

A Model for Radiating Pain in Endometriosis: the Nerve-Uterus Chimera

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BACKGROUND Endometriosis is a prevalent female health disorder and often leads to radiating leg pain [1, 2]. This complication is likely to be caused by nerve inflammation secondary to endometrioma. To model this disorder in rat we auto-transplanted a section of uterus to the sciatic nerve.

METHODS In female Wistar rats, a 7-8 mm length of the right uterine horn was removed. The left sciatic nerve was exposed in mid-thigh, and the uterus section applied to the nerve like a cuff. Up to 15 months following recovery, the resulting nerve-uterus chimeras were removed and processed for presence of immune cells and neural elements.

RESULTS All operations resulted in a fusion of the uterus to the nerve (Figure).

Macroscopically, these chimeras were characterized by turgid cysts apposed to the nerves.

Microscopically, chimeras contained recruited macrophages, indicating persistent inflammation, and had become innervated by newly formed small diameter axons.

CONCLUSION A section of uterus transplanted to the sciatic nerve survives and leads to the formation of a nerve-uterus chimera. The persistent immune response and innervation suggest the chimera as a source of persistent neural discharge, and thus pain. This model could shed light upon this complication of endometriosis.



The rat nerve-uterus chimera as a model of sciatic endometriosis. A section of uterus was transplanted to the sciatic nerve, and the rat allowed to recover. All operated rats developed cysts on their sciatic nerves. A. Cyst (arrow) on sciatic nerve (arrowhead), 15 months after operation. Scale bar = 10 mm. B. H & E staining demonstrated that the drained cyst was uterus (arrow) attached to the nerve (asterisk). Scale bar = 500 μ m.

REFERENCES

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