

# Through the Skin, To the Nerves: Subcutaneous Immunoglobulin for Neuromuscular Diseases

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In this issue of the Canadian Journal of Neurological Sciences, Suleman et al. describe a multi-disciplinary approach to subcutaneous immunoglobulin (SCIG) administration in patients with immune neurological conditions in the article “Evaluation of a Personalized Subcutaneous Immunoglobulin Treatment Program for a Neurological Patients”.<sup>1</sup> In their study, a nurse-led program transitioned patients receiving 10% intravenous immunoglobulin (IVIG) to 20% SCIG using a conversion of 1:1.2 (IVIG:SCIG), with a 79% retention rate at 12 months, no serious adverse events and only one minor cutaneous dermatological adverse event reported. In their study, which included patients with chronic inflammatory demyelinating polyneuropathy (CIDP), multifocal motor neuropathy (MMN), myasthenia gravis (MG) or Lambert Eaton Myasthenic Syndrome, four patients (three with MMN) were not able to complete the 12 months of SCIG treatment and required either supplemental IVIG infusions or a transition back to IVIG treatment.

This study follows other case series describing patients with CIDP and MMN<sup>2-5</sup> and a study on MG<sup>6</sup> from the same group, who have been successfully able to do transition of most patients with these neurological conditions using a conversion factor ranging from 1:1 to 1:1.53. A recent double-blind, randomized controlled trial in CIDP known as the PATH study published in January of this year also confirmed a favorable adverse event profile and maintenance of efficacy in patients receiving SCIG equivalent treatment at a dose equivalent to 0.9 or 1.6 times an IVIG dose of 1 g/kg every 3 weeks, previously established via double-blinded randomized controlled trial of IVIG in CIDP.<sup>7</sup> The PATH study has now led to approval of a 20% formulation of SCIG for use in CIDP in Canada, the United States and Europe and is being used more frequently as a treatment option in treating this chronic immune neuromuscular condition among others. Although most studies using SCIG for treatment of neurological conditions have used a sequential transition from IVIG to subcutaneous administration, a short-term study in MG has suggested that immunoglobulin levels can build up over a 6-week period and similarly result in gradual improvement in strength.<sup>8</sup>

Subcutaneous immunoglobulin offers a number of advantages over IVIG. Systemic adverse events including malaise, fever and headache are very infrequent with SCIG, which can particularly help those who find themselves struggling around the time of IVIG with these symptoms. Flexibility in administration is another advantage as SCIG can be self-administered at home usually once or twice a week as opposed to monthly hospital visits required for IVIG as home-IVIG is not available in Canada at this time. Difficulty with venous access for patients with chronic neuromuscular conditions requiring frequent intravenous treatment can also be a potentially limiting factor which SCIG can bypass. Although many

patients with chronic neuromuscular disorders have challenges with strength, sensation and dexterity, most patients will be able to perform the physical requirements of subcutaneous infusion either on their own or with assistance from a caretaker or family member. From a Canadian health systems perspective, switching from IVIG to SCIG in patients requiring chronic treatment frees up valuable space and time in hospital infusion centers where intravenous blood products are usually administered.

It remains to be seen how this newly available treatment will fit in the treatment algorithm of patients with chronic immune neurological conditions. Most studies including the one presented in this issue of the journal indicate that a proportion of patients will not be able to maintain stability on SCIG and require intermittent IVIG treatment or an outright switch back to intravenous immunoglobulin treatment. Although most patients can tolerate the expected, mild, transient skin reactions that usually occur in patients receiving SCIG, some patients may experience more serious local reactions which may limit long-term tolerability and retention. Although some studies including Suleman et al have evaluated patients over at least 12 months, many other studies to date present short-term outcomes. Evaluation of trial patients through open-label extensions or post-marketing surveillance in patients starting SCIG outside a clinical trial will be of key importance going forward in order to capture the long-term viability of SCIG as a treatment in neurological disease. Finally, although the current evidence provides a range of SCIG doses that appear to be tolerated and efficacious in patients with neuromuscular diseases, the ideal dosing and duration of treatment in each neuromuscular disease from a clinical and pharmacoeconomic perspective also remains unknown and a recommended area for future research.

## DISCLOSURES

The author does not have anything to disclose.

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