

 PARKINSON DISEASE

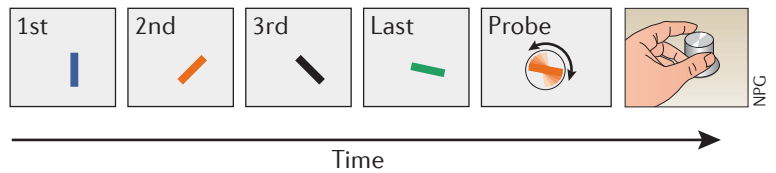
Sleep disorder deficits suggest signature for early Parkinson disease

“poor performance in both patient groups was accounted for by increased rates of guessing”

Patients with REM sleep behaviour disorder (RBD) have deficits in short-term visual memory that are identical to those in patients with Parkinson disease (PD), according to a new study. RBD is associated with a high risk of developing PD, so the findings indicate that such deficits could be a marker of early PD.

Up to 80% of people with RBD go on to develop PD, and this strong association led Nahid Zokaei and colleagues at the University of Oxford to investigate cognitive impairments in the two conditions. “Previously, we showed that individuals with PD make a specific type of error on short-term memory,” she explains. “Their memories seem to be randomly corrupted so they make more guesses than healthy people.”

This previous work used a newly developed cognitive test that assesses not just the capacity for recall, but also the precision of recall. Participants are shown a sequence of four coloured bars arranged in different orientations, and are subsequently asked to recall the orientation of one of these bars. The difference between the original and recalled orientations provides a measure of recall precision. This approach provides a fine-grained



Zokaei and colleagues used a cognitive test in which participants were shown a sequence of coloured bars and then asked to recall the orientation of one. The test measures the precision of recall.

measure of memory, and can provide information about the type of recall errors made. The researchers used the same test in their new study.

“We asked whether any memory deficit in RBD mirrors the pattern observed in established sporadic PD patients,” says Zokaei. “If it did, then it would show that it is possible to detect the signature of memory deficit associated with PD long before a clinical diagnosis is made.”

The team measured visual short-term memory performance in 21 patients with RBD, 26 patients with PD and 26 healthy controls. Overall visual short-term memory performance was impaired in patients with PD and in patients with RBD. Furthermore, the poor performance in both patient groups was accounted for by increased rates of guessing; rates of other error types did not differ between patients and controls.

Combined with the high risk of progression from RBD to PD, the results indicate that the same mechanisms underlie visual short-term memory deficits in both conditions.

“Our findings suggest that RBD is representative of prodromal stages of sporadic PD and, hence, is an important candidate disorder for clinical trials of novel disease interventions in PD,” explains Zokaei.

The researchers now plan to conduct longitudinal studies of patients with RBD, as well as assessing visual short-term memory in other groups who are at risk of developing PD.

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ORIGINAL ARTICLE Rolinski, M. *et al.* Visual short-term memory deficits in REM sleep behaviour disorder mirror those in Parkinson's disease. *Brain* <http://dx.doi.org/10.1093/brain/awv334>

FURTHER READING Zokaei, N. *et al.* Working memory recall precision is a more sensitive index than span. *J. Neuropsychol.* **9**, 319–329 (2015)