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## Dilated Virchow-Robin space and Parkinson's Disease: A Case Report of Combined MRI and Diffusion Tensor Imaging

**Alberto Negro\*, Renata Conforti, Angela Sardaro, Giuseppina Caiazzo, Antonella Paccone, Rosita De Micco, Sossio Cirillo** and **Alessandro Tessitore**
University of Campania Luigi Vanvitelli, Italy

**Purpose:** To identify a possible correlation between dilated Virchow Robin spaces (dPVS) and Parkinson's disease (PD).

**Materials and Methods:** We report the case of a 69-year-old female patient that developed PD with rigidity and bradykinesia, predominantly affecting the right limbs. The family history affirmed that the mother suffered from PD. Non-motor symptoms were constipation, anxiety, insomnia and daytime sleepiness. The response to dopaminergic therapy was positive. The patient underwent a 3T high field Magnetic Resonance study through morphological and functional sequences for a Diffusion Tensor study. The MRI data were analyzed using the MIPAV software and a study of the diffusion data was developed through the FSL software for an adequate probabilistic processing of the graphic tract based on a multi-fiber model.

**Results:** Presence of dPVS on the left anterior perforated substance, with dimensions of approximately: 13.4718 mm (minor axis), 384.728 mm2 (area) and 461.674 mm3 (volume). The DTI data of our PD patient showed increased peak frequency of left FA (fractional anisotropy) and decreases in the distribution of MD (mean diffusivity) with changes in the fiber density compared to the normal contralateral tract.

**Conclusion:** Even if MRI morphologic brain study did not show evidence of compression signs due to enlarged VRS, we instead hypothesize that the DTI changes are due to dVRS. Because fMRI symmetrical data does not entirely explain patient PD symptomatology, therefore larger sample of patients compared with healthy controls of MRI and fMRI studies will be made showing the relation between dVRS and PD symptoms.

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