Psychometric Properties of a Novel Vineland™-II 2-Domain Composite Score to Assess Social Communication and Social Interaction in Autism Spectrum Disorder

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Background

The Vineland™-II 2-Domain Composite (2DC) score, which combines these 2 independently validated scales, was constructed to address gaps in the existing literature by creating a comprehensive measure of social communication and social interaction. The 2DC score is based on the Vineland™-II Adaptive Behavior Scale (Vineland™-II) which measures social skills and practical skills in children from birth through adulthood. The Vineland™-II is widely used to assess adaptive behavior in individuals with autism spectrum disorder (ASD) and other developmental disabilities. The Vineland™-II was originally published in 1999 and has been updated to the current version in 2005.

Objective

To explore the measurement properties of a novel Vineland™-II 2-Domain Composite (2DC) score, which combines these 2 independently validated scales, we conducted a psychometric analysis of this new score using data from the Vineland™-II phase 2 trial of balovaptan, a 13-week study in adults with ASD and an intelligence quotient (IQ) ≥ 70. The Vineland™-II 2DC has been shown to be a reliable and valid scale used as an outcome measure in clinical trials with adults with ASD.

Methods

The 2DC score is calculated as the arithmetic mean of the Vineland™-II Socialization and Communication domain scores. Measurement of reliability was performed using interclass correlation coefficient (ICC) in patients with no change in their clinical status at day 84 of the Clinical Global Impression-Improvement (CGI-I) scale. Sensitivity to changes (baseline to day 84) was assessed by comparing mean scores on the Vineland™-II 2DC between subjects with CGI-I scores of “minimally improved” or better versus “no change” on various measures of covariance. Concurrent and divergent validity, as well as known group validity, were also explored with baseline Vineland™-II 2DC, age, and IQ as covariates. All analyses were conducted on the total dataset.

Results

The 2DC score correlated with CGI-I scores (N = 212): 0.23 and with CGI-S (N = 212): 0.30, indicating that the Vineland™-II 2DC has strong known-groups validity. The relationship between CGI-I and CGI-S scores was strong (r = 0.78, p < 0.001). The Vineland™-II 2DC has strong known-groups validity with the CGI-I and CGI-S scales.

Conclusions

In adults with ASD with IQ ≥ 70, the novel Vineland™-II 2DC score shows evidence of reliability, validity, and sensitivity to change, and enables a comprehensive assessment of social communication and social interaction in adults with ASD.

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