

Letter to the Editor

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Color vision test to differentiate Alzheimer's disease from vascular dementia

Arnaoutoglou *et al.* (2017) reported that “Ishihara Color Vision Test – 38 Plate” was useful for the differential diagnosis of dementia between Alzheimer's Disease (AD) and Vascular Dementia (VaD). The authors used sensitivity/specificity analysis, presenting 80.6% and 87.5% to discriminate AD and VaD patients when an optimal (32.5) cut-off value of performance was used. The authors cited a reference of the fact that AD patients suffered from a non-specific type of color blindness (Pache *et al.*, 2003), and I have a query on their study with special reference to statistical method.

Although their statistical approach is fundamentally correct, insufficient values of positive and negative predictive values show inadequate screening tools to discriminate AD and VaD patients. In addition, the Receiver Operating Characteristic (ROC) curve analysis by shifting cut-off value for drawing ROC curves and calculating area under the curve is another important method for the differentiation (Hanley and McNeil, 1982, 1983).

Second, Takeda *et al.* (2010) evaluated the screening ability for 91 patients with mild AD by using Takeda three colors combination test (TTCC). They set a 75 control subjects and logistic regression analysis was adopted. Odds ratio (95%CI) was 32.0 (13.1–78.1), and concluded that TTCC was effective for screening mild AD. Anyway, the setting of control group in study by Arnaoutoglou *et al.* (2017) seems not effective,

and sensitivity/specificity analysis alone is not satisfactory to confirm “Ishihara Color Vision Test – 38 Plate” as the adequate screening tool to discriminate AD and VaD patients.

Conflicts of interest

None.

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