 3.72% in cases and decreased by 3.1% in controls ($p = 0.170$). Velocity decreased slightly in both groups (-2.63% in cases and -2.75% in controls, $p = 0.917$), and the percentage change in amplitude showed no significant difference between cases (0%) and controls (5.92%, $p = 0.497$). Overall, no significant differences were observed in the motor electrophysiological parameters between the two groups before or after the procedure (Figure 2).

Table 6 shows that at baseline, the median sensory latency was 2.21 ms (1.83-4.5) in cases and 1.96 ms (1.71–3.13) in controls, with no significant difference ($p = 0.562$). The mean velocity was almost identical between cases (61.06 ± 16.09 m/s) and controls (61.7 ± 16.49 m/s), with no statistical significance ($p = 0.899$). The amplitude values were also comparable between cases (median 4 mV) and controls (median 5.75 mV), with no significant difference ($p = 0.817$).

After the procedure, the latency decreased in cases to a median of 1.96 ms and increased in controls to 2.33 ms, but this difference was not statistically significant ($p = 0.226$). Sensory velocity showed an increase in cases (66.02 ± 10.31 m/s) compared to controls (58.54 ± 16.78 m/s), though the difference was not significant ($p = 0.126$). Amplitude values post-procedure were similar between the two groups, with cases showing a median amplitude of 6.56 mV and controls 6.13 mV ($p = 0.807$).

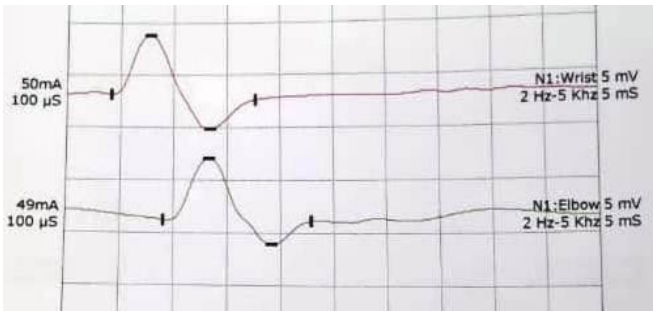
The percentage change in latency post-procedure was slightly higher in controls (-14.75%) compared to cases (-10.67%), but this was not statistically significant ($p = 0.775$). Both groups showed a decrease in velocity post-procedure, with cases showing a median percentage change of -2.6% and controls -0.3% ($p = 0.568$). The amplitude percentage change was positive in both groups, with no significant difference between cases (7.92%) and controls (13.42%) ($p = 0.474$). Overall, there were no

Table 6: Comparison of sensory electrophysiological parameters between cases and controls

Parameter	*Cases*	*Controls*	*p-value*
Baseline			
Latency (ms)	2.21 (1.83–4.5)	1.96 (1.71–3.13)	0.562
Velocity (m/s)	61.06 ± 16.09	61.7 ± 16.49	0.899
Amplitude (mV)	4 (0.25–8.6)	5.75 (0.4–8.525)	0.817
Post Procedure			
Latency (ms)	1.96 (1.768–2.212)	2.33 (1.835–3.75)	0.226
Velocity (m/s)	66.02 ± 10.31	58.54 ± 16.78	0.126
Amplitude (mV)	6.56 (1.72–8.52)	6.13 (1.55–9.95)	0.807
Percentage change post procedure			
Latency (%)	-10.67 (-22.958–23.719)	-14.75 (-29.3–4.48)	0.775
Velocity (%)	-2.6 (-25.96–21.95)	-0.3 (-16.4–17.3)	0.568
Amplitude (%)	7.92 (-37.29–64.12)	13.42 (-17.51–94.62)	0.474

Table 7: Ultrasonographic measurements pre and post-procedure

Measurement	*Pre- procedure (Mean ± SD)*	*Post- procedure (Mean ± SD)*	*p-value*
USG area of ulnar nerve (mm²)	10.68 ± 2.15	9.47 ± 0.7	0.012*
Change in USG area (mm²)	-0.51 ± 1.24	0.14 ± 1.36	0.395
Percentage change (%)	-4.73 ± 10.65	1.49 ± 14.28	0.538



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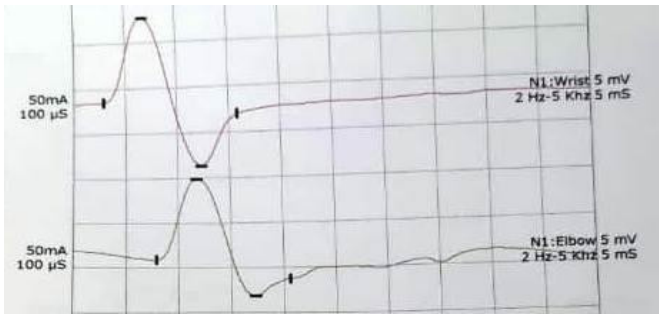
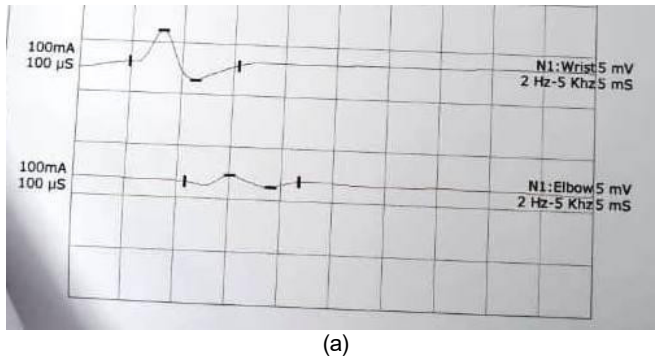


(b)

Figure 2: Graph showing improvement in motor parameters(from A-pre procedure to B- post procedure)



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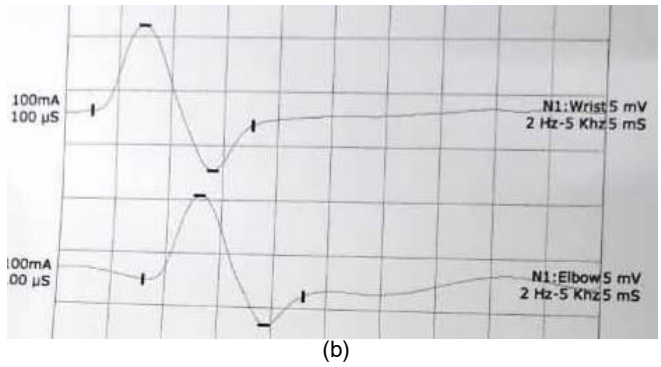

(b)

Figure 3: Graph showing improvement in sensory parameters(from a –pre procedure to b-post procedure)

significant differences in sensory electrophysiological parameters between the groups (Figure 3).

Table 7 reveals that before the procedure, the mean ultrasonographic (USG) area of the ulnar nerve was 10.68 ± 2.15 mm², which decreased to 9.47 ± 0.7 mm² post-procedure. This reduction in the USG area was statistically significant (p = 0.012). However, the mean change in the USG area was -0.51 ± 1.24 mm² pre-procedure and 0.14 ± 1.36 mm² post-procedure, with no significant difference between the two measurements (p = 0.395). The percentage change in the USG area also did not show a significant difference between pre-procedure (-4.73 ± 10.65%) and post-procedure (1.49 ± 14.28%) measurements (p = 0.538). These results indicate that while there was a significant reduction in the area of the ulnar nerve post-procedure (Figure 4), the overall change and percentage change did not reach statistical significance.

Table 8 highlights the comparison of motor and sensory electrophysiological parameter improvements between cases and controls. For motor parameters, the control group demonstrated slightly higher improvement rates in latency (54.1 vs. 37.5%), amplitude (54.1 *vs.* 41.6%), and velocity (37.5 *vs.* 33.3%) compared to cases. Similarly, in sensory parameters, the controls had higher improvements in latency (37.5 vs. 25%), amplitude (33.3 vs. 25%), and velocity (37.5 vs. 33.3%). However, none of these differences were statistically significant, with all *p-value*s exceeding 0.05. This suggests comparable outcomes for both groups in terms of parameter improvements,

Table 8: Comparison of improvement in parameters among cases and controls

Parameter type	*Parameter*	*Cases improved*	*Controls improved*	*p-value*
Motor parameters	Latency	9 (37.5%)	13 (54.1%)	0.38
	Amplitude	10 (41.6%)	13 (54.1%)	0.56
	Velocity	8 (33.3%)	9 (37.5%)	1
Sensory parameters	Latency	6 (25%)	9 (37.5%)	0.53
	Amplitude	6 (25%)	8 (33.3%)	0.75
	Velocity	8 (33.3%)	9 (37.5%)	1

Table 9: Neuropathy types and association with electrophysiological parameters

Parameter type	*Neuropathy type*	*Latency improvement*	*Velocity improvement*	*Amplitude improvement*
Motor	Axonal (n = 12)	5 (45.45%)	5 (45.45%)	7 (58.33%)
Parameters	Demyelinating (n = 7)	0 (0%)	2 (25%)	2 (28.57%)
	P value	045	0.63	0.35
Sensory parameters	Axonal (n = 8)	6 (75%)	4 (57.14%)	5 (62.5%)
	Demyelinating (n = 6)	2 (33.33%)	3 (42.86%)	1 (16.67%)
	p-value	0.27	1	0.14

Table 10: Complications between cases and control

Complications	*Cases frequency*	*Cases percentage*	*Controls frequency*	*Controls percentage*
Numbness	9	37.5	1	4.17
Pain	5	20.83	9	37.5
Tingling	10	41.67	14	58.33

Table 11: Complications and baseline electrophysiological parameters

Motor electrophysiological parameters	*Stage*	*Paucibacillary (n = 5)*	*Multibacillary (n = 16)*	*Total*	*p-value*
Latency	Baseline	6.04 (4.9–6.7)	6.63 (5.988–7.68)	6.46 (5.83–7.08)	0.2
	Post-Procedure	2 (1.83–2.58)	2.27 (1.82–4.948)	2.21 (1.83–4.5)	0.741
Velocity	Baseline	65.75 ± 10.95	58.8 ± 14	60.46 ± 13.43	0.325
	Post-Procedure	67.82 ± 13.05	58.81 ± 16.76	61.06 ± 16.09	0.29
Amplitude	Baseline	2.9 (2.7–8.4)	5.75 (2.775–8.65)	5.5 (2.7–8.6)	0.71
	Post-Procedure	5.15 (1.012–8.05)	4 (1.575–9.2)	4 (0.25–8.6)	0.64

Table 12: Complications and baseline electrophysiological parameters

Sensory electrophysiological parameters	*Stage*	*Paucibacillary (n = 5)*	*Multibacillary (n = 15)*	*Total*	*p-value*
Latency	Baseline	6.04 (5.8–7.71)	7.6 (6.04–10)	7.2 (5.822–8.622)	0.407
	Post-procedure	1.8 (1.67–1.88)	1.96 (1.92–2.565)	1.96 (1.768–2.212)	0.059
Velocity	Baseline	66.64 ± 18.59	53.48 ± 16.55	56.77 ± 17.57	0.152
	Post-procedure	70.62 ± 5	64.49 ± 17.26	66.02 ± 15.2	0.504
Amplitude	Baseline	7.8 (0.5–9.8)	6.7 (3.1–8.85)	7.15 (2.45–9.325)	1
	Post-procedure	15.65 (7.337–27.375)	0.64 (0.19–8.4)	6.8 (0.25–9.65)	0.117

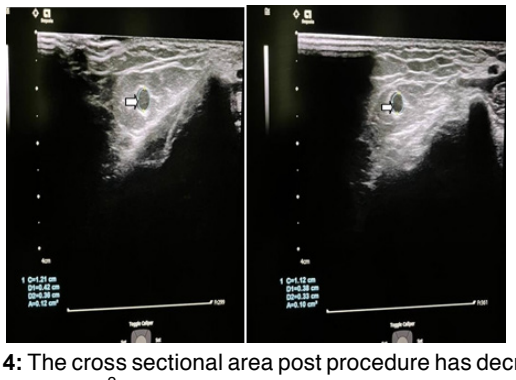

Figure 4: The cross sectional area post procedure has decreased from 12 to 10 mm^2 post procedure therefore improvement (white arrowhead shows ulnar nerve)

indicating no definitive superiority of one group over the other.

Table 9 presents the association between neuropathy types and electrophysiological improvements in motor and sensory parameters. Among motor parameters, individuals with axonal neuropathy showed greater improvements in latency (45.45%), velocity (45.45%), and amplitude (58.33%) compared to those with demyelinating neuropathy (, 25%, and 28.57%, respectively). The *p-value*s indicate statistical significance for latency improvement (p = 0.045), while other motor parameters showed no significant differences.

Table 10 compares the complications between cases and controls. It shows that numbness was reported in 37.5% of cases but only 4.17% of controls. Pain was experienced by 20.83% of cases and 37.5% of controls. The tingling was the most common complication, affecting 41.67% of cases compared to 58.33% of controls. These data highlight notable differences in the frequency of complications between the two groups.

Table 11 presents the comparison of motor electrophysiological parameters (latency, velocity, and amplitude) between the paucibacillary and multibacillary stages at baseline and post-procedure. For latency, both stages showed a reduction after the procedure, with no significant difference between groups either at baseline ($p = 0.2$) or post-procedure ($p = 0.741$). In terms of velocity, both groups exhibited minor changes from baseline to post-procedure, with no significant difference at either stage ($p = 0.325$ at baseline, $p = 0.29$ post-procedure). Amplitude values also showed no significant change between the stages ($p = 0.71$ at baseline, $p = 0.64$ post-procedure). These findings suggest that the procedure did not significantly impact these electrophysiological parameters across both stages of the disease.

Table 12 compares sensory electrophysiological parameters (latency, velocity, and amplitude) between the paucibacillary and multibacillary stages at baseline and post-procedure. For latency, there was no significant difference at baseline ($p = 0.407$), but post- procedure, latency reduced for both groups, with a marginally significant difference between them ($p = 0.059$). Regarding velocity, no significant difference was observed at baseline ($p = 0.152$) or post-procedure ($p = 0.504$). Amplitude values at baseline showed no significant difference (p = 1), while post-procedure amplitude values varied significantly between groups, but the overall difference was not statistically significant ($p = 0.117$). These findings suggest that while there were changes in sensory electrophysiological parameters, they were not significant across the stages or in response to the procedure, with the exception of latency.

DISCUSSION

In our study, the mean age of patients was 32.96 ± 9.92 years. Similarly, other studies on leprosy patients reported varying mean ages: 41.9 years in the study by Anandan V *et al.*[6], 44.83 years in the study by Anjayani S *et al.*[8], 34.1 ± 15.72 years in Brahmanti H *et al.*[9], and 49.5 ± 8.9 years in Saha S *et al.*[10]

In our study, 95.83% of patients were male, with only one female patient. Other studies also reported a male predominance, with 66% male patients in Anandan V *et al.*[6], 33.33% in Anjayani S *et al.*[8], 56.48% in Saha S *et al.*[10], 80% in Brahmanti H *et al.*[9], and 78% in Kavya SK *et al.*[11]

In our study, 45.83% of patients were classified as new and the same percentage as old, with 8.33% identified as relieved from treatment. Comparatively, Brahmanti H *et al.*[9] found 50% of patients on MDT-ROM (multi-drug treatment) and 50% released from treatment. In Pepito VCF *et al.*[12]

In our study, 25% of cases were paucibacillary, while 75% were multibacillary. In Saha S *et al.*[10], 61.1% had multibacillary leprosy, while in Shravani B *et al.*[13], 94% had multibacillary and 6% had paucibacillary.

In our study, 66.67% of cases showed no reaction, while 33.33% exhibited type 2 lepra reactions. In Shravani B *et al.*[13], 46% of patients had lepra reactions, with type 1 in 18% and type 2 in 26%. Raghavendra BN *et al*. reported that 24% of patients had reactions, including 14% with erythema nodosum leprosum (ENL).

In our study, 70.83% of patients presented with anesthesia, 16.67% had claw hands, 8.33% had ulcers, and 4.17% had motor weakness. Shravani B *et al.*[13] reported 28% of patients with grade 1 disability and 32% with grade 2, with 20% having trophic ulcers and 14% with claw hands.`

We used the monofilament test to assess sensory loss before and after PRP treatment. In comparison to Brahmanti *et al.*[9], who used a single monofilament (5.07/10g), we employed multiple sets based on patient thresholds, leading to higher baseline values. Despite this, median values in our study were comparable to Brahmanti *et al.*[9], both in cases (2.00 ± 8.25 *vs* 2[2-2.5]) and controls (3.5[2-4] *vs* 1.50 ± 5.50). The higher median values in our study may be due to the later presentation of patients with advanced sensory loss. The change in post-procedure SWM values was similar between the two studies for cases (1[–0.5- 2] vs 1.30 ± 1.42), though it differed for controls due to multivitamin use in Brahmanti's control group.[9]

We assessed motor parameters, including latency, amplitude, and velocity, which differed from Brahmanti *et al.*[9] The differences could be due to variations in patient selection, disease severity, and intervention protocols between the two studies.

Motor parameters, including latency, amplitude, and nerve conduction velocity, were assessed in both the treatment and control groups. In comparison to Bramhanti *et al.*[9], our study showed differing baseline motor parameters. This discrepancy could be attributed to the delayed presentation of patients in low socioeconomic regions such as India, where early-stage treatment for nerve impairment is often lacking. Additionally, sociogeographical factors may play a role in these variations.

Our study's baseline motor values were, however, similar to the normal values reported by Misra UK,[14] indicating a regional consistency. The sensory parameters

also showed a similar trend when compared to previous studies, with baseline values aligning closely with those reported by Misra UK[14] and the study on leprosy patients by Kar S *et al*.[15]

When comparing post-procedure outcomes, latency remained consistent in both cases and controls, whereas amplitude demonstrated significant differences between the studies. In our study, nerve conduction velocity was lower than the normal values, and further analysis showed a lack of statistically significant improvement post-procedure in both the motor and sensory parameters.

Brahmanti *et al*.[9] reported improvement in motor and sensory parameters following treatment, whereas our study demonstrated a deterioration in motor parameters on the treatment side, as shown by increased latency and decreased amplitude and velocity. These findings suggest that perineural PRP did not yield significant benefits in our study, and further research with larger sample sizes is required to draw definitive conclusions regarding its efficacy. The ulnar nerve's cross-sectional area was also examined using ultrasonography. Although there was an increase in the area post-procedure in our study, the change was not statistically significant, further highlighting the need for additional research to establish the role of perineural PRP in nerve regeneration.

CONCLUSION

In conclusion, the study found no significant differences between cases and controls regarding sensory and motor electrophysiological parameters, both at baseline and after the procedure. While cases showed a higher rate of deterioration in sensory function compared to controls, the changes in monofilament, latency, velocity, and amplitude were not statistically significant. Additionally, although there was a significant reduction in the ultrasonographic area of the ulnar nerve post-procedure, the overall change and percentage change did not reach statistical significance. These findings suggest that the procedure had minimal impact on nerve function as measured by the assessed parameters, indicating the need for further research to better understand its clinical relevance.

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