Paintings of an artist with Alzheimer’s disease: visuoconstructural deficits during dementia

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Summary. Patients suffering from Alzheimer’s Dementia (AD) have increasing difficulties to orient in space and often fail to recognize basic realities and even their closest relatives. These symptoms lead to severe deterioration of everyday life and finally to total dependence. In this report we present the case of Carolus Horn, a famous German artist, who contracted with AD. The qualitative and quantitative analysis of changes in his artwork during disease progression gives an impressive insight into the patient’s visual world and how it becomes increasingly affected by delusional misperceptions, spatial errors and changes of colour-perception in the course of disease. Carolus Horn’s artwork lets us see the world through the patient’s eyes and by that it helps us to better understand the consequences of visuospatial and cognitive changes in AD.

Keywords: Alzheimer’s dementia, art, Carolus Horn, visuospatial impairments.

Introduction

In Alzheimer’s disease (AD) a number of deficits in constructional abilities, including drawing and writing are observed as early signs of the disorder (Rizzo et al., 2000; Esteban-Santillan et al., 1998). For instance, Alois Alzheimer himself came up with a simple, but impressive and historical way of showing constructional apraxia and agraphia (Maurer et al., 1997). He asked his first patient with Alzheimer’s disease, Auguste D., to write her name and home town on a small sheet of paper (see example Fig. 1 dated November 26, 1901). The handwriting of the 51-year old Auguste showed “amnestic writing disorder”, a term coined by Alzheimer to connote forgetfulness during writing. In addition, Auguste D. showed signs of dysgraphia, both perceptual and visuospatial disabilities and of a right side hemispatial visual searching impairment. Following her symptoms it can be predicted that she would have had deficits in drawing figures such as squares, squared stones or houses.
Artistic techniques such as drawing, painting and sculpturing, require the integration of a wide range of visuospatial and visual motor skills. They reflect the structured and functional organization of an artist’s brain. It is known that occipital and temporal cortical areas are concerned with the perception of form and colour, whereas parietal parts are involved in the perception of space and control of movement in space and time (Haxby et al., 1991).

As such, it is of interest to investigate the extent to which lesions in areas concerned with those skills should lead to an artistic decline. In the case of Alzheimer’s disease damage can occur to nearly all of those areas and as such can produce a complex cluster of perceptual and constructional dysfunctions in the visuospatial domain (Mendez et al., 1996; Ska et al., 1990). Depending upon the severity of the damage caused by the disease, patients would, for instance show a display of fewer angles, impairment of both depth perception and spatial relations, and oversimplification compared with control subjects.

**History of art in Alzheimer’s disease**

Drawings made by patients with focal or generalized cerebral damage or by patients with probable AD provide a unique opportunity to study the consequences of brain damage to artistic abilities. The effects of degenerative brain damage on artistic creativity have been reported by Henderson et al. (1989), who demonstrated that AD-patients who perform poorly on drawing tasks more after wander and become lost. Kirk et al. (1991) reported on drawing impairment in AD. Drawing performance was related to perceptual and executive dysfunctions in the visuospatial domain.