

Is vagotomy protective against PD?

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The α -syn has the propensity for spontaneous misfolding and displays prion-like properties in vitro, including cell-to-cell propagation. Animal studies showed both retro- and anterograde axonal transport of α -syn fibrils in the vagal nerve. However, so far we lack formal evidence that similar prion-like spreading occurs in human PD patients.

If the vagal nerve constitutes a major highway for centripetal spreading of α -syn pathology, it follows that vagotomy could be protective against PD. Three principal types of vagotomy have been employed: full truncal vagotomy; selective vagotomy where only vagal branches to the stomach is cut, and the most refined superselective vagotomy, where only the corpus and fundus is denervated. When the stomach of mice was exposed to the neurotoxin rotenone, α -syn aggregation and subsequent spreading to the brain stem via the vagus has been demonstrated. Both partial sympathectomy and hemivagotomy significantly delayed the development of motor symptoms in the animals. Moreover, hemivagotomy prevented accumulation of α -syn in the ipsilateral dorsal motor nucleus of vagus (DMV) and prevented cell death in the ipsilateral substantia nigra pars compacta (SNc). Nowadays, data from two recent epidemiological studies suggest and provide some preliminary evidence that the truncal vagotomy might decrease risk of PD after >5 years of follow-up when compared with the background population, and also when compared with the selective/super-selective vagotomy group.