Low-frequency rTMS of the premotor cortex reduces complex movement patterns in a patient with pantothenate kinase-associated neurodegenerative disease (PKAN).

INTRODUCTION: Pantothenate kinase-associated neurodegenerative disease (PKAN) is a secondary generalized dystonia associated with an accumulation of iron in the basal ganglia and increased motor cortex excitability. A pilot study in three patients with secondary generalized dystonia had reported a reduced frequency of painful axial spasms following inhibitory 1-Hz repetitive transcranial magnetic stimulation (rTMS) applied over the premotor cortex. PATIENT AND METHODS: We compared the effects of real versus sham rTMS on the frequency of the complex movement pattern and the need for additional benzodiazepine medication in a 6-year-old male patient with PKAN. A 20-minute session of left premotor 1-Hz rTMS was performed daily on 5 consecutive days. RESULTS: The occurrence of the complex movement pattern was gradually reduced from three to two attacks daily to one attack daily by real rTMS while sham rTMS had no effect. This reduction was obtained concomitantly with a similar reduction of additional benzodiazepines for both real and sham rTMS sessions. CONCLUSION: Inhibitory rTMS of the premotor cortex may be used to temporarily control motor symptoms in PKAN.