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Visuospatial memory deficits in long term heavy cannabis users: relation to psychotic symptoms and regional brain volumes

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Abstract

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e.g. zolpidem. In order to define what potentially inappropritate use of BZD is, we need to look into the simultaneous use of multiple BZDs which is not uncommon and deserves to be further studied. Efforts also need to characterize potential heavy users, in order to ensure that BZDs are used most effectively and their untowards effects are minimized.

P-06.32 Corpus callosum damage in heavy marijuana use: preliminary evidence from diffusion tensor tractography and tract-based spatial statistics

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Objective: Heavy marijuana use has well established long term consequences for cognition and mental health, but the effect on brain structure is less well understood. We used an MRI technique that is sensitive to the structural integrity of brain tissue combined with a white matter mapping tractography technique to investigate structural changes in the corpus callosum (CC).

Methods: Diffusion tensor imaging (DTI) was obtained in eleven heavy marijuana users who started using marijuana in early adolescence and eleven age matched controls. Mean diffusivity (MD) and fractional anisotropy (FA) (which measure structural integrity and tract coherence, respectively) were analysed within the corpus callosum which was spatially defined using tractography and tract-based spatial statistics (TBSS).

Results: MD was significantly increased in marijuana users relative to controls in the region of the CC where white matter passes between the prefrontal lobes. This observation suggests impaired structural integrity affecting the fibre tracts of the CC and is in keeping with previous reports of altered and diversified activation patterns in marijuana users. There was a trend towards a positive correlation between MD and length of use suggesting the possibility of a cumulative effect of marijuana over time and that a younger age at onset of use may predispose individuals to structural white matter damage.

Conclusion: Structural abnormalities revealed in the CC may underlie cognitive and behavioural consequences of long term heavy marijuana use.

P-06.33 Comparative study of haloperidol and olanzapine in cannabis induced psychotic disorder

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Objective: There are different ideas about prevalence and treatment of cannabis induced psychotic disorder. It is shown that high doses can lead to psychotic symptoms. Abuse of more potent and pure form of cannabis as"Hashish" is relatively prevalent In Iran. Some studies have shown successful treatment of this disorder with different antipsychotic drugs. In this study we aimed at comparing olanzapine with halopridol in cannabis induced psychotic disorder.

Methods: 21 patients including 19 male and 2 female with diagnosis of cannabis induced psychotic disorder according to DSM-IV-TR criteria were randomly divided into two groups to receive either haloperidol (11 patients) or olanzapine (10 patients) for a six a week trial. Mean age was 22.7 years. Assessments were conducted at baseline and after two, four and six weeks treatment using Brief Psychiatric Rating Scale.

Results: We used haloperidol in a dose between 5–20 mg daily and olanzapine in a dose between 2.5–10 mg daily. There was not a significant difference between two groups on Brief Psychiatric Rating Scale at the end of treatment. Mean haloperidol group 39.07 versus olanzapine 40.43 ($p = 0.23$). Comparing extrapyramidal adverse effects haloperidol group with use of Simpson Angus Scale showed significantly more side effects and they needed more to anticholinergic drugs such as biperidine for continuing treatment. Sedation was more in olanzapine group.

Conclusion: Olanzapine can be as effective as haloperidal for cannabis induced psychotic disorder. Olanzapine is associated with lower extrapyramidal side effects but more sedative effects.

P-06.34 Visuospatial memory deficits in long term heavy cannabis users: Relation to psychotic symptoms and regional brain volumes

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Objective: Verbal episodic memory has been extensively investigated in long term heavy cannabis users and most studies have found impaired learning and memory processes in this domain. Less attention has been devoted to studying visuospatial memory processes in this population. Recently we reported reduced hippocampal and amygdala volumes in long term heavy cannabis users which were related to subthreshold psychotic symptoms. This study assessed visuospatial memory in cannabis users and examined relations with symptoms and neural substrates.

Methods: 100 healthy participants (51 cannabis users, 49 non-user controls) completed four tests of visuospatial memory function from the Cambridge Neuropsychological Test Automated Battery (CANTAB): Spatial Recognition Memory (SRM), Spatial Span (SSP), Spatial Working Memory (SWM) and visuospatial Paired Associate Learning (PAL). Groups were matched on most demographic characteristics and other substance use was minimal in the sample. Subthreshold psychotic symptoms were assessed using the Scales for the Assessment of Postive and Negative Symptoms (SAPS and SANS) and the Brief Symptom Inventory. For 15 users and 16 controls, detailed anatomical brain scans were also obtained.

Results: Cannabis users and controls did not differ in age, but users had a marginally lower WAIS-R full scale IQ. Cannabis users showed significantly lower percent correct responses in SRM ($p < 0.02$), a smaller spatial span ($p < 0.04$), greater errors ($p < 0.0001$) and poorer strategy in SWM ($p < 0.0005$), and more errors in PAL ($p < 0.03$). None of the measures correlated with IQ, but differences were nevertheless retained when IQ was controlled. There were trends toward smaller spatial span ($p < 0.07$) and greater errors on PAL ($p < 0.03$) as a function of increasing duration of cannabis use. None of the measures correlated with subthreshold psychotic symptoms in the cannabis users but associations were observed between most of the memory indices and volumetric measures of the orbitofrontal and anterior cingulate cortices, despite the fact that these measures did not differ significantly between groups. The regional volumes also correlated with subthreshold psychotic symptoms in the cannabis users as well as with cannabis use parameters (eg. duration of exposure and cumulative dose of exposure).

Conclusion: Long term heavy cannabis use is associated with poorer visuospatial memory and subthreshold psychotic symptoms. These functional indices are related to volumetric measures of orbitofrontal and anterior cingulate cortices. The findings suggest that long term and heavy cannabis use has widespread adverse effects. Further research is required to determine whether these adverse effects recover with abstinence.

P-06.35 Pronounced paranoia as result of a cocaine disulfiram interaction

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Objective: Cocaine addiction is a chronic replapsing disorder. Disulfiram has recently shown to be promising in the treatment of cocaine addiction. Disulfiram targets the neurotransmitter system by inhibiting the dopamine β-hydroxylase (DBH) reducing dopamine and increasing norepinephine concentrations in peripheral and central tissues in both animals and humans. However, the pharmacodynamics by which this drug achieves reduced relapse rates in cocaine dependent patients is not fully unterstood. Several authors suggested that inhibition of DBH might represent an important key to success of disulfiram treatment for cocaine dependence. This modulation of central monoamie levels would induce drug aversion by provoking symptoms like anxiety, tachycardia and panic following cocaine taking.

Methods: Case Report.

Results: We now present the clinical data of a serious cocaine-disulfiram-reaction after relapse with cocaine in a patient who was treated in our outpatient unit due to an existing cocaine dependence.

Conclusion: Disulfiram seems to be very promising in the treatment of cocaine dependence. However, this must be confirmed in larger patient populations.