



Resolution of abnormal fractional anisotropy of substantia nigra in organophosphate intoxication

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Parkinsonism following organophosphate poisoning is a known complication. We present a patient with acute Paraquat intoxication. After the initial phase of cholinergic hyperactivity (coma, autonomic, cardiac and respiratory symptoms), he developed a transient Parkinsonism lasting 4 weeks. Paraquat structurally resembles MPTP, the textbook toxin for the substantia nigra. Paraquat might also inhibit tyrosine hydroxylation, essential for dopamine production.

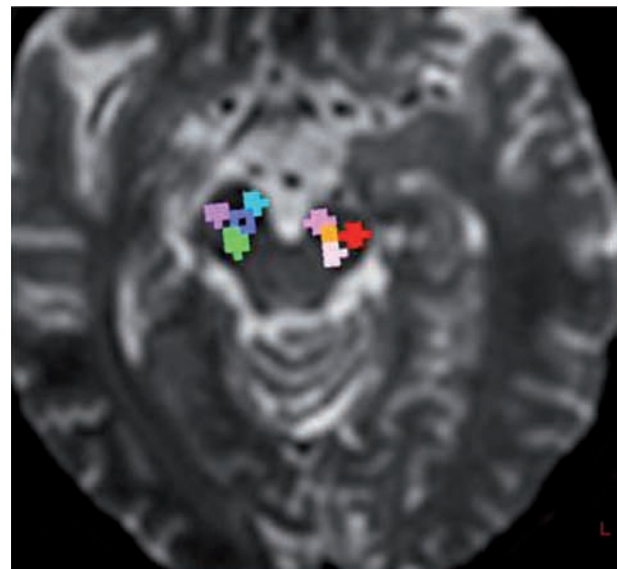
MRI using diffusion tensor imaging and fractional anisotropy measuring the substantia nigra, is used to differentiate between patients with Parkinson's disease and healthy controls. MRI was performed during the extrapyramidal syndrome. Measurements were compatible with findings in Parkinson's disease. After the neurological syndrome disappeared, control MRI with fractional anisotropy normalised.

Findings suggest that fractional anisotropy measures malfunction instead of degeneration of nigrostriatal neurons.

REFERENCES

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| ROI | Fractional Anisotropy |
|---|-----------------------|
|  | 0.599 ± 0.205 |
|  | 0.530 ± 0.182 |
|  | 0.411 ± 0.120 |
|  | 0.775 ± 0.077 |
|  | 0.607 ± 0.187 |
|  | 0.495 ± 0.147 |
|  | 0.323 ± 0.064 |
|  | 0.803 ± 0.090 |

FIG. 1. — (A) FA-value in the caudal region of the substantia nigra: 0,411 on the right and 0,323 on the left. Compatible with Parkinson disease: FA < 0.450. (B) MRI after disappearance of Parkinsonism: normalization of the FA-value in the caudal region substantia nigra on the left: 0.756.