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INTRAOPERATIVE ABOBOTULINUMTOXINA ALLEVIATES PAIN AFTER SURGERY AND IMPROVES GENERAL WELLNESS IN A TRANSLATIONAL ANIMAL MODEL

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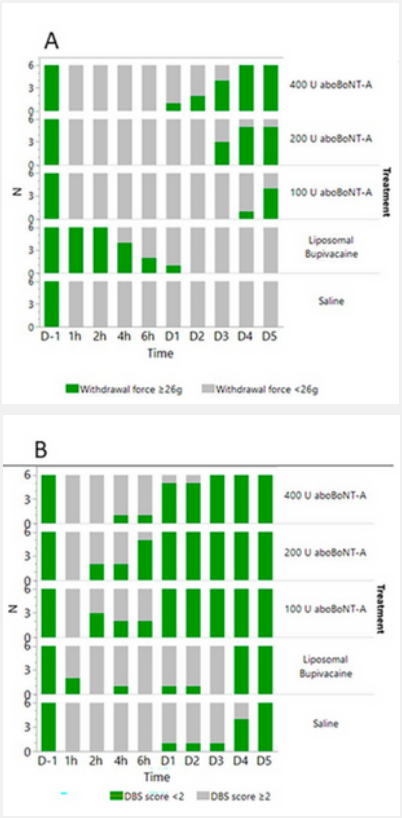
RESULTS



Effects of aboBoNT-A, saline, and liposomal bupivacaine on mechanical sensitivity/withdrawal force (A) and DBS (B). AboBoNT-A provided prolonged relief of evoked and non-evoked pain, as well as pain-associated anxiety and depression-like reactivity in a post-surgical pig model.

OBJECTIVES

Pain after surgery remains a significant healthcare challenge as a significant number of patients continue to suffer from moderate to severe pain, some for a prolonged period. The management of post-surgical pain still relies heavily on opioid drugs, despite associated acute side effects, slower healing, and the risk of addiction. Botulinum toxins (BoNTs), produced by Clostridium botulinum, have been used in therapeutic applications for muscle hyperactivity disorders and recently approved for chronic migraine.

PRECLINICAL MODEL

Postoperative Pain Pig Model: full-skin-muscle incision and retraction surgery on the lower back was followed by intradermal injections of the treatment. Pain was assessed using mechanical sensitivity, distress behaviors, latency to approach the investigator, and wound inflammation/healing for 5–6 days post-surgery. Immunohistochemical analyses was also conducted.

CONCLUSIONS

Preclinical data demonstrated that abobotulinumtoxinA (aboBoNT-A, DYSPORT) provides effective analgesia in a post-surgical pain model in pigs. Intradermal aboBoNT-A injections led to a full reversal of mechanical allodynia from Day 3, along with reduced distress and normalized approach responses from 6 hours post-surgery. Bupivacaine provided only transient relief for 24 hours without affecting distress behaviors. Immunohistochemical analyses revealed aboBoNT-A activity in the spinal cord, with reductions in glial and microglial markers, suggesting its analgesic effects are mediated through spinal neurons and glial modulation.

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