Introduction: In view of recent global trends in alcohol use, it becomes increasingly relevant to characterize health outcomes related to unhealthy alcohol use. Previous studies found that self-reported alcohol use was related to poor brain health. However, these studies remain inconclusive since they limited their analyses to very narrow demographic strata, considered only a subset of cortical regions, or didn't validate self-reported alcohol use with biomarkers such as gamma-glutamyltransferase (gamma-GT).
Objectives: This study aimed to comprehensively examine several aspects of brain health (cortical thickness, gray matter volume, and brain age gaps) in participants regularly exceeding the recommended limits of moderate alcohol use versus those who don't, and to validate self-reported alcohol intake by comparing gamma-GT levels across groups.
Methods: This analysis was based on cross-sectional data from the population-based cohort of the BiDirect Study conducted in Münster (Germany). Individuals aged between 35 and 65 years were randomly selected from the local population register and invited to participate in the assessment that included a 3 Tesla magnetic resonance imaging (MRI) of the brain and a blood collection. Unhealthy alcohol use was defined as the regular consumption of at least three units of alcohol (one unit = 0.2L beer or 0.1L wine or 2cl spirits) per occasion at least twice a week. Regional cortical thickness and subcortical gray matter volumes were extracted from T1-weighted images in participants who underwent MRI. In addition, brain age gaps were estimated using an elastic net algorithm based on the imaging-derived phenotypes. Associations between unhealthy alcohol use, cortical thickness, subcortical gray matter volumes, and brain age gaps were analyzed using multiple regression models adjusted for age, sex, lifetime smoking status, education, and childhood trauma.
Results: Participants engaging in unhealthy alcohol use had significantly higher gamma-GT levels. In addition, unhealthy alcohol use was associated lower regional cortical thickness across all four lobes of the brain. No differences in subcortical gray matter volumes were detected. In addition, we observed a significantly higher brain age gap (+ 1.11 years) in unhealthy alcohol users.
Conclusions: The results of this study indicate that the regular exceedance of the recommended levels of alcohol use is associated with poorer brain health as reflected by lower regional cortical thickness and advanced brain aging. The findings underscore the potentially adverse effects of alcohol on brain health, which are increasingly relevant in view of recent global trends in alcohol use.

Disclosure of Interest: None Declared

EPV1047

How Follow-Up Neuroimaging Techniques Enhance Care for a Veteran with Combat-Related TBI and PTSD

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Introduction: As traumatic brain injury (TBI) is a significant concern among military veterans, ongoing neuroimaging is a beneficial tool for monitoring functional brain changes and evaluating the progression of symptoms.
Objectives: Highlighting the importance of follow-up neuroimaging assessments in guiding treatment adjustments and understanding the evolving relationship between TBI, post-traumatic stress disorder (PTSD), and neurocognitive dysfunction.
Methods: A 27-year-old male veteran injured by an IED experienced trauma to the right side of his body, resulting in 80% vision loss in the right eye and 20% in the left. He reported memory gaps and sleep disturbances. After inpatient and outpatient rehabilitation, he was prescribed Olanzapine (5 mg/day), Quetiapine (150 mg/day), and Venlafaxine (75 mg/day). On his second admission for increased sleep disturbances and anxiety, Quetiapine was increased to 200 mg/day. One year later, the patient developed new cognitive impairments and reported memory deficits and anterograde amnesia, concurrently PET scans revealed hypometabolism in the frontal lobe.
Results: Neuropsychological Evaluation: The Raven Standard Progressive Matrices Test indicated potential issues in reasoning and problem-solving, while the Verbal Fluency Test suggested difficulties with cognitive flexibility and memory, and the Trail Making Test revealed problems with attention and sequencing. Imaging Findings: The initial CT scan demonstrated displaced linear fractures in the right temporal bone and two brain contusions shortly after the incident. On his visit nine months later, SPECT imaging showed relative hypoperfusion in the right posterior parietal cortex and bilateral temporal lobes. An EEG revealed slow wave anomalies in the right temporooccipital area and sharp spasms in the left temporal region. One year later, a follow-up PET scan revealed diffuse hypometabolism in the left frontal lobe, parietal lobes, and cerebellum.

Image:

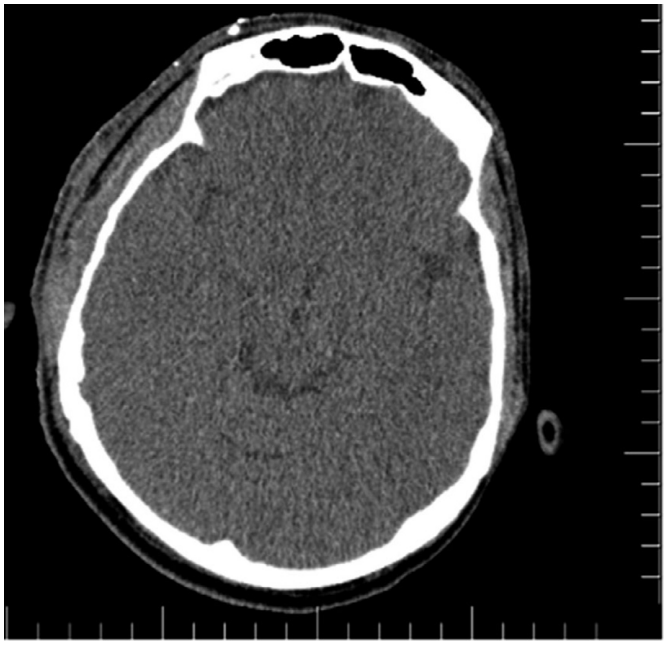


Image 2:

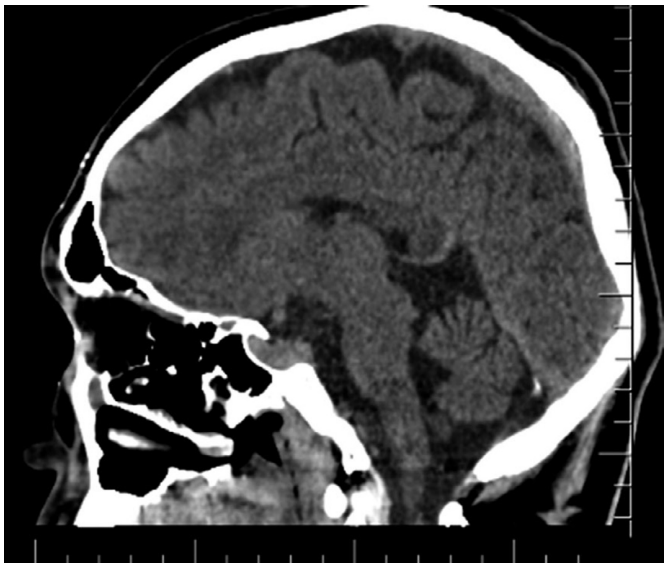
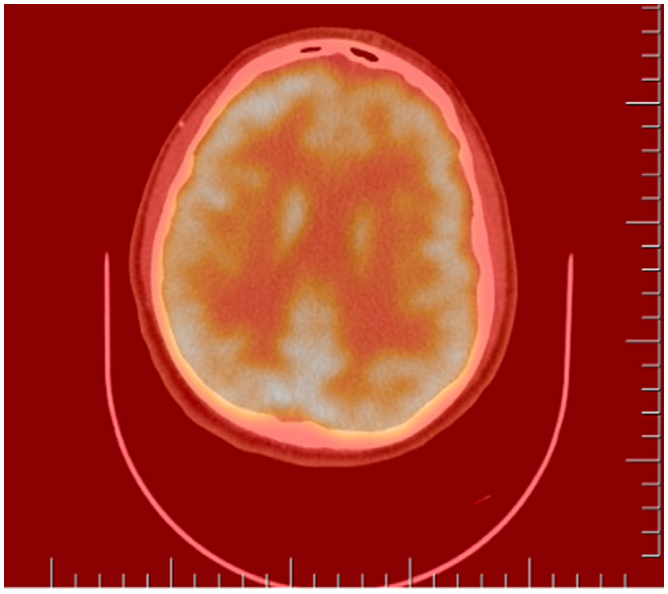


Image 3:



Conclusions: This case emphasizes the role of follow-up neuroimaging in managing complex cases of combat-related TBI and PTSD. The progression from structural damage to later functional changes like hypometabolism in the frontal and parietal lobes illustrates how neuroimaging helps track the long-term impact of brain injuries and provides a comprehensive understanding of the evolving neurocognitive challenges. Continued neuroimaging is crucial for monitoring neurodegenerative processes and guiding adjustments in treatment (Koerte et al., 2015b). This approach supports a more targeted treatment plan, improving the veteran's long-term prognosis (Wilde et al., 2015). Future studies should prioritize large, multi-site longitudinal research to track long-term neurotrauma effects through imaging, providing insights into neurodegeneration, recovery, and neuroplasticity.

Disclosure of Interest: None Declared

EPV1048

MRI structural alterations in schizophrenia patients with prominent first rank symptoms

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Introduction: There is an evidence that the presence of first rank symptoms (FRS) in psychotic patients is associated with structural brain alterations and that the FRS severity is correlated with abnormal brain functioning. However, whether the severity of first rank delusions (FRD) or first rank hallucinations (FRH) correlates with structural alterations remains unclear.

Objectives: We aimed at exploring correlations of FRS severity with structural brain alterations in schizophrenia patients with prominent first rank symptoms.

Methods: Twenty one right-handed patients (21.2-47.6 years, mean age 35.2±8.8, 2 females) with schizophrenia, presenting with prominent FRS and 21 one-to-one matched healthy controls (21.4-47.7 years, mean age 34.6±9.0, 2 females) underwent structural MRI at 3T scanner. MRI images were processed via FreeSurfer 6.0 to quantify cortical thickness and volumes for subcortical and brainstem (midbrain, pons, superior cerebellar peduncle and medulla) structures. The presence of FRS were diagnosed by professional psychiatrist (M.M.) using clinical interview and clinical-psychopathological method, severity of FRD and FRH were assessed with PANSS (P1 and P3 items accordingly). PANSS total for all patients: 88.1±20.6; PASNSS positive: 23.7±5.2 (P1: 4.9±1.3; P3: 4.6±1.3); PASNSS negative: 21.9±8.7.

Results: Compared to healthy controls, patients with FRS showed widespread cortical gray matter thickness reductions (Image 1, A), and decreased volumes of hippocampus, amygdala, thalamus, caudate and nucleus accumbens bilaterally (Image 1, B). Patients with FRS also showed decreased volumes of whole brainstem and all of its substructures (midbrain, pons, superior cerebellar peduncle and medulla: Cohen's d from -0.74 to -1.2).

No correlations between structural alterations and severity of FRD or FRH (PANSS P1, P3, P1+P3) were found.

Image 1. A: Clusters of decreased cortical thickness according to atlas of Desikan et al. (2006) in patients with FRS compared to healthy controls. B: Decreased volumes of subcortical structures in patients with FRS compared to healthy controls (nucleus accumbens are not shown).