

Peripheral Neuropathy in Long-COVID Patients: Demographic Distribution and Comorbid Risk Factors

Jason Li¹, Camden Bohn¹, Noah Todd¹, Jessica Pater PhD², Jeanne Carroll RN², Brian Henriksen PhD¹, Fen-Lei Chang MD PhD^{1,2}
 1. Indiana University School of Medicine, Fort Wayne, Indiana, 2. Parkview Research Center, Fort Wayne, Indiana

Background

- “long-COVID” syndrome: persisting symptoms four-weeks after COVID infection¹.
- Neurologic and psychiatric symptoms within 6 months after COVID infection: 33.6%².
- Peripheral neuropathy is a concerning symptom stemming from the peripheral nervous system, and is present in 2.9% of COVID patients².
- Peripheral neuropathy can present with sensory and motor symptoms like tingling and loss of balance.
- There is a lack of data on the demographic and medical risk factors of COVID peripheral neuropathy.

Objectives

1. Investigate the demographic distribution of long-COVID peripheral neuropathy and compare it with existing data on current literature.
2. Examine the relationship long-COVID neuropathy has with patient demographics, hospitalization status due to COVID infection, and medical comorbidities.

Materials & Methods

A retrospective chart review was done on patients of the Parkview Health Post-COVID Clinic (PCC) between March 2021 and September 2022.

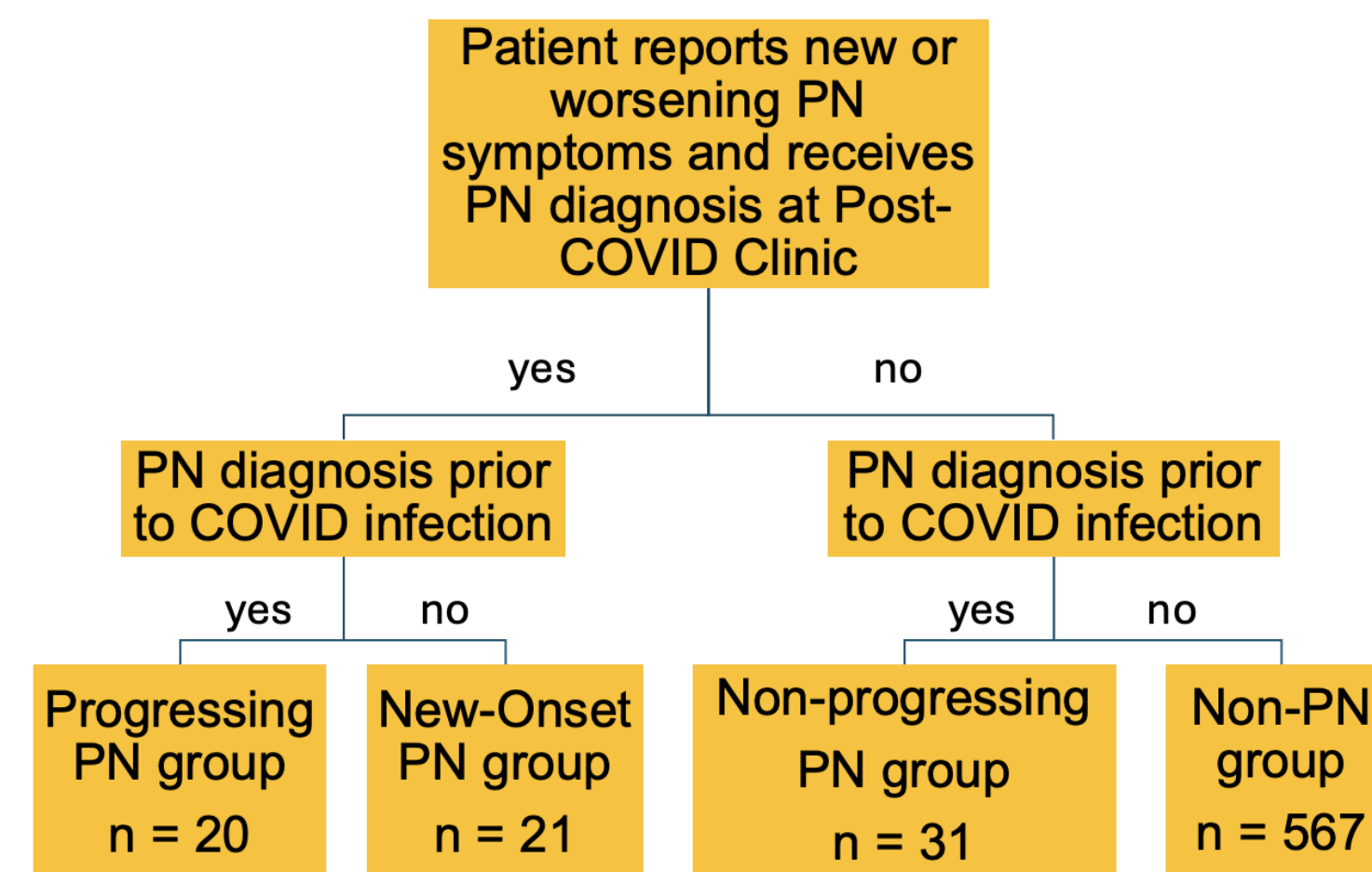
Inclusion criteria: age 18+, positive COVID test or diagnosis, and symptoms at least 4 weeks after COVID onset.

Data collected: patients’ demographics, basic health information, past medical history, current medications, reported symptoms during PCC visit, and diagnoses from PCC neurologists or nurse practitioners

Data analysis: age and BMI were compared using a two-sampled t tests. Other information and comorbidities were compared using chi-square test. SPSS 28.0.1.1 was used.

Results

Participants (n = 639) are assigned into 1 of 4 groups:



Comparison of new-onset neuropathy group (n = 21) and non-neuropathy group (n = 567):

Characteristic	New-onset Neuropathy	Non-Neuropathy	p value
Age (mean±SD)	55.5 ± 13.2	50.3 ± 14.0	p = 0.047*
Male (n)	47.6% (10)	26.1% (148)	p = 0.029*
Hospitalization (n)	47.6% (10)	22.4% (127)	p = 0.007*

BMI, COVID vaccination and hospitalization status, diabetes and other comorbidities: no statistically significant difference.

Comparison of progressing neuropathy group (n = 20) and non-neuropathy group (n = 567):

Characteristic	Progressing Neuropathy	Non-Neuropathy	p value
Age (mean±SD)	65.5 ± 9.1	50.3 ± 14.0	p < 0.001*
Diabetes (n)	35.0% (7)	15.0% (85)	p = 0.016*
Active Diabetes medications (n)	30.0% (6)	14.1% (80)	p = 0.048*
Hypertension (n)	70.0% (14)	34.3% (194)	p = 0.001*

Discussions

- This is one of the first studies evaluating risk factors in new-onset and progressing COVID neuropathy.
- The incidence of neuropathy in this study (3.29%) is higher than of non-COVID neuropathy in the literature (0.8%)³, suggesting COVID infection is correlated with increased neuropathy incidence.
- Compared to COVID patients without neuropathy, COVID patients with new neuropathy are of older age, more males, and higher COVID hospitalization.
- Patients with progressing neuropathy have older age, and higher rates of hypertension, diabetes, and orthostatic hypotension than non-neuropathy; also older age than progressing neuropathy patients.

Implications and Future Directions

- Understanding the risk factors provides opportunities for better knowledge on etiology, prevention strategies, and management options for long-COVID neuropathy.
- The study prompts more clinical attention of neuropathic symptoms in patients with risk factors after COVID infection and encourage management of chronic comorbidities to lower chance of developing neuropathy.
- Ideas for future studies include objective assessments to evaluate for neuropathy subtypes and severity.

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