

## Histopathological rearrangements of the colonic wall following dopaminergic nigrostriatal neurodegeneration

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Parkinson's disease (PD) is a degenerative neurological disorder, which is often associated with gastrointestinal disturbances (e.g., constipation and defecatory dysfunctions), whose mechanisms are still unknown [1]. Recently, an inflammatory pathogenesis has been proposed to explain these colonic disorders, but low literature are available. This study aims to analyze whether the central dopaminergic denervation, induced by intranigral injection of 6-hydroxydopamine (6-OHDA), can alter the morphological arrangement of colon in rats. Animals were euthanized 4 and 8 weeks after 6-OHDA injection. Histological, histochemical and immunohistochemical analysis were carried out on formalin-fixed, paraffin-embedded colonic samples in order to evaluate: histology, inflammatory cells (eosinophils and mast cells) and collagen fibers in the whole wall; glial fibrillary acidic protein (GFAP), immunoperoxidase, alpha-smooth muscle actin (alpha-SMA) and vimentin immunofluorescence by confocal microscopy. Malondialdehyde (MDA, colorimetric assay), TNF and IL-1 $\beta$  (ELISA assay) levels were also examined. 6-OHDA-induced nigrostriatal denervation was associated with the following histopathological changes observed in the colonic wall: eosinophil and mast cell infiltration, collagen deposition, activation of myenteric glial cells (GFAP+), increased vimentin immunostaining associated with alpha-SMA decrease in the tunica muscularis, enhanced colonic tissue levels of MDA, TNF and IL-1 $\beta$ . On the basis of the present results it is possible to conclude that the induction of central nigrostriatal dopaminergic denervation is followed by inflammation and fibrotic rearrangement of the colonic wall.

### References

[1] Abbott et al. Neurology, 2011.

### Keywords

Parkinson's disease; experimental dopaminergic nigrostriatal neurodegeneration; colonic rearrangement.