Drawing analysis in the assessment of patients with neurodegenerative diseases

Figure 1 Copying vs spontaneous drawing by a patient with advanced early-onset Alzheimer disease

(A) Pentagon drawing from Mini-Mental State Examination (the patient scored 7/30). (B) Flower drawing to command (reminiscent of baubles she decorated professionally). (C) Rey Complex Figure copy with spatial distortions. (D) Spontaneous duck character drawing. At home, the patient used to produce duck character drawings in a perseverative manner.

A drawing may elucidate a cognitive profile in neurodegenerative conditions, as illustrated here. A 64-year-old woman with early-onset Alzheimer disease exhibited impaired visual perception (poor copying), which contrasted with good access to acquired constructional representations or motor routines (well-constructed spontaneous drawings) (figure 1).

A 60-year-old patient with frontotemporal dementia and parkinsonism linked to chromosome 17 with P301L *MAPT* mutation (11 years after onset), with executive dysfunction and hemispatial neglect,¹ produced a drawing with well-delineated, but markedly disconnected, internal details (figure 2). Thus, in this case, exploded drawing might be linked to the executive deficits, rather than solely to impaired visuoception.²

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Figure 2 Dysexecutive exploded drawing in a patient with frontotemporal dementia and parkinsonism linked to chromosome 17

(A) Model figures. (B) The patient's copies. In B3, dramatically misplaced details correspond to the exploded drawing characteristics. However, the internal details are precisely copied, which is not typical for simultanagnosia. The left side omissions are due to hemispatial neglect. The 2 most outstanding disjointed details are marked with arrows.

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1. Sitek EJ, Narozanska E, Barczak A, et al. Agraphia in patients with frontotemporal dementia and parkinsonism linked to chromosome 17 with P301L MAPT mutation: dysexecutive, aphasic, apraxic or spatial phenomenon? *Neurocase* 2014;20:69–86.
2. McMonagle P, Kertesz A. Exploded drawing in posterior cortical atrophy. *Neurology* 2006;67:1866.

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