Ejaculation is a complex physiological event which requires coordination of sympathetic, parasympathetic, and somatic nervous system. Despite advances in the anatomy and physiology of spinothalamic (LSt) neurons, the spinal ejaculation generator is not well defined. LSt neurons express neurokinin-1 receptors (NK-1R) and play a role in ejaculation. The aim of this study was to search for spinal ejaculation generator among LSt neurons and validate their role in ejaculation by ablating them.

**ABSTRACT**

Hypogastric Nerve: Pudendal Nerve results from an interplay between spinal nuclei directly controlling the sexual accessory glands including the prostate and parasympathetic and somatic mechanism of the bladder neck, to prevent flow of semen backward in the bladder. Pelvic Nerveplexus 6 adult SD male rats under anesthesia. Between 3 to 6 days, rats were perfused with 4% paraformaldehyde, the spinal cord was placed into a Petri dish and the dorsal roots of each spinal segment were identified. Between 3 and 6 days, rats were perfused with 4% paraformaldehyde, the spinal cord was placed into a Petri dish and the dorsal roots of each spinal segment were identified. Confocal photograph of PRV immunoreactive neuron enveloped by an NK1 receptor immunoreactive plasma membrane. (1) NK1 receptor staining (rhodamine); (2) PRV labeled neuron cell body (Alexa 488); (3) Double labeled neuron. The spinal cord was sectioned transverse and longitudinally. The number and location of virus-labelled in the spinal cord were recorded for each section. Images were captured at 10× magnification with Nikon digital camera DXM1200F, qualification of neuron size and the optical density (OD) of NK1 receptor and galanin immunohistochemistry reactive product were performed in a area of 800×800 surrounding the central canal with the Image-pro plus image analysis software (Media cybernetics, USA).

**METHODS**

- Male Sprague-Dawley rats (300-320 g, 44♂)
- Pseudorabies virus (PRV) retrograde tracing technique was used combined with immunohistochemistry against galanin or NK1R.
- PRV (Bartha strain of pseudorabies virus 6.5×10^6 pfu/ml, Dr. A. Jenck, Pitié-Salpêtrière, France) was injected into the BS muscles or the central canal of prostate in respectively 1d and 4 adult male rats under anesthesia.
- Between 3 and 6 days, rats were sacrificed and perfused with 4% paraformaldehyde.
- One series was used for detecting the infection of PRV with immunohistochemistry by ABC method. The spinal cord was sectioned transverse and longitudinally. The number and location of virus-labelled in the spinal cord were recorded for each section. Images were captured at 10× magnification with Nikon digital camera DXM1200F, qualification of neuron size and the optical density (OD) of NK1 receptor and galanin immunohistochemistry reactive product were performed in a area of 800×800 surrounding the central canal with the Image-pro plus image analysis software (Media cybernetics, USA).
- One series was used for detecting the infection of PRV with immunohistochemistry by ABC method. The spinal cord was sectioned transverse and longitudinally. The number and location of virus-labelled in the spinal cord were recorded for each section. Images were captured at 10× magnification with Nikon digital camera DXM1200F, qualification of neuron size and the optical density (OD) of NK1 receptor and galanin immunohistochemistry reactive product were performed in a area of 800×800 surrounding the central canal with the Image-pro plus image analysis software (Media cybernetics, USA).
- The spinal cord was placed into a Petri dish and the dorsal roots of each spinal segment were identified. Lumbal spinal cord segments were cut off, transverse sections of spinal cord were cut (Ommaya with ultratomes and collected fixed floating in four parallel series. The spinal cord was sectioned transverse and longitudinally. The number and location of virus-labelled in the spinal cord were recorded for each section. Images were captured at 10× magnification with Nikon digital camera DXM1200F, qualification of neuron size and the optical density (OD) of NK1 receptor and galanin immunohistochemistry reactive product were performed in a area of 800×800 surrounding the central canal with the Image-pro plus image analysis software (Media cybernetics, USA).
- The spinal cord was sectioned transverse and longitudinally. The number and location of virus-labelled in the spinal cord were recorded for each section. Images were captured at 10× magnification with Nikon digital camera DXM1200F, qualification of neuron size and the optical density (OD) of NK1 receptor and galanin immunohistochemistry reactive product were performed in a area of 800×800 surrounding the central canal with the Image-pro plus image analysis software (Media cybernetics, USA).
- The spinal cord was sectioned transverse and longitudinally. The number and location of virus-labelled in the spinal cord were recorded for each section. Images were captured at 10× magnification with Nikon digital camera DXM1200F, qualification of neuron size and the optical density (OD) of NK1 receptor and galanin immunohistochemistry reactive product were performed in a area of 800×800 surrounding the central canal with the Image-pro plus image analysis software (Media cybernetics, USA).

**RESULTS**

**Summary of results**

We have found that the subpopulation of LSt neurons located in the lamina X of the L3-L4 segment of the male rat spinal cord express neurokinin 1 receptor or galanin and project to the motoneurons of the DM nucleus innervating the bulbospongiosus muscle and to the preganglionic neurons of the IML innervating the prostate. These interneurons are located in the same area as the LSt cccs.

**CONCLUSION**

LSt neurons previously identified as playing a pivotal role in ejaculatory behavior are likely retrogradely labeled from the prostate and the BS muscle.

This anatomical finding provide a organisational support for the mandatory coordination between the emission and the expulsion phase of ejaculation.

The role for LSt cells in the spinal control of ejaculation is reinforced.

**OBJECTIVES**

To investigate the anatomical relationships between LSt neurons and both the prostate and the BS muscles.