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## Homicide and Dementia in Older Adults: The Key Role of Dysexecutive Function

**To the Editor:** Homicide committed by older adults is an extreme and infrequent outcome of violence that has a prevalence ranging from 1% to 4%.<sup>1-4</sup> An association of mild and moderate dementia with homicide has been reported.<sup>1,2,5-9</sup> Although risk factors of homicide in demented patients remain unknown, dysexecutive syndrome could be a cause. The reported case highlights this issue and shows that neuropsychiatric evaluation of older murderers could be useful to understand their acting out.

**Case report.** Mr A, a 78-year-old man, was admitted to a psychiatric hospital in December 2008 after the homicide of his wife. He killed her at his home, during the morning, with multiple stab wounds on her whole body. Before the homicide, he had experienced feelings of being attacked by his wife in a delusion of persecution. He had not planned his act. After the homicide, he called for assistance.

Mr A had no history of criminal offense, psychiatric disorders, alcohol abuse, or dementia. His past medical history included presbyopia and presbycusis. The patient's first neuropsychiatric evaluation, conducted 9 months after the initial events, found significant cognitive impairment. Mr A's Mini-Mental State Examination (MMSE)<sup>10</sup> score was 22/30 and revealed a moderate dementia with a moderate dysexecutive syndrome. His Frontal Assessment Battery (FAB)<sup>11</sup> score was 12/18 (normal score = 18/18), and his performance of verbal fluency tasks was low (number of enumerated names in 1 minute: 7 for animal names, and 4 for words starting with *P*). He was left-hand dominant. Furthermore, the patient had episodic memory impairment and nominal dysphasia for complex words. His score on a simplified Instrumental Activities of Daily Living Scale<sup>12</sup> was 1/4 (normal score = 4/4). Results of a neurologic examination were normal.

Brain computed tomographic imagery showed a mild cortex atrophy, a bilateral and symmetrical ventricular enlargement, and a smaller right hippocampus than the left. There was no ischemic or hemorrhagic lesion.

We concluded that he had a neurodegenerative dementia associated with dysexecutive syndrome and a psychotic feature corresponding to homicide. The most probable retained diagnosis was moderate Alzheimer's disease, based on National Institute of Neurological and Communicative Disorders and Stroke-Alzheimer's Disease and Related Disorders Association (NINCDS-ADRDA) criteria for probable Alzheimer's disease.<sup>13</sup> Two years after the homicide, Mr A's dementia was moderate to severe; he had an MMSE score of 15/30 and worsening of executive functions with a FAB score of 4/18. Cerebral magnetic resonance imaging displayed diffuse moderate cortex atrophy associated with leukoariosis, and a hypoperfusion of the frontal lobes was seen on technetium-99m hexamethylpropyleneamine oxime single-photon emission computed tomography (HMPAO-SPECT).

Homicide in older adults may be the first manifestation of dementia. The nature of the act committed in the reported case excludes passive omission of assistance as a hypothetical cause of the homicide, but it could be explained by prosopagnosia or a disinhibited rage attack. This last hypothesis could be related to dysexecutive syndrome.<sup>8</sup> Deficits of executive functions reflect impairment in dorsolateral prefrontal and orbitofrontal cortex.<sup>4</sup> In addition, low 5-hydroxyindoleacetic acid in the prefrontal cortex has been associated with inhibition disorders resulting in aggressive or impulsive behavior.<sup>4</sup>

Besides the diagnosis orientation, a neuropsychological investigation could help to determine whether a murderer, especially if he or she is above the age of 65, was mentally competent during the act. Further research is needed to corroborate our findings.

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