Developing a Non-Surgical Mouse Model of Neuropathic Bladder

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Introduction

- Accurately diagnosing urinary tract infections (UTI) is difficult in children with neuropathic bladder is difficult.
- Mouse studies could help identify improved methods to diagnose UTI.
- Spinal cord injury model is technically difficult and results in inconsistent phenotypes.
- Chrm3-/- (muscarinic acetylcholine receptor 3 KO) may have a neuropathic bladder phenotype.
Methods

Mice
• Experimental mice: B6N.129S6-Chrm3\textsuperscript{tm1Jwe}/J (muscarinic acetylcholine receptor 3 knock-out) with background strain C57BL/6N.
• Littermate control mice are of the same background strain (C57BL/6N)
• Experiments conducted at 4-5 months of age.

Assessment of Voiding Behavior
• Voided spot assays
• Voided volumes

Assessment of Bladder Dynamics
• Sedated cystometry
Voided Spot Assays

Chrm3-/-

Controls
Voided Volumes in Females

Urine Output (ml/g)

Chrm3-/- (n=3)  Controls (n=3)

P=NS
Leaking began

Male Chrm3-/-

Male Controls

Leaking began

Volume of infused saline (μL)

Pressure (mmHg)
Detrusor Compliance

Gender Comparison:
- **Female:** p=NS
- **Male:** p<0.05

Compliance (mL/mm water)

Control
Conclusion

The Chrm3-/- mouse exhibits a neuropathic bladder phenotype, and may be useful for work focused on improving UTI diagnosis in children with neuropathic bladders.
Thank you!

Questions?

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Funding: K12-HD-001399 (NICHD) CTSI-CN Pilot Award

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