

A masked object recognition task as an objective marker for the Visual Snow Syndrome

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Introduction

Visual Snow Syndrome (VSS) is a migraine-related perceptual disorder. The main symptom is “visual snow (VS)” resembling the view of TV-static in the entire visual field. There are additional visual symptoms such as enhanced entoptic phenomena, palinopsia, photophobia and nyctalopia.^(1, 2) The diagnosis as established in the ICDH3-criteria⁽³⁾ is based solely on patient history.

Objectives

Here we propose an objective marker supporting the diagnosis and quantifying VS symptom intensity.

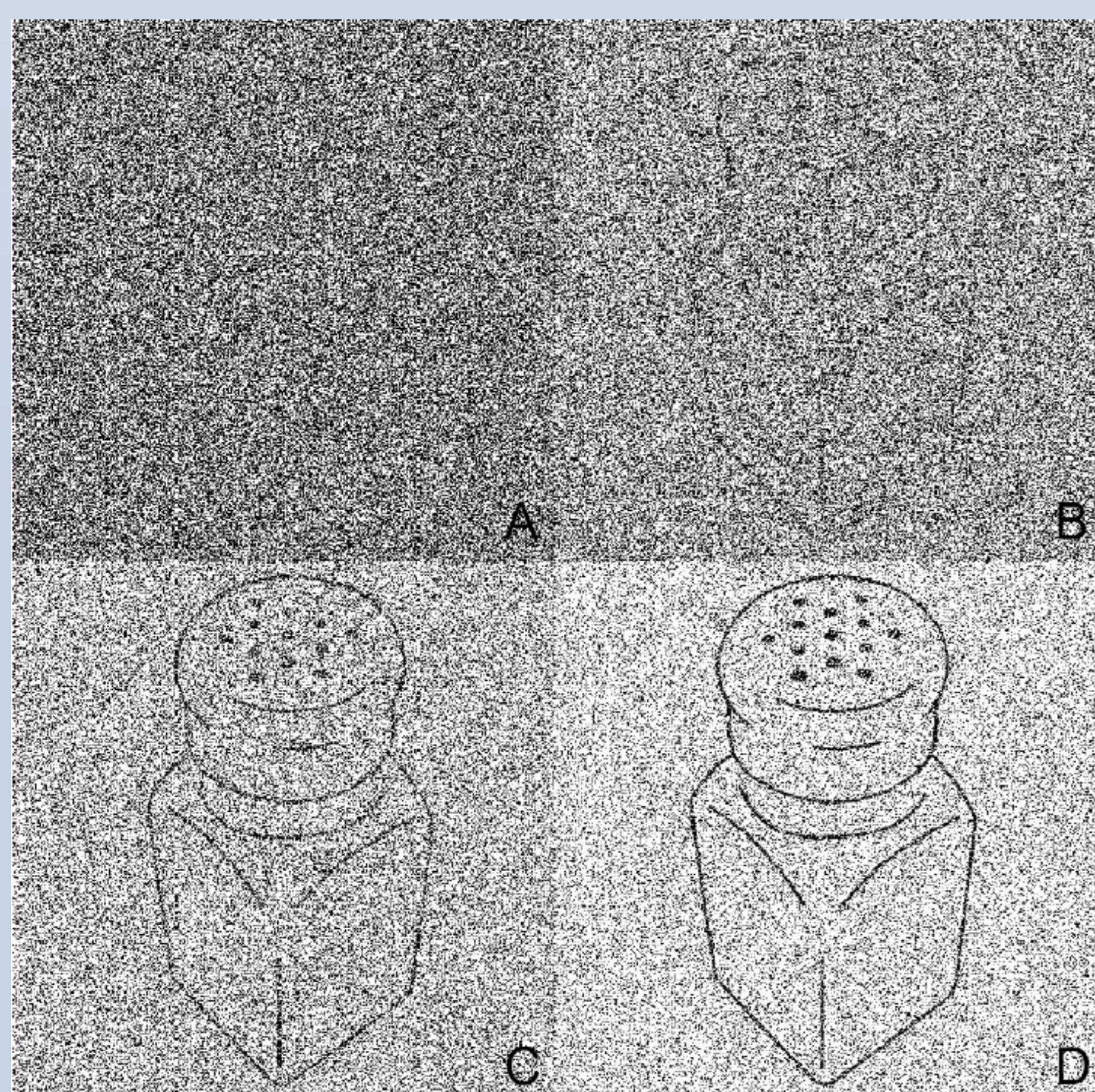


Figure 1: Image taken from the object recognition task described below

Methods

Fourteen subjects (9 VSS, 5 matched healthy controls) participated in a web-based, object recognition task, in which images of common objects were masked with black and white noise, which approximates the quality of VS as reported by the patients. At the beginning of each of the ten trials, the added noise covered the entire image, making object recognition impossible. Over time the noise level was automatically reduced until subjects signaled that they recognized the image embedded in the noise via a button press. To control for correct identification subjects had to select the answer from five alternatives presented on the screen. The primary endpoint was the mean noise level at the moment of recognition.

Results

Comparing the mean detection performance between visual snow patients and healthy controls using an independent t-test, we found a significant difference over all stimuli, between the patients with VSS and the age matched HC ($p = .026$; $d = 1.05$).

Overall detection performance was lower in VSS (mean noise level = 34.27) than in healthy controls (mean noise level = 37.48), demonstrating that people suffering from visual snow syndrome tolerate a lower level of noise to successfully recognize objects than people without visual snow syndrome.

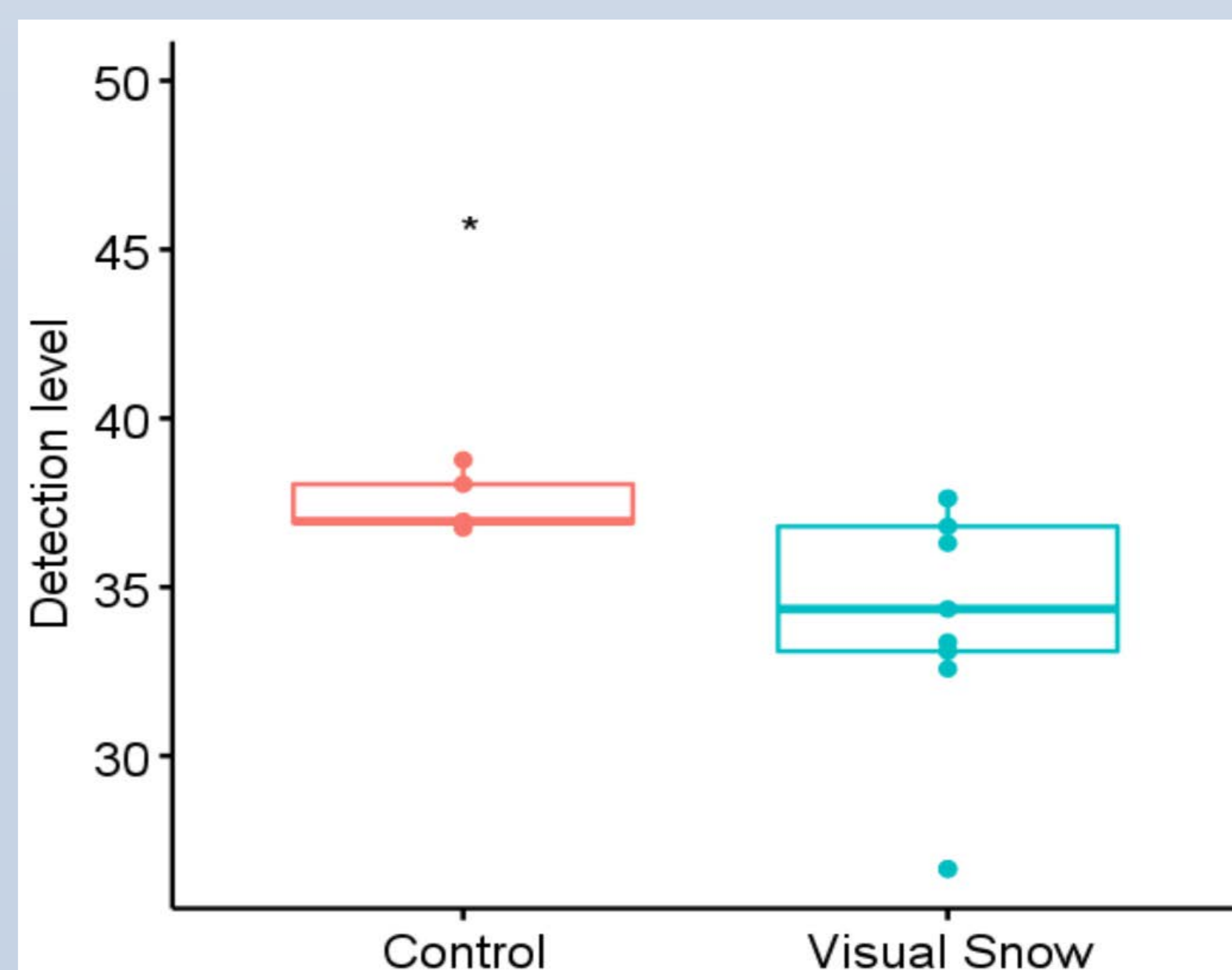


Figure 2: mean noise detection levels and standard deviations for both groups

Conclusion

The preliminary data show that subjects with VSS can be identified by their reduced performance in a masked object recognition task. The presented test provides an attempt to quantify the severity of visual impairment caused by VSS. In the future, such a test might be used as a diagnostic tool or, to monitor the success of therapeutic interventions, or in research projects.

References:

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Disclosure of Interest:

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