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Factors Affecting Mortality in Late Stage Parkinson's Disease

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Background

- Parkinson's disease (PD) is a neurodegenerative condition associated with increased mortality, although studies disagree to what extent.^[1]
- Previous research on predictors of mortality has focused on early rather than late stage PD.^[2,3]
- The leading cause of mortality in Parkinson's disease patients is pneumonia.^[4]

Objectives

- To determine the association of dysphagia and hospital admissions with mortality in Parkinson's Disease.

Method

- A prospective study where patients with later stage PD (Hoehn & Yahr stages III-V) known to the Northumbria PD service were interviewed at baseline and had deaths, hospital and care home admissions recorded for 2 years.
- Dysphagia was assessed with a binary question about the presence of swallowing problems and using question 2.3 of the "Unified Parkinson's Disease Rating Scale (UPDRS), where 0 = no problems, 1 = increased effort swallowing, 2 = modified diet, 3 = episode of choking in the past week, 4 = tube feeding.

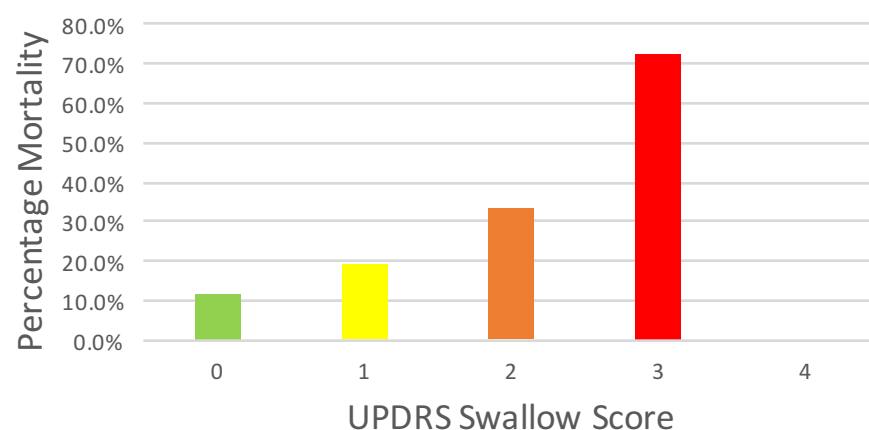
Results

- Of the 162 patients originally interviewed, 36 (22.2%) died during the two-year follow-up.
- 18 patients (11.1%) entered a care home during follow-up, including 10 of the 36 who died.

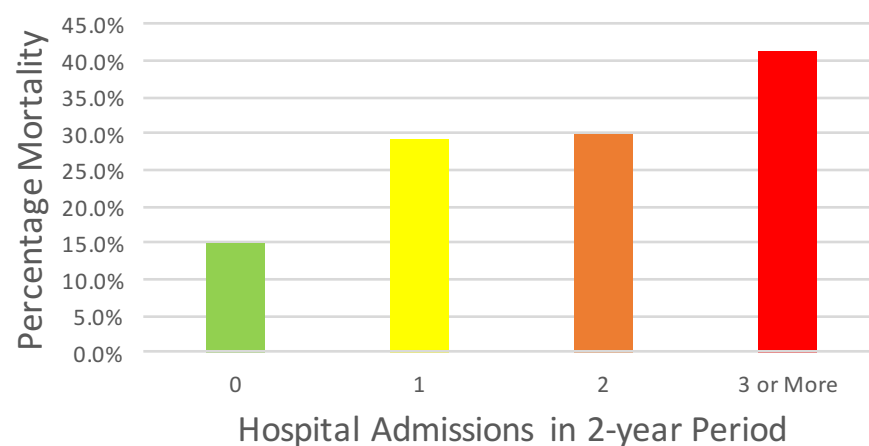
Swallowing	Mortality
No dysphagia	17.4%
Dysphagia	32.6%
P Value	0.034

UPDRS 2.3	Mortality	Hospital Admissions	Mortality
0	11.9%	0	14.9%
1	19.4%	1	29.3%
2	33.3%	2	30.0%
3	72.7%	3 or More	41.2%
4	0.0%	P Value	0.006
P Value	0.0004		

UPDRS Swallow Score vs Mortality



Number of Hospital Admissions vs Mortality



Discussion

- There was a significant increase in mortality in those with dysphagia when using either UPDRS 2.3 or a yes/no question, possibly due to the complications of dysphagia, e.g. pneumonia, or as a sign of disease progression.
- Those with hospital admissions had higher rates of mortality than those without, with a trend of increased mortality the greater the number of admissions.

Recommendations

- Dysphagia should be assessed in Parkinson's patients when predicting mortality.
- Patients with multiple hospital admissions may need greater follow-up due to its relationship with mortality.
- Analysis surrounding cause of admission and total length of stay may allow more accurate prediction of mortality in future.

Limitations

- Only one patient had a UPDRS score of 4, so the impact of enteral nutrition on mortality could not be assessed.
- There was only a small number of patients with a large amount of admissions, so a larger sample size may have altered the observed trend between increasing number of admissions and mortality.

References:

- 1) Macleod, A. D., Taylor, K. S. and Counsell, C. E. (2014), Mortality in Parkinson's disease: A systematic review and meta-analysis. *Mov Disord.*, 29 (13): pp1615-1622.
- 2) Bäckström, D., Granåsen, G., Domellöf, M. E., Linder, J. et al. (2018) Early predictors of mortality in parkinsonism and Parkinson disease. *Neurology*, 91 (22): pp2045-2056.
- 3) Macleod, A. D. and Counsell, C. E. (2016) Predictors of mortality in Parkinson's disease and the development of a prognostic model. *Lancet*, 387: p67
- 4) Pennington, S., Snell, K., Lee, M. and Walker, R. (2010) The cause of death in idiopathic Parkinson's disease. *Parkinsonism & Related Disorders*, 16 (7): pp434-437.