Modeling Fall Propensity in Parkinson's Disease

(continued from page 1)

and DA; triple lesions, 'TL') was not more severely impaired than following combined BF cholinergic and striatal DA lesions (DL), however, some abnormal gait characteristics were observed such as ballistic recovery movements and slip-triggered switches to symmetrical locomotion ('galloping'). Furthermore, rats with only cholinergic cell losses (PPN and BF) fell more than shams on more complex rod traversal conditions (rod rotating in alternating directions) (Fig.1). Histological analysis showed that infusions of 192-IgG saporin into the BF removed cholinergic neurons primarily from the nucleus basalis of Meynert and the more ventral substantia innominata (Fig. 2 a,b) and anti-ChAT-SAP infusions into the PPN resulted in the almost complete loss of cholinergic neurons in this region (Fig. 2 c,d). In total, these results support a role of cholinergic systems in falls and gait control in PD and further support the hypothesis that BF cholinergic-striatal disruption of attentional-motor interactions, proposed to reflect impaired attentional control of posture, gait and movement, is a primary source of falls.

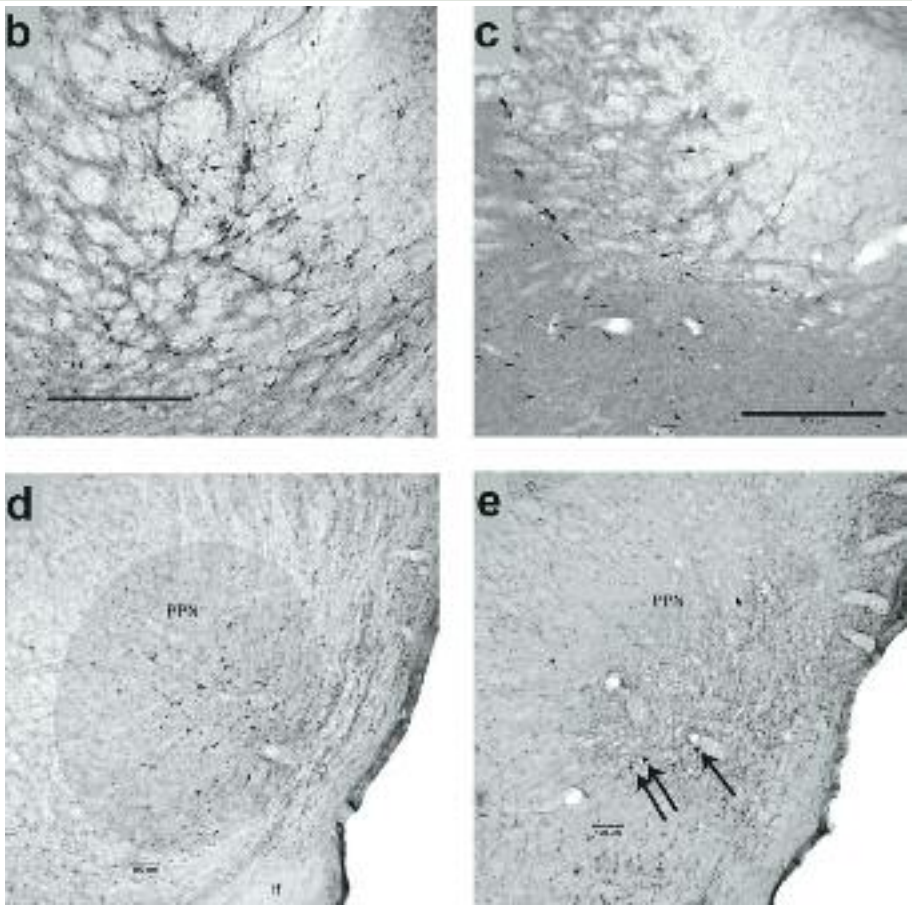

Fig. 2. (a) ChAT immunoreactivity on a coronal section of the BF from a sham-lesioned rat. (b) Infusions of 192-IgG saporin removed 70-90% of the cholinergic neurons in this region. (c) Cholinergic neurons in the intact PPN (shaded region; ChAT-immunoreactivity). d) Infusions of anti-ChAT-SAP lesioned >90% of the neurons (arrows point to neurons spared by the toxin). Scales in b and c are 500µm and in d and e are 100µm.

References

1. Kucinski A, Paolone G, Bradshaw M, Albin RL, Sarter M. Modeling fall propensity in Parkinson's disease: Deficits in the attentional control of complex movements in rats with cortical-cholinergic and striatal-dopaminergic deafferentation. *J Neurosci* 33:16522-39, 2013.

Targeting Teaser Solution

The solution to the puzzle was:

Jumbles: LABRADOR
VETERINARY
ROTTWEILER
TRANSLATION
SIGNIFCANT

Why the zombie wanted to be a neuroscientist.

Answer: He loved... BRAINS!

Solve this quarter's teaser at www.ATSbio.com/news/15q1_teaser.html

Congratulations to the puzzle solvers from last quarter. Each winner will receive an ATS 2015 calendar.

LAST QUARTER'S WINNERS: Jheem D. Medh, California State Univ Northridge * Glenn H. Kageyama, Cal Poly Pomona Univ * Dave Ginsbert, Molecular Innovations * Judene Bliss, Roswell Park Cancer Institute * Daniel Pekala, Charles River Laboratories * Joan Schein, Biochain * Seto Chice, SUNY HSC at Brooklyn * Bill Henry, Rhode Island Hospital