Treating a spinal cord injury mouse model using fecal microbiota transplantation

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Video Byte

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Abstract

Spinal cord injury (SCI) is a devastating condition that currently has no cure. Patients with spinal cord injury often experience neurological impairment and secondary complications, such as colorectal, bladder and sexual dysfunction. While fecal microbiota transplantation (FMT) has been shown to help treat central nervous system diseases, much remains to be understood about how and why it helps. A recent study examined the effect of FMT in a mouse model of SCI. After FMT from healthy, uninjured mice to mice with SCI, researchers found that FMT facilitated functional recovery, promoted the regeneration of neuronal axons, and improved weight gain, metabolic profiling, intestinal barrier integrity, and GI motility in mice with SCI. Sequencing revealed that FMT restructured the gut microbiome in mice with SCI, increasing the amount of metabolites that were correlated with intestinal permeability and locomotor recovery. FMT also downregulated inflammatory signaling in the spinal cord and gut following SCI. Although further studies are needed to expand these results to humans, the results suggest that reprogramming of the gut microbiota by FMT improves locomotor and GI functions following SCI, providing important insight into the mechanisms underlying the neuroprotective effect of FMT in those with spinal cord injuries.