How hormones may alleviate side-specific movement difficulties after brain injury
10 August 2021

Uppsala University, Sweden, and a co-senior author of the study.

To investigate further, Bakalkin and the team examined the effects of a one-sided brain injury in rats that lacked the connection between the brain and nerves that regulate the hindlimbs. They found that, even without this connection, the hindlimb on the opposite side to the injury had impaired reflexes.

However, animals that lacked the pituitary gland, a hormone-producing gland connected to the brain, did not experience these problems. Two pituitary hormones ß-endorphin and Arg-vasopressin appeared to play a role. When the team gave rats without a brain injury these two hormones, the rats also developed hindlimb contraction on the right side.

Next, they tested what would happen if they gave the rats with a left-sided brain injury drugs that block the effects of these two hormones. They found that the animals did not develop right-sided movement problems. This suggests that the hormones convey side-specific signals after a brain injury and treating patients who have a similar injury with drugs that block the effects of these hormones might be beneficial.

"These observations suggest that the endocrine system through its hormones in the blood may selectively target the left and right sides of the animals' bodies," Bakalkin concludes. "This is an unusual phenomenon that requires further studies and verification in other animal models. We must be cautious in the interpretation of these findings and their biological implications before further research is carried out. But if future studies confirm the benefits of treatments that block these hormones, they may offer a new approach to treating movement problems following stroke or injury. Now having this published we could proceed with analysis of underlying mechanisms and a role
of this phenomenon in control of our body plan and in neurological disorders."


Provided by Uppsala University