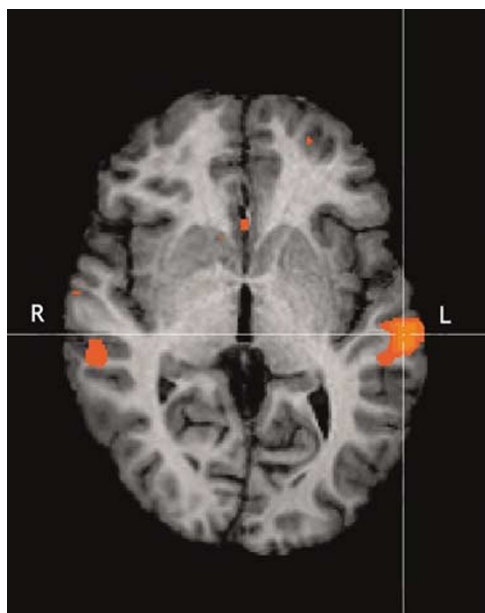


## LETTERS TO THE EDITOR

# An 11-year-old boy with drug-resistant schizophrenia treated with temporo-parietal rTMS

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Very early onset schizophrenia is a psychiatric syndrome in children under 13 years of age that is characterized by a very poor prognosis, due to frequent resistance to treatment.<sup>1</sup> We report here the case of a hospitalized 11-year-old child (YP), with a positive diagnosis of very early onset schizophrenia for the past 2 years (positive K-SADS-DSM-IV<sup>2</sup>), without any previous sign of pervasive developmental disorder. YP experienced verbal auditory hallucinations, a delusion of alien control and hetero-aggressive behaviour. Antipsychotic drugs were unsuccessful and furthermore, provoked severe acute dystonia. A 72-h EEG recording, an anatomical MRI



**Figure 1** Bilateral activations are shown in the superior temporal gyri, predominantly on the left, in an 11-year old child with verbal auditory hallucinations. Imaging was performed using a 1.5T MRI scanner (*Intera Achieva*, Philips, The Netherlands). Functional results are shown super-imposed on a transverse T1-weighted anatomical image. The statistical map was obtained by *Cortex-Based Spatial Independent Component Analysis*<sup>3</sup> (*BrainVoyager QX v1.7* software, Brain Innovation, The Netherlands, 2005).

brain scan and a complete set of metabolic analyses, were all negative. However, using data-driven analysis, we observed that YP's functional MRI scan revealed bilateral neural activity in the auditory cortex during auditory verbal hallucinations<sup>3</sup> (Figure 1). Ten sessions of fMRI-guided, low frequency (1 Hz), repeated trans-cranial magnetic stimulation (rTMS) over the left temporo-parietal cortex, were successful in stopping the verbal auditory hallucinations (*Auditory Hallucination Rating Scale*<sup>4</sup> –47%). The improvement obtained with rTMS was maintained by repeating the sessions every 5 weeks. The clinical improvement was confirmed by a significant improvement of adaptive functions (*Children's Global Assessment Scale*<sup>5</sup> +40%), and the fact that YP was able to go back home and attend school. Thereby, YP was able to receive education about his illness and to follow regular psychotherapeutic sessions. rTMS has been used for hallucinations in adults,<sup>4</sup> and in children with attentional deficits and hyperactivity.<sup>6</sup> To our knowledge, however, this is the first published case demonstrating the efficacy of fMRI-guided rTMS in the treatment of verbal auditory hallucinations in a child with schizophrenia. These results require replication.

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