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Distinct profiles of apathy corresponding to distinct anatomical subtypes of behavioural variant frontotemporal dementia

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STATE OF THE ART: Apathy in behavioral variant frontotemporal dementia (bvFTD) is presumed to involve different pathophysiological mechanisms and neuroanatomical regions. We explored the hypothesis that distinct profiles of apathy, corresponding to distinct patterns of atrophy within frontal lobes, could be disentangled in bvFTD.
METHODOLOGY: We isolated clusters within a population of 20 bvFTD patients, according to their profiles on the three subscales of the Dimensional Apathy Scale (DAS). Apathy profiles of isolated bvFTD subgroups were characterized first according to measures by questionnaires, and second, after taking account of objective behavioral metrics assessing the reduction of goal-directed behaviors (with and without external guidance). The atrophy pattern of each bvFTD subgroup (compared to 16 matched controls) was obtained by voxel-based morphometry.
RESULTS: We disentangled three subgroups of bvFTD patients, with distinct apathy profiles and atrophy patterns. One subgroup (bvFTD-G1), which presented the smallest pattern of atrophy (including orbitofrontal and anterior cingulate cortex), was characterized by a specific self-initiation deficit reversible by external guidance. In the two other subgroups (bvFTD-G2 and G3), which showed more diffuse bilateral atrophies extending to areas of lateral prefrontal cortex, apathy was not reversible by external guidance and more difficulty to focus on goal-management was detected, especially in patients who reported the highest levels of executive apathy.
CONCLUSION: Distinct clinical profiles of apathy, corresponding to distinct anatomical subtypes of bvFTD, were identified. We discuss the implications for clinicians in a perspective of precision medicine, to personalize treatments of apathy.

Conflicts of interest

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