AB003. Validation of a two-stage screening model to predict moderate to severe obstructive sleep apnea in chronic tetraplegia

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Background: Prevalence of obstructive sleep apnea (OSA) in people with chronic spinal cord injury (SCI) is estimated at between 28% and 77%. Current guidelines recommend polysomnography (PSG) for all people with SCI and symptoms of OSA. However, PSG is a resource intensive and frequently inaccessible test, especially in SCI. A two-stage model of questionnaire followed by overnight oximetry has been found to accurately detect moderate to severe OSA in the able-bodied. To determine whether a similar two-stage model can detect moderate to severe OSA in chronic tetraplegia.

Methods: An existing dataset of 78 people with tetraplegia was examined to determine predictors of OSA for inclusion in a new questionnaire. Cut-offs for the model were estimated with receiver operating characteristics (ROC) curve analysis. Model accuracy was evaluated prospectively in 100 participants with chronic, traumatic tetraplegia across four international SCI units.

Results: Multivariate analysis identified injury completeness, age, sleepiness, self-reported snoring and apneas for the new questionnaire [ROC area under curve (AUC) 0.87 (95% CI: 0.79–0.95)]. Oxygen desaturation index was also highly predictive [0.93 (0.87–0.98)]. The two-stage model had a sensitivity and specificity of 83% (66–93%) and 88% (75–94%) in the development group (n=78), and 77% (65–87%) and 81% (68–90%) in the validation group (n=100).

Conclusions: The two-stage screening model provides an accurate and translatable alternative to full PSG for identifying moderate to severe OSA in people with chronic tetraplegia. Implementation of this screening model could substantially increase the detection of OSA in tetraplegia and improve access to treatments.

Keywords: Sleep disordered breathing; neuromuscular disease; sleep study; oximetry

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