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IN BRIEF

PAIN

Chronic back pain linked to reduced dopamine function in the striatum

The vast majority of people will experience back pain at some point in their lives. In up to 40% of adults, back pain becomes chronic or recurrent; however, the underpinnings of pain chronification are poorly understood. Now, a new PET study evaluating dopamine and opioid signalling has demonstrated that patients with chronic non-neuropathic back pain (CNBP) show reduced dopamine receptor binding potential in the striatum. Moreover, a pain challenge (intramuscular injection of hypertonic saline) was linked to a further decrease in dopaminergic signalling via reduced dopamine release in patients with CNBP relative to healthy controls. CNBP was also associated with altered μ -opioid-receptor-mediated antinociception in the amygdala, supporting the notion that dopamine–opioid interactions in the brain are involved in the pathophysiology of chronic pain.

Original article Martikainen, I. K. *et al.* Chronic back pain is associated with alterations in dopamine neurotransmission in the ventral striatum. *J. Neurosci.* doi:10.1111/ene.12763

AGEING

β 2-microglobulin identified as a mediator of age-related decline in cognition and neurogenesis

β 2-microglobulin, a component of MHC class I molecules that circulates in blood, impairs cognitive function and neurogenesis, according to a new study led by Saul Villeda. The researchers had observed earlier that cognitive function in old mice could be rejuvenated by the blood of young mice, infused via heterochronic parabiosis. In the new study, the investigators were able to identify β 2-microglobulin as the blood-soluble factor underlying the age-related cognitive impairments. The findings are in line with previous reports of increased β 2-microglobulin levels in the CSF of patients with Alzheimer disease or HIV-associated dementia. The authors suggest that β 2-microglobulin could be a therapeutic target for the amelioration of age-related cognitive decline.

Original article Smith, L. K. *et al.* β 2-microglobulin is a systemic pro-aging factor that impairs cognitive function and neurogenesis. *Nat. Med.* doi:10.1038/nm.3898

Further reading Malkki, H. *et al.* Could young blood combat age-related cognitive decline? *Nat. Rev. Neurol.* **10**, 307 (2014)

MULTIPLE SCLEROSIS

Psychosocial factors contribute to pain in multiple sclerosis

Although pain affects about two-thirds of patients with multiple sclerosis (MS), pharmacotherapeutic treatment of pain in MS has limited efficacy. A recently published study surveyed 612 patients with MS experiencing pain. All patients reported substantial pain and pain-associated disability even though >90% of them were taking pain medication. Distress, negative beliefs about pain, avoidance of activity and other psychosocial factors were important predictors of the severity and interference of both neuropathic and musculoskeletal pain associated with MS. The results highlight the potential for interventions that target cognitive, behavioural and emotional factors as strategies to successfully alleviate pain associated with MS.

Original article Harrison, A. M. *et al.* Beyond a physical symptom: the importance of psychosocial factors in multiple sclerosis pain. *Eur. J. Neurol.* doi:10.1111/ene.12763