NIHR GOSH BRC Vacation Studentship

PROGRESS FORM – VACATION STUDENT 2018

Student's name:	Duagi Denis
Primary Supervisors:	Madeleine Verriotis /Suellen Walker
Project title(s):	Characterisation of Neuropathic Pain in Children

Summary

What are you trying to do in this studentship?

My project comprises of a preliminary data analysis for a larger project that utilises a multimodal approach, including questionnaires, Quantitative Sensory Testing, and brain imaging (MRI & fMRI), to characterise the symptoms, signs, and underlying mechanisms associated with neuropathic pain in children. The overall aim of the study is to improve diagnosis and understanding of neuropathic pain in children.

As part of my project I have assessed whether a questionnaire used in adults to identify neuropathic pain can also be used in children and developed a better outcome tool to screen for neuropathic pain in children. I have also assessed the impact of chronic pain of neuropathic pain on quality of life, mood and function by looking at Patient-and-Parent Reported Outcomes assessment tools and comparing to healthy controls and children with other types of chronic pain. Furthermore, I have looked at word descriptors commonly used in adult studies and determined which word descriptors are chosen more frequently by children with neuropathic and non-neuropathic pain and whether they refer to sensory or affective aspects of their pain and compared with previous studies.

I had also accessed data from Quantitative Sensory Testing and generated various sensory profiles and developed a method to classify the children with neuropathic pain according to mechanism-related sensory profiles established in adults. This can help identify different patterns of sensory changes associated with neuropathic pain. As part of a larger project I had access to functional and structural MRI data which enabled me to learn about changes in brain regions involved in pain signalling in children with neuropathic pain.

Why is this research important?

Neuropathic pain can be difficult to treat and can have a significant negative impact on the quality of life of the child and family. However, it is not well-documented in children and there is urgent need to increase the understanding of this condition in children. Currently, diagnosis, assessment and treatment of neuropathic pain in children is based on methods derived from adult studies. These methods may not work as effectively in children because the underlying disease states, presentation and prevalence of neuropathic pain are different from the ones encountered in adults and studies have identified age-dependent changes in pain processing in the developing brain.

This project will improve diagnosis of neuropathic pain by assessing the clinical utility of a screening tool for neuropathic pain in children. So far, no screening tool for neuropathic pain has been validated for use in children. It is important to recognise neuropathic pain early as management and prognosis differ from other types of chronic pain. A good screening tool will help paediatricians and other doctors to recognise neuropathic pain and start appropriate treatment or know whether to refer children to a chronic pain service. The project will also explore what sensory changes are associated with neuropathic pain in children. This is indicative of which nerve fibers function differently and can provide a more comprehensive characterization of symptoms and signs associated with neuropathic pain in children.

Value of Your Experience

As part of my vacation studentship, I have gained a deeper understanding of neuropathic pain conditions, as well as experience with different research techniques that can be used in a clinical context. This is extremely valuable to me as my current undergraduate degree is more focused on molecular and cellular aspects of brain function and a good understanding of the clinical context will not only aid me to further understand and deepen my knowledge about pain signalling that I have gained during my degree but also help to pursue a postgraduate degree in clinical neurosciences. Apart from the research experience I have also gained several other skills such as using statistical software (SPSS) and I was also given the opportunity to present my independent research to the Paediatric Pain Research Group. Furthermore, as part of my studentship, I have attended seminars and other training opportunities relating to clinical and laboratory research conducted by research teams at ICH as well as across all UCL. This provided me with invaluable insight into the latest research in neuroscience and will definitely aid me in pursuing future projects at UCL.