Abstract:

Objective: To evaluate the pattern of cortical activation during a painful procedure, such as a venipuncture, in children with intellectual disability and compare it with that of cognitively healthy children.

Study design and setting: A cohort study was conducted and cortical activation was assessed by multichannel cerebral near-infrared spectroscopy to monitor variations in oxyhaemoglobin and deoxyhaemoglobin (Hbb) in children with and without intellectual disability during a venipuncture for blood sampling with topical anaesthesia. Pain and distress were assessed as well using different validated pain scales (visual analogue scale and Non-Communicating Children’s Pain Checklist-Postoperative Version for children with intellectual disability), and compared between groups.

Participants: 16 children with severe to profound intellectual disability and 20 cognitively healthy peers (age range: 4-17 years).

Results: When Hbb was analysed, children with intellectual disability exhibited a bilateral activation of the somatosensory (p<0.006) and right motor cortex (p=0.0045), whereas cognitively healthy peers never showed a cortical activation. Children with intellectual disability also showed more pain than controls (p=0.001).

Conclusions: When subjected to a painful procedure, only children with intellectual disability show an activation of the cerebral cortex, even if topical anaesthesia is applied, and express more pain than cognitively healthy peers. The role of other issues in painful procedures, such as anxiety, fear or physical restraint, deserves further investigation.

Reference: