Reviewer's report

Title: Screening for Parkinson’s disease with response time batteries: A pilot study

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Reviewer: Elan D Louis

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This is a report on a method for screening for Parkinson’s disease (PD) with response time batteries. The authors studied a group of 40 patients with PD and a group of 40 healthy participants. Receiver operator curves were used to identify cutoff scores. The high sensitivity and specificity of this battery suggests that it might be useful. The paper is well-written. The paper would be strengthened if the following issues were addressed.

In the Introduction, the authors write that the diagnosis of PD is entirely clinical. While it is true that in office practice, the diagnosis is based on a history and neurological examination, in some instances, imaging studies (e.g., positron emission tomography studies) are used for diagnostic purposes. This literature should be referenced.

There is a literature on the use of test batteries that include motor tasks to diagnose early PD. This includes a series of papers by Montgomery and Koller and these should be referenced as well.

The authors examine the positive and negative predictive value of their screening method. The problem with this approach is that the positive predictive value of a screening test depends on the prevalence of the condition in the population under study. In this instance, the prevalence was 50% and this is likely to result in higher estimates of positive predictive value than if the prevalence of PD were lower. Therefore, predictive value is often largely an artifact of the prevalence of the condition under study. This will vary, depending on the situation. In a movement disorders clinic, the prevalence of PD is likely to be high whereas in the population it is likely to be low. Therefore, these analyses are not particularly useful.

It would be useful to see more information on the cases and how they were selected and over what time period. The representation of UPDRS scores as well as Hoehn and Yahr scores could be better presented so that the reader could get a sense of the proportion with mild, moderate, and severe PD. Similarly, information on disease duration could be presented. A sample of moderate to severe PD cases would be more easily separated by a test battery from healthy controls than a sample of mild cases with disease of short duration.

It is not completely clear how the cases and controls were matched. The authors write that they were “approximately matched”. This could be clarified.

One wonders how well this screening method performs with a group of mild PD cases. Similarly, some patients may have tremor dominant forms of PD with little bradykinesia and one would expect that this battery would not perform as well if these cases were heavily sampled.

It is difficult to imagine that this battery, which requires a special type of set-up, would be used in routine clinical practice or by primary care physicians. So, the arguments made on page 7 about the utility of this method are difficult to accept. There could be a role for this method in epidemiological field studies, however.
A figure or photograph of the set up would be helpful.

What next?: Accept after minor essential revisions