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PROGRESSIVE NEUROCOGNITIVE DECLINE IN MIDLIFE FOLLOWING LONG-TERM POLYSUBSTANCE USE: A CASE REPORT

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OBJECTIVE: Long-term substance use has been associated with impairments across cognitive domains, including memory, attention, executive functions, and orientation. In middle adulthood, substance-related cognitive impairment may present heterogeneously, ranging from domain-specific deficits to progressive functional decline. However, longitudinal case reports describing neurocognitive trajectories in abstinent polysubstance users remain limited. This case report aims to describe progressive cognitive and functional deterioration in a middle-aged patient with long-term cannabis and methamphetamine use, emphasizing diagnostic considerations.

CASE: A 46-year-old male with a 15-year history of cannabis and methamphetamine use was brought to the emergency department due to psychomotor activation and aggression toward family members. Relatives reported several years of progressive forgetfulness, impaired self-care, and episodic confusion prior to 2023.

Following an intensive care unit admission for bronchopneumonia in 2023, behavioral and cognitive symptoms accelerated, including frequent disorientation (occasionally not recognizing his location), impaired daily functioning, episodic urinary incontinence, and confusion-related misinterpretations such as repeatedly searching rooms and believing his former spouse—despite being divorced—was present in the home.

Intermittent paranoid themes were observed but did not reach the level of fixed or systematized delusions. During a one-year abstinence period, supported by negative urine toxicology, cognitive and functional decline persisted. Cognitive assessment using the Mini-Mental State Examination (MMSE) demonstrated a decline from 22 to 19 within one year. Cranial magnetic resonance imaging performed after the 2023 hospitalization revealed mild cortical atrophy. Neurological consultation did not indicate an alternative primary neurological disorder. Infectious, metabolic, and routine laboratory evaluations were unremarkable. Written informed consent was obtained.

DISCUSSION: This case illustrates progressive neurocognitive and functional decline in midlife following long-term polysubstance use, persisting despite abstinence. While the clinical presentation was considered consistent with a substance-induced neurocognitive disorder, alternative diagnoses—including early-onset dementias—should be carefully considered. Potential contributing mechanisms may include cumulative neurotoxicity, neuroinflammation, and medical stressors such as critical illness.

Keywords: Substance-induced neurocognitive disorder, polysubstance use, cognitive decline