

CASE REPORT

HEMIHYPOSMIA IN A CASE OF HEMIPARKINSONISM

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Olfactory dysfunction in Parkinson's disease is becoming more relevant. We report on a 38-year old woman with right-sided hemiparkinsonism classified 1 degree of severity according to the Hoehn and Yahr scale. Despite not complaining of smell disturbances olfactory testing revealed pronounced hemihyposmia on the ipsilateral side of the marked decreased tracer uptake in the 123I-FP-CIT SPECT. To our knowledge pronounced hemihyposmia has been rarely described in patients with early signs and symptoms of Parkinson's disease.

Keywords: Olfactory dysfunction, Parkinson's disease, hemihyposmia, hemiparkinsonism

INTRODUCTION

Parkinson's disease is a frequent neurodegenerative disease beginning often with unspecific signs and symptoms. In a large number of patients half-sided symptoms with stiffness and pain in one upper limb occur which are often misinterpreted as shoulder-arm-syndrome delaying correct diagnosis (1). However, early diagnosis is mandatory, in particular if neuroprotective drugs are available. Here we report on a patient with hemiparkinsonism in whom a pronounced hemihyposmia was detected which was not noticed by the patient emphasising the olfactory dysfunction in parkinsonism.

CASE

A 38-year old woman reported on right upper limb movement difficulties for half a year. Sometimes at rest she noticed a slight trembling of the right hand. The neurological examination revealed slight rigor with cogwheel-phenomenon and ca. 5Hz tremor at rest of the right upper limb. Further history was unremarkable with no history of urine incontinence, falls or cognitive impairment. The mini-mental status (german version), MR imaging of the brain and perfusion SPECT were normal.

Questioning prior to olfactory testing revealed that the patient indicated no subjective olfactory dysfunction. An ear, nose and throat examination was normal regarding

ventilation through the nostrils. Olfactory testing was performed using the standardised psychophysical "Sniffin Sticks" test. This tests odour threshold, odour discrimination and odour identification (2,3). Testing was performed bilaterally, followed by unilateral testing of each nostril. This smell test revealed a pronounced half-sided olfactory dysfunction (Table 1).

123I-FP-CIT SPECT (280 MBq) demonstrated a marked left-sided diminished tracer uptake in the basal ganglia consistent with hemiparkinsonism (Figure 1).

Hemiparkinsonism was diagnosed and degree of severity was classified 1 according to the Hoehn and Yahr scale. A treatment with glutamate receptor antagonist amantadin and dopamine receptor agonist pramipexole was initiated leading to clinical improvement. At follow-up six months later the patient was in stable condition.

DISCUSSION

There is increasing knowledge on olfactory dysfunction in Parkinson's disease and in a number of other neurodegenerative disorders such as Alzheimer's disease, cerebellar ataxia, multiple system atrophy and others (4-9). In a previous study on 40 patients with Parkinson's disease uni- and bilateral testing was performed and no correlation was found with the clinically more affected side. In these patients, however, the disease duration was mean 5.8 years, and more than 50% of the patients were scaled 3 or 4 degree of severity according to the Hoehn and Yahr scale (9). Recently Zucco et al. (2001) reported on half sided pronounced hyposmia in 6 medicated Parkinson patients at an early stage with more

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Table 1. Results of the Olfactory test was using the standardized psychophysical “Sniffin Sticks” test according references (2,3).

	Bilateral	Right-sided	Left-sided	Normal values*
Odour thresholds	5	4	4	9.0 (0.9)
Odour discrimination	9	12	8	12.2 (1.5)
Odour identification	11	12	6	14.7 (1.2)
Combined score	25	28	18	>30 normosmia

* age and gender related

marked unilateral disorder (10). This suggests that a larger compromise is in the nostril contralateral to the side of the body more affected by the disease. Our clinical findings agrees with this observation. Obviously we investigated our patient at a very early stage of disease. Her history was just six month and degree of severity was 1 in the Hoehn and Yahr scale. Pathological studies have shown that the olfactory bulb is one of the first areas to be affected in Parkinson's disease (11). Additionally, Parkinson's disease often begins with half-sided symptoms, thus we assume that in hemiparkinsonism, ipsilateral to the brain region affected, a hemihyposmia can occur in the early phase of Parkinson's disease.

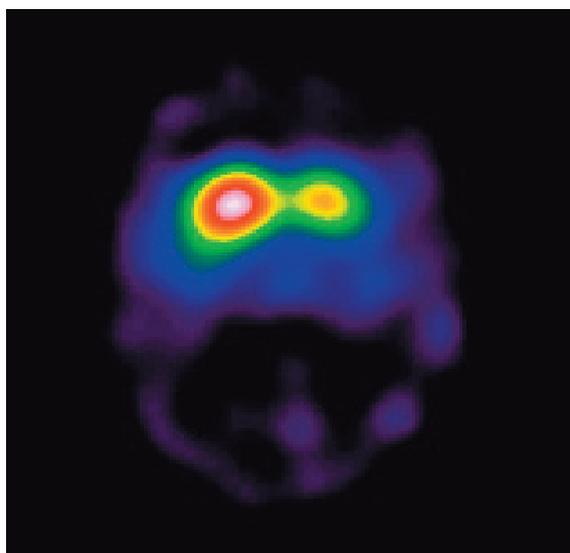


Figure 1. 123I-FP-CIT SPECT (280 MBq) shows a markedly decreased tracer uptake in the left basal ganglia indicating disturbed integrity of the pre-synaptic dopamine metabolism and a slightly decreased tracer uptake on the right side.

REFERENCES

- 1- Heckmann JG, Platsch G, Elstner S, Lang CC, Neundörfer B. Painful upper limb stiffness as symptom of early Parkinson's disease. *Z Allg Med* 2003;79:358-61
- 2- Hummel T, Sekinger B, Wolf SR, Pauli E, Kobal G. „Sniffin“ sticks: olfactory performance assessed by the combined testing of odor identification, odor discrimination and olfactory threshold. *Chem Senses* 1997;22:39-52
- 3- Kobal G, Klimek L, Wolfensberger M et al. Multicenter investigation of 1,036 subjects using a standardized method for the assessment of olfactory function combining tests of odor identification, odor discrimination, and olfactory thresholds. *Eur Arch Otorhinolaryngol* 2000;257:205-11
- 4- Özdener MH, Rawson NE. Olfactory dysfunction in neurodegenerative diseases. *Eur J Gen Med* 2004;1:1-11
- 5- Hawkes C. Olfaction in neurodegenerative disorder. *Mov Disord* 2003;18:364-72
- 6- Hawkes C. Olfactory testing in parkinsonism. *Lancet Neurology* 2004;3:393-4
- 7- Müller A, Müngersdorf M, Reichmann H, Strehle G, Hummel T. Olfactory function in Parkinsonian syndromes. *J Clin Neurosci* 2002;9:521-4
- 8- Abele M, Riet A, Hummel T, Klockgether T, Wüllner U. Olfactory dysfunction in cerebellar ataxia and multiple system atrophy. *J Neurol* 2003;250:1453-5
- 9- Daum RF, Sekinger B, Kobal G, Lang CJ. Olfactory testing with „sniffin“ sticks“ for clinical diagnosis of Parkinson disease. *Nervenarzt* 2000;71:643-50
10. Zucco G, Zeni MT, Perrone A, Piccolo I. Olfactory sensitivity in early-stage Parkinson patients affected by more marked unilateral disorder. *Percept Mot Skills* 2001;92:894-8
11. Braak H, Del Tredici K, Bratzke H, Hamm-Clement J, Sandmann-Keil D, Rub U. Staging of the intracerebral inclusion body pathology associated with idiopathic Parkinson's disease (preclinical and clinical stages). *J Neurol* 2002;249:1-5