UK PARKINSON'S Excellence Network

What clinical features predict the development of Parkinson's disease dementia (PDD)?

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Clinical bottom line

There is currently insufficient evidence to confirm any easily elicited clinical features that accurately predict PDD. Further validation cohort studies are needed, of greater numbers and with longer, more complete follow-up.

Background

Given the profound impact of Parkinson's dementia (PDD) on the patient[1] and any carers,[2] there is interest in predicting which patients will progress to PDD. This can potentially optimise care by avoiding medications that cause hallucinations, and by identifying those patients who might benefit from treatment.[3] This CAT sought studies defining clinical features that can be picked up in routine medical care, and which predict progression to PDD.

Search terms

idiopathic parkinson's disease [MeSH Term] AND predictor* AND dementia patient-report* OR carer*)

Search strategy

PubMed was searched without date restriction. Longitudinal studies were selected if they included validation of findings in an independent "test" cohort. Studies in languages other than English were excluded. Studies evaluating prediction tools combining clinical features with biomarkers were excluded on the basis of limited applicability in a clinical setting. A hand-search of bibliography from key studies was also conducted.

Evidence

From 210 hits, one longitudinal validation study was selected. It evaluated eight clinical predictors in two test cohorts.[3]

Anang JB, Nomura T, Romenets SR, Nakashima K, Gagnon JF, Postuma RB. Dementia Predictors in Parkinson Disease: A Validation Study. J Parkinsons Dis. 2017;7(1):159-162.

Summary

A longitudinal study, comprising two validation cohorts: a Montreal cohort of 53 eligible PD patients, and a cohort from Tottori, Japan, comprising 82 eligible patients. Follow-up was for 3.6 years. A set of eight clinical features were studied (age 70 years or over, REM sleep behaviour disorder (RBD), mild cognitive impairment (MCI), orthostatic hypotension, hallucinations, bilateral disease onset, male sex and a history of freezing and/or falls). These had been identified in an original cohort study.[4] Bilateral onset, hallucinations and falls/freezing did not significantly predict dementia, although point estimates of odds ratio were all over 1. The strongest predictors of progression to PDD was the co-existence of RBD, MCI and orthostatic hypotension at baseline.

The following points should be noted:

- It is unclear how representative the cohorts were, of patients likely to be encountered in primary or secondary care.
- There was a high rate of loss to follow-up (32%). Reasons were provided for the Montreal cohort, but data were unavailable for the Tottori cohort. For the Montreal cohort, there was no comparison of demographic and clinical characteristics of those lost to follow-up and those in whom it was complete.
- Assessments were not carried out blind to the clinical status of the participants. This could lead to attribution bias.
- There was a lack of precision in odds ratios for PDD for all statistically significant predictors. The study would have benefited from a larger cohort, and longer follow-up.
- There was no attempt to correct for multiple comparisons. This could result in Type one error.
- Overall, the quality of this validation cohort study was poor. It provides weak evidence for clinical features that might predict PDD.

References

1. Schrag A, Jahanshahi M, Quinn N. What contributes to quality of life in patients with Parkinson's disease? J Neurol Neurosurg Psychiatry. 2000;69(3):308-312.
2. Aarsland D, Bronnick K, Ehrt U, et al. Neuropsychiatric symptoms in patients with Parkinson's disease and dementia: frequency, profile and associated care giver stress. J Neurol Neurosurg Psychiatry. 2007;78(1):36-42.
3. Anang JB, Nomura T, Romenets SR, Nakashima K, Gagnon JF, Postuma RB. Dementia Predictors in Parkinson Disease: A Validation Study. J Parkinsons Dis. 2017;7(1):159-162.
4. Anang JB, Gagnon JF, Bertrand JA, et al. Predictors of dementia in Parkinson disease: a prospective cohort study. Neurology. 2014;83(14):1253-1260.