# Neuromuscular Disease and EMG

## P.101

### A-waves on electrodiagnostic studies in axonal and demyelinating cases of Guillain-Barré Syndrome (GBS)

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Background: A-waves are lesser-known late responses of debated clinical significance, seen in routine motor nerve conduction studies (NCS). They are proposed to be a sensitive marker of demyelination and an early finding in acute demyelinating polyradiculoneuropathy (AIDP). We hypothesized that the presence and distribution of A-waves are discriminative markers in differentiating AIDP from axonal variants of Guillain-Barré Syndrome (GBS). Methods: We identified patients diagnosed with demyelinating and axonal forms of GBS at the Montreal Neurological Institute between 2016 and 2021. Clinical and electrophysiological data including raw NCS responses were retrospectively reviewed for 28 AIDP and 9 axonal GBS cases. Results: 20 of 28 AIDP cases had at least one A-wave in non-tibial nerves compared to 2 of 9 axonal cases. Among patients with NCS available within 2 weeks of symptom onset, 13 of 14 AIDP cases had non-tibial A-waves, compared to 0 of 6 axonal cases. Eight of 14 AIDP cases had one or more nerves with multiple A-waves within 2 weeks, compared to 0 of 6 axonal cases. Conclusions: In patients with GBS, the presence of A-waves in non-tibial nerves and of nerves with multiple A-waves are early indicators of the demyelinating variant. Early identification of GBS subtype is valuable for prognostication.

## P.102

### Role of interdigital sensory nerve conduction study as a noninvasive approach for early diagnosis of diabetic peripheral neuropathy

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Background: Diabetes mellitus is a common cause of polyneuropathy. Despite numerous diagnostic tools such as routine electrophysiologic procedures, its early detection is challenging. This study compares a distal electrodiagnostic technique, with conventional approaches to investigate its role in confirming early polyneuropathy. Methods: Thirty-one symptomatic diabetic outpatients and 23 asymptomatic nondiabetic subjects were included in our study. We performed nerve conduction studies on the dorsal sural, medial plantar, and digital branches of the interdigital nerves to toes I, II, and III (as a new antidromic technique). All techniques were applied with the surface stimulator and pick-up electrodes. Results: Only 9 (29%) of patients had impaired routine NCSs. Interestingly, the results of interdigital nerve studies were abnormal in 17 out of 22 patients with normal routine NCSs. Also, 11 and 13 subjects had impaired medial plantar and dorsal sural nerves conduction studies, respectively. According to this method, the prevalence of detectable diabetic neuropathy increased from 46% to 83%. Conclusions: The digital sensory branches can be easily evaluated with the new antidromic SNAP technique for the early diagnosis of diabetic polyneuropathy, especially in presymptomatic and subclinical neuropathies. This method is simple, non-invasive, sensitive, and reproducible. There is no need for needle electrodes or averaging techniques.

# Other Adult Neurology

## P.104

### Beyond the hippocampus and the SVZ: adult neurogenesis throughout the brain

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Background: Adult neurogenesis occurs in the hippocampus and the subventricular zone. Recent evidence suggests that neurogenesis may also extend to other brain regions (hypothalamus, striatum, substantia nigra, cortex, and amygdala). Harnessing this intrinsic neurogenic potential may present a novel alternative for the replenishment of neurons lost in neurologic conditions. Methods: This descriptive review summarizes evidence supporting the classic and novel neurogenic zones present within the mammalian brain, discusses the functional significance of these new neurons, and the potential clinical applications of promoting intrinsic neurogenesis. Results: Some studies suggest new neurons originate from endogenous stem cell pools located within novel neurogenic regions while others show the migration from the subventricular zone to these regions. Regardless, adult neurogenesis is impacted by neurologic processes such as ischemia and neurodegenerative diseases and can be modulated by factors including neurotrophins, pharmacologic interventions, environmental exposures, exercise, and stem cell therapy. Conclusions: The discovery of functionally significant neurogenesis in adult brain regions has implications not only with regards to the function of these regions, but also for neuropathological conditions that affect them. Pharmacologic and stem cell-based strategies capable of promoting neurogenesis may have therapeutic potential following stroke or in the context of various neurodegenerative disorders.

# Multi-Society Dementia and Cognitive Disorders

## P.105

### Using mobile electroencephalography for rapid detection of mild cognitive impairment

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Background: Mild cognitive impairment (MCI) is a concern for our aging population as it can be a pre-cursor to dementia. However, the diagnosis of MCI can be quite problematic and can