SPLANCHNECTOMY IMPROVES GASTRIC EMPTYING IN A RAT MODEL OF CEREBRAL PALSY AND FOREGUT DYSMOTILITY

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Aim of the study: To assess the effect of splanchnectomy on gastric emptying time in a previously described rodent model of cerebral palsy (CP) and foregut dysmotility compared to shams.

Methods: Ethical approval was obtained in accordance with the Animals (Scientific Procedures) Act 1986 (PPL 60/4262). Neonatal Sprague-Dawley rat pups, postnatal day 5-6, underwent midline craniotomies to allow bilateral brain injections in the medial prefrontal cortex (MPFC) of either ibotenic acid (IBA) i.e. our CP model or normal saline i.e. shams. Gastric emptying studies were then performed between day 14 and 20. Gastric emptying time (GET) was recorded by gavaging 0.2-0.5mls of water soluble contrast and performing time lapsed x-rays. On day 21 a midline laparotomy and splanchnectomy was performed with bipolar diathermy. GET was measured again between days 35 to 42. The pups were euthanized by means of transcardially perfusing with fixative under terminal anaesthesia. Statistical analysis was conducted to compare the GET of the two group’s pre and post splanchnectomy by means of a Mann-Whitney U test using Graph Pad Prism.

Main results: 26 rat pups were injected (14 female and 12 male). 13 pups underwent IBA injection and 13 sham injections. One pup died post brain injection from postoperative apnoea, the remainder progressed to splanchnectomy. Two pups, one from each group, died post laparotomy from intraoperative bleeding. The median GET was significantly longer in the CP model 58 minutes compared to 45 minutes (p=0.0024). Splanchnectomy reduced the GET in the CP group to 40.5 minutes (p<0.0001) as shown in the graph below.

Conclusion: Splanchnectomy can reverse the delay in GET we have shown previously in our rodent model of CP and dysmotility. Further work is needed to explore the mechanistic pathways behind this and may help develop new treatments for this challenging group of patients.