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Functional near infrared spectroscopy (fNIRS) to identify pain in children

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Pain occurs in children after surgery or with certain diseases and conditions. Many children cannot communicate pain because they are too young or neurologically impaired. Based upon functional magnetic resonance imaging (fMRI), the prefrontal cortex plays an important role in pain perception; the fMRI BOLD signal in this area correlates with painful stimuli in healthy adults. Functional near infrared spectroscopy (fNIRS) is a non-invasive, portable, optical technology that measures changes in oxy-, deoxy- and total hemoglobin (HbO_2, Hb, HbT) in the frontal cortex. Our prior study found that fNIRS detected frontal cortex HbO_2 and HbT changes analogous to fMRI BOLD changes to painful stimuli in adolescents under anesthesia. In this study, we evaluated fNIRS to detect painful stimuli in young children under anesthesia and in adolescents with chronic pain. Our goal is to develop a non-invasive device to objectively measure pain to improve pediatric pain management.

Biography

Yifei Jiang received her MD and PhD. in Anesthesiology from Wenzhou Medical University and postdoctoral training at Cincinnati Children's Hosptial. Her research focused on anesthetic neurotoxicity and fNIRS to detect and predict pain in children

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Page 68