Turkish Journal of Medical Sciences

Turkish Journal

of

Medical Sciences

Keywords
Authors

medsci@tubitak.gov.tr

Scientific Journals Home Page

A Cell Protective Mechanism in a Murine Model of Parkinson's Disease

Emin ÖZTAŞ[1], Turgut TOPAL[2]

[1]Department of Medical Histology and Embryology, Gülhane Military Medical Academy, Ankara - Turkey

[2]Department of Physiology, Gülhane Military Medical Academy, Ankara - Turkey

Abstract: Parkinson's disease is characterized by progressive degeneration of the dopaminergic (DA) neurons in the substantia nigra (SN). However, the mechanism underlying DA cell death remains unclear. While apoptotic cell death has been implicated in DA cell death in Parkinson's disease, autophagy - a regulated cellular process for degrading intracellular proteins and organelles under stress - in Parkinson's disease is not known. Here, we report evidence of autophagy in DA neurons of the SN in a 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) model of Parkinson's disease. Mice were treated with saline or MPTP (40 mg/kg) and sacrificed after 7 days, and brain tissue samples were processed for immunohistochemistry using a tyrosine hydroxylase (TH) antibody to reveal the SN area. TH-positive tissues were then processed for transmission electron microscopy and examined for ultrastructural evidence of autophagy. MPTP treatment induced significant morphological changes that closely resembled the autophagic process. This autophagic degeneration was observed in ~35% of DA neurons in MPTP mice. We conclude that at the ultrastructural level MPTP treatment produced a prominent autophagic process in DA neurons. The identification of autophagy in the MPTP model of Parkinson's disease may provide an insight into the mechanism of cell protection and may lead to a novel therapeutic strategy in Parkinson's disease.

Key Words: Ramadan, fasting, diabetes, hypertension, stroke

Turk J Med Sci 2003; **33**(5): 295-299.
Full text: pdf
Other articles published in the same issue: Turk J Med Sci,vol.33,iss.5.