The clock drawing test is useful for diagnosing dementia, but can it differentiate Alzheimer disease (AD) from other forms of dementia?

RESEARCH

The clock drawing test (CDT) is useful for diagnosing dementia, but can it differentiate Alzheimer disease (AD) from other forms of dementia? Because a variety of skills are needed to successfully complete the CDT, researchers have reasoned that examination of the pattern of errors made by an individual patient may identify dementia subtype. The results of studies seeking to confirm this, however, have been conflicting. Researchers from the Sunnybrook Health Sciences Centre in Toronto, Canada, conducted a literature review to get more clarity on the issue.\(^1\) Databases searched included MEDLINE, PsycINFO, and Embase, and search terms included “clock drawing” or “CLOX” plus “dementia,” “Parkinson’s disease,” Alzheimer’s disease,” “dementia with Lewy bodies” (DLB), or “vascular dementia.” The analysis included any study published in English that used the CDT to compare patients with AD with patients with other dementias. An additional inclusion criterion was that diagnoses were based on clearly defined criteria and/or autopsy findings.

Of 866 potentially relevant references, 20 studies met inclusion criteria. Of these, CDT scores of patients with AD were compared with those of patients with vascular dementia in 11 studies, with Parkinson’s disease dementia in 6 studies, DLB in 4 studies, and frontotemporal dementia in 3 studies (5 studies compared AD with more than 1 other type of dementia).

Quality not quantity matters

With the exception of frontotemporal dementia, no significant differences were found in quantitative CDT scores between patients with AD and those with other dementia subtypes. However, qualitative error analysis was able to reveal differences. Patients with vascular dementia demonstrated more spatial/planning deficits, graphical errors, and perseveration errors than patients with AD, who themselves demonstrated more conceptual deficit errors over time (compared with baseline). More spatial/planning errors also were observed in patients with Parkinson’s disease dementia, and, again, it was observed that patients with AD made more conceptual errors. However, patients with DLB demonstrated more conceptual and planning errors than patients with AD. Available research also suggests that the CDT can differentiate patients with DLB who hallucinate from those who do not. Patients with DLB who had visual hallucinations scored lower on the CDT than those who did not. CDT score also predicted the rate of global decline in patients with DLB but not those with AD.

As for frontotemporal dementia, affected patients scored higher on the CDT than patients with AD. Qualitative error analysis also revealed that patients with frontotemporal dementia demonstrated fewer stimulus-bound responses, conceptual deficits, and spatial/planning errors than patients with AD.
Narrowing it down
The CDT evaluates orientation, attention, listening comprehension, verbal working memory, numerical knowledge, visual memory, visuospatial organization, motor execution, and executive function and serves up an single, overall score. Although this score can identify cognitive impairment, scrutiny of specific domains is apparently needed to differentiate type of cognitive impairment, the researchers explained. Therefore, examination of the type of CDT errors a patient makes may be more useful in forming a differential diagnosis. Although quantitative analysis of CDT scores are not likely to differentiate AD from other dementia subtypes—with the exception of frontotemporal dementia—qualitative error analysis of the CDT may be a helpful adjunct in differentiating AD from other dementias.

References:

Source URL: http://www.psychiatrictimes.com/geriatric-psychiatry/identifying-dementia-subtypes-clock-drawing-test

Links: