Multidisciplinary Research Program in Medicine Project*: Understanding Breakthrough Neuropathic Pain*

Hypothesis or Research Question(s): The purpose of this project is to pilot a novel data collection strategy called Ecological Momentary. Assessment (EMA) to understand the epidemiology of breakthrough neuropathic pain. EMA incorporates a smartphone app to prompt participants to answer questions about their neuropathic pain. We hypothesize that EMA will be a feasible way to better understand the experience of neuropathic pain and that breakthrough episodes will be highly prevalent.

PROJECT BACKGROUND & SUMMARY

Peripheral neuropathy (PN) can affect up to 7% of older adults. The most debilitating symptom of PN is neuropathic pain. People with neuropathic pain experience burning, stabbing and aching in their hands and feet, making it difficult to walk, sleep or sit comfortably. Neuropathic pain is extremely difficult to treat. Even with medications to reduce symptoms, patients are likely to experience "breakthroughs", leading to frequent healthcare visits. Breakthroughs are also commonly treated with medications that have harmful consequences (such as opioids). Our knowledge of breakthrough pain is very limited and there are currently no evidence-based tools to manage breakthroughs for individuals living with PN and neuropathic pain. Our project will be the first study of breakthrough neuropathic pain in patients with PN. The objective of our project is to determine the characteristics of breakthroughs and the subsequent effect of these episodes on quality of life and healthcare resource use. At the conclusion of our study, we will have gained critical information about the impact of breakthrough neuropathic pain on patients and health resources. This knowledge will then allow our team and others to develop strategies to prevent neuropathic pain breakthroughs and to reduce the need for interactions with the healthcare system.

This project is cross-disciplinary. It combines the expertise and resources of a clinician-scientist in neuromuscular diseases and an internationally renowned pain neuroscientist. The project will be supervised by an experienced post-doctoral fellow with expertise in pain neuroscience. The most exciting aspect of this project is its use of a smartphone app to understand the experience of individuals with neuropathic pain in a real-world setting, in real-time. This technique is called Ecological Momentary Assessment (EMA), which allows for data acquisition in a participants' community environment. Participants with PN and neuropathic pain will be recruited through Dr. Berger's outpatient clinics. Recruited participants will be provided with a smartphone app to answer daily questions about their neuropathic pain over two months. We will analyze the frequency, severity and triggers for neuropathic pain breakthrough episodes. We will also examine how breakthrough episodes affect healthcare resources, by determining strategies for managing these episodes (e.g., ER visits, medications used etc.). At the end of this project, we will have accumulated valuable information about the epidemiology of neuropathic pain breakthrough episodes. This information will be used to design strategies to prevent and safely manage breakthrough episodes. We will also have demonstrated that EMA is an effective and feasible way to better understand neuropathic pain.

BENEFIT TO THE STUDENTS

The successful student(s) will gain valuable clinical research experience. They will participate in a project that is translational and cross-disciplinary. A low-cost, non-invasive technique, easy-to-understand technique (EMA) will be used to gain information both about the pathology of neuropathic pain and the impact of neuropathic pain on quality of life and healthcare resources. Accordingly, the student(s) will gain clinical research experience covering the translational spectrum.

The student will also be supported in both the clinical and research spheres, through the cross-disciplinary collaboration of both co-supervisors. The student(s) will also be well supported through mentorship from an experienced post-doctoral fellow.

The student(s) will be responsible for drafting a clinical research ethics protocol, consenting participants, and capturing and analyzing the data. The student will also be expected to participate in manuscript generation and submission, although it is anticipated that knowledge translation activities will occur beyond the funding window. We anticipate that the student(s) will continue to sporadically participate in knowledge translation activities over the course of one year (20-40 hours).