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Letter to the Editor

ATP13A2-related juvenile-onset Parkinson disease

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Recently we have published a case report describing a 10-year-old child who had juvenile-onset parkinsonism with rigidity, bradykinesia, dystonia, gait disturbance, and cognitive impairment. Whole exome sequencing showed compound heterozygosity for two *ATP13A2* novel mutations supporting the diagnosis of *ATP13A2*-related juvenile-onset Parkinson disease [1]. Subsequently, a letter was published with comments related to our publication [2]. Herein, we respond to the comments and queries raised in that letter.

First, in the first paragraph of the introduction [1], we clearly defined Parkinson as a neurodegenerative disease characterized by loss of dopaminergic neurons with intracytoplasmic inclusions (Lewy bodies) in the substantia nigra. Therefore, it is well-stated in our publication that substantia nigra, which is part of basal ganglia, is the main site of pathology in Parkinson disease.

Second, as we explained in the first paragraph of the discussion, *ATP13A2* mutations are associated with overlapping neurodegenerative phenotypes [1]. However, not all affected individuals demonstrate all the features [3]; and the child we described presented mainly with parkinsonism as we elaborated in the case report section [1]. We have also mentioned that brain MRI were normal and no features to suggest iron accumulation (such as T1 hyperintensities in basal ganglia) were observed [1]. Other than what have been mentioned in the paper [1], no additional studies were performed such as DAT-scan and mitochondrial studies.

Finally, parents, who were heterozygous carries for *ATP13A2* muations, and all siblings, including the ones carrying heterozygous *ATP13A2* mutations were healthy without any neurological signs or symptoms suggestive of Parkinson or any other neurological disease. Detailed 3-generation family history also failed to identify any family member diagnosed with or had any features suggestive of Parkinson disease. Such an observation strongly argues against the suggestion that heterozygous carriers for *ATP13A2* muations are at higher risk of developing Parkinson disease.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.braindev.2018.08.002.

References

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