

# Quality of Life and Productivity Loss Costs of Nerve Block with Deeply Inserted Acupotomy Versus Nerve Block Alone in Lumbosacral Radiculopathy

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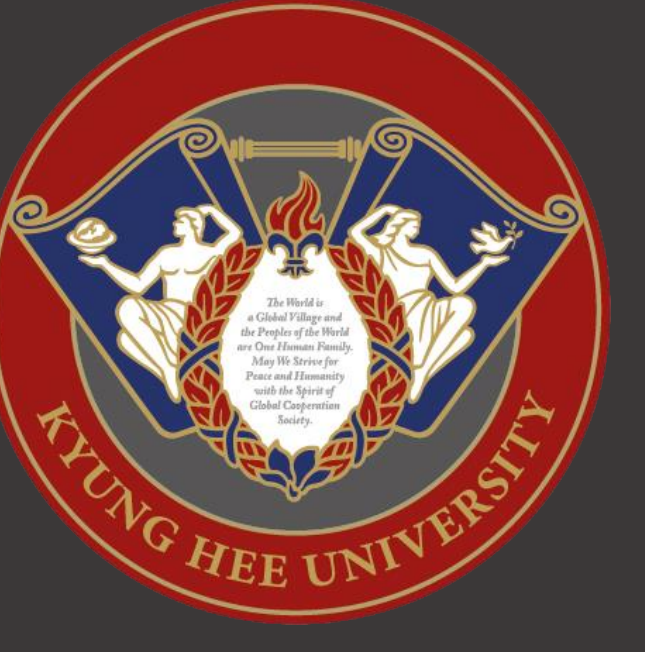
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## Background

- Lumbosacral Radiculopathy (LR)** is a disorder caused by compression of nerve roots in the lumbar spine, presenting with low back pain and radiating leg pain.
- Nerve block therapy (NBT)** is widely used as a non-surgical treatment for symptom management. **Acupotomy**, a modern therapeutic intervention combining traditional acupuncture and minor surgical techniques, has recently gained clinical attention in Korea as a potential alternative treatment option.
- Objectives:** This study aimed to compare quality of life and productivity loss costs between nerve block combined with deeply inserted acupotomy and nerve block alone patients with Lumbosacral Radiculopathy (LR).

## Methods

**Study design:** Two-arm randomized controlled trial

### Study population

- Treatment period:** 4-week treatment; Follow-up at 4, 12, 52 weeks post-treatment
- Treatment arm**
  - (1) Acupotomy + Nerve block therapy**  
: Acupotomy twice weekly for 4 weeks, total 8 sessions;  
Nerve block once every 2 weeks, total 2 sessions
  - (2) Nerve block therapy only**  
: Nerve block once every 2 weeks, total 2 sessions
- Inclusion criteria**
  - Adult patients with symptoms related to lumbosacral radiculopathy
  - Numeric Rating Scale (NRS) pain score over 5
- Exclusion criteria**
  - History of spinal surgery related to lumbosacral region
  - History of spinal surgery within 6 months prior to study participation

**Outcomes:** Health-related quality of Life and Productivity loss cost

- Health-related quality of Life:** at baseline, week 2, 4, 8, 16, 56
  - Validated Korean version of the EQ-5D-5L
  - Mobility, self-care, usual activity, pain/disability, anxiety/depression
- Productivity loss cost:** at baseline, week 2, 4, 8, 16
  - Validated Korean version of iMTA Productivity Cost Questionnaire (iPCQ)
  - Category: Absenteeism, Presenteeism, unpaid work

### Statistical analysis

- The primary analysis was conducted using Full Analysis Set (FAS), which included all randomized clinical trial participants.
- Missing utility outcomes were imputed using the Last Observation Carried Forward (LOCF) method.
- Differences in continuous variables among groups were assessed using analysis of covariance and t-test.
- All statistical analyses were conducted using SAS version 9.4(SAS Institute Inc., Cary, NC, USA).

## Results

### Baseline characteristics

- A total of 114 patients with LR were included, with a mean age of 61.3 years(SD=13.7).
- No statistically significant differences were observed between the two groups for all variables except sex and education level.

Table 1. Baseline characteristics

	Acupotomy+ NBT (n=57)	NBT (n=57)	p-value
<b>Sex, N(%)</b>			
Male	28(49.1)	15(26.3)	0.0120
Female	29(50.9)	42(73.7)	
<b>Age, mean(SD)</b>	61.0(13.7)	61.6(13.8)	0.7963
<b>Height, mean(SD)</b>	162.6(8.4)	160.2(7.6)	0.1124
<b>Weight, mean(SD)</b>	66.6(10.5)	65.2(10.4)	0.4671
<b>Education level, N(%)</b>			0.0124
Elementary school	12(21.05)	12(21.05)	
Middle school	14(24.56)	2(3.51)	
High school	15(26.32)	25(43.86)	
Junior college	8(14.04)	7(12.28)	
University	7(12.28)	7(12.28)	
Graduate school	0(0)	3(5.26)	
Other	1(1.75)	1(1.75)	

Abbreviations: NBT, nerve block therapy; SD, standard deviation

### EQ-5D-5L

- Baseline EQ-5D-5L mean scores did not differ significantly between the acupotomy combination group and the nerve block alone group ( $p=0.6413$ ).
- Significant differences between two groups were observed in the change of utility value from baseline at all time points except week 56.

Table 2. Change of utility value outcome from baseline by visit

	Acupotomy + NBT (n=57)	NBT (n=57)	p-value
<b>V1(Baseline)</b>	0.546	0.558	0.6413
<b>(Week 2 - V1)</b>	0.172	0.074	<b>0.0019</b>
<b>(Week 4 - V1)</b>	0.214	0.115	<b>0.0007</b>
<b>(Week 8 - V1)</b>	0.231	0.113	<b>0.0005</b>
<b>(Week 16 - V1)</b>	0.235	0.156	<b>0.0088</b>
<b>(Week 56 - V1)</b>	0.226	0.175	0.0844

Note: Week 4 = end of treatment; Week 8, 16, 56 = 4, 12, 52-week post-treatment follow-up

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### Productivity Loss Cost

- Total productivity loss costs associated with LR were significantly lower in the acupotomy combination group (USD 1150.54) compared with the nerve block alone group (USD 3070.27;  $p<0.001$ ).



	V1(Baseline)	Week 2	Week 4	Week 8	Week 16	Total(\$)
<b>Acupotomy + NBT</b>	612.96	188.28	189.40	386.43	386.43	1150.54
<b>NBT</b>	533.43	418.01	292.07	1180.09	1180.09	3070.27
<b>P-value</b>	0.5401	0.0014	<0.0001	0.0004	0.0004	0.0005

Figure 1. Productivity loss cost outcome by visit

## Discussion

### Summary

- Combination therapy improved EQ-5D utility scores and reduced productivity loss costs compared with nerve block therapy alone.

### Limitation

- Analysis and follow-up period of clinical studies were generally shorter than time horizon required for economic evaluation due to limitations in time and cost.

### Study implications

- These findings provide preliminary evidence that combination therapy may offer patient-centered and socioeconomic benefits.
- Further multicenter studies with larger sample sizes are warranted to confirm clinical and economic value of the intervention.

## Conclusions

- The combination of nerve block and deeply inserted acupotomy therapy was associated with greater improvements in quality of life and lower productivity loss costs, highlighting its potential value in the comprehensive management of LR.

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