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Cannabinoids Are Neuroprotective in a Human Cell Culture Model of Parkinson's Disease

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MOVEMENT DISORDERS

role in psychiatric disease. We have conducted a systematic review of previous publications detailing *SGCE* mutation status and psychiatric disease. Inclusion criteria included: use of recognised MDS diagnostic criteria, a case control study design, *SGCE* status, and the use of standardised and validated psychiatric assessment tools. When data were pooled, these showed a significant association between *SGCE* mutations and psychiatric disease (p=0.028), including obsessive-compulsive disorders, depression and generalised anxiety disorder. This association was further strengthened when inclusion criteria were relaxed to include details of psychiatric diagnoses obtained by clinical history or patient self-report (p=0.012). This supports the view that psychiatric disorders form part of the MDS phenotype and that epsilon-sarcoglycan may have an important role to play.

POMD11 CANNABINOIDS ARE NEUROPROTECTIVE IN A HUMAN CELL CULTURE MODEL OF PARKINSON'S DISEASE

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Background We have previously shown a protective effect of Δ9-tetrahydrocannabinol (THC) in Parkinson's disease (PD) cell culture models associated with increased CB1 cannabis receptor cDNA. Here we investigate whether this protective effect is mediated via the CB1 receptor.
Methods SH-SY5Y human neuroblastoma cells were differentiated to a neuronal phenotype. The presence of an endocannabinoid system (ECS) was investigated by immunocytochemistry, Western blotting and reverse transcriptase PCR. Cannabinoids and ECS modulators were co-administered with PD-relevant toxins (MPP+ (mitochondrial inhibitor), lactacystin (proteasome inhibitor), paraquat (free radical generator) to determine any protective effect.
Results The protective effect of Δ9-THC was not blocked by the CB1 antagonist AM251, nor reproduced by the CB1 agonist WIN55,212-2. Δ9-THC is known to be antioxidant. Cannabidiol, an antioxidant with little CB1 receptor affinity, exerted a protective effect against MPP+ with no effect against paraquat or lactacystin. Cannabidiol may be acting via modulation of anandamide hydrolysis. We found expression of the enzyme involved in endocannabinoid hydrolysis, fatty-acid amide hydrolase (FAAH). Co-administration of URB597, an FAAH inhibitor, was protective against MPP+, an effect which was not blocked by antagonism of the CB1 receptor.
Conclusions Our results suggest that the protective effects of cannabinoids in cell culture models of PD may be mediated by modulation of the ECS.

POMD12 VISUAL CUE "WALKING GLASSES" MAY AID GAIT IN PARKINSON'S DISEASE

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Gait disturbance is an almost universal complaint suffered by PD patients as they inevitably progress to the more severe stages of the disease. This can be partially corrected by external cues guiding placement of each step. "Walking glasses", spectacles that present the patient with visual cues to aid walking without necessitating marking the floor or using a walking stick, have been used with varying degrees of success. We explored the use of a novel design of walking glasses that provide flexibility of visual and auditory cueing and would be very cheap to mass-produce. Performance was measured by timing 15 Parkinson's disease patients' walking over a "real-life" predefined 30 m course using different patterns of visual and auditory stimulation. Using the glasses, 8 of 15 patients achieved a meaningful benefit in walking speed of 21.5% (95% CI 3.9%). A further two patients had subjective benefit. It was found that both visual and auditory cues were beneficial, different patterns suiting different patients and more effective in different circumstances. Overall, the best pattern was visual cueing alone with a fixed cue present all the time. This pilot study shows promising improvement in the gait of a significant proportion of Parkinson's disease patients through the use of a simple, inexpensive and robust design of walking glasses, suggesting practical applicability in a therapy setting to large numbers of such patients.

POMD13 DISTINGUISHING TREMOR-DOMINANT PARKINSON'S DISEASE FROM TREMULOUS SUBJECTS WITHOUT EVIDENCE OF DOPAMINERGIC DEFICIT BY SPIROGRAPHY: AN FP-CIT VALIDATED STUDY

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Five to fifteen per cent of de novo patients recruited for recent clinical trials of anti-parkinsonian drugs had no evidence of nigrostriatal dopamine denervation on functional imaging. These diagnostically challenging subjects without evidence of dopaminergic deficit (SWEDDs) had tremulous syndromes other than Parkinson's disease (PD). Our objective was to analyse the accuracy of spirography in distinguishing cases of tremor dominant PD from tremulous SWEDDs cases. Analyses were carried out by observers blinded to the clinical data and supplied with just spiral drawings, from which tremor severity, 3-turn spiral diameter and spiral density were measured. A spiral coefficient, averaged for the spirals drawn by each hand, was derived from these three indices. A cut off of <4 in the coefficient was taken to indicate PD. Of the 65 cases analysed, the data were felt to be of insufficient quality in 6. Of the remaining 59 cases, the sensitivity and specificity for differentiating tremor dominant PD from tremulous SWEDDs was 65.2% and 61.1% respectively. An analysis was also performed looking at the individual spiral components. This showed that the sensitivity and specificity for tremor severity were 62.5% and 74.3%, 3-turn diameter 75% and 77.8% and spiral density 28% and 67.3% respectively for predicting PD. The simple 3-turn spiral diameter has similar sensitivity and specificity for distinguishing PD from SWEDDs as reported for two blind PD experts assessing these patients from standardised videotapes.

PONM01 MEASUREMENT OF GLOBAL STRENGTH: STABLE CONCEPT, FLUID RULER

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Background We previously described the construction of a measure for global strength in MS. However, loss of strength is common to many diseases. Thus, a generic strength measure may prove widely applicable and allow inter-disease comparison.
Aim To determine whether measurement performance of the MS-derived strength scale remained stable in people with CIDP.
Method MRC strength data from the RMC study (n=238) were amalgamated with those from our previously described MS sample (n=371). Items included were the eight pairs of muscles (four upper

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