

# New imaging technique reveals structural changes in Tourette's

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Magnetization Transfer Imaging, MTI, has been used to visualize previously unknown alterations in the cerebral architecture of patients with Tourette's syndrome. The researchers, writing in the open access journal *BMC Neuroscience*, also found a correlation between the extent of some of the structural changes and symptom severity.

Kirsten Müller-Vahl, from Hanover Medical School, led a team of researchers who used normal MRI scanning and the new MTI technique to investigate the brains of 19 Tourette's patients and 20 controls. They identified alterations in the frontal lobe of the Tourette's group that they suggest may be responsible for the pathology of the syndrome. Müller-Vahl said, "Our in vivo findings, using two sensitive and unbiased techniques, support the hypothesis that alterations in frontostriatal circuitries underlie Tourette's pathology".

The MTI technique used by the researchers has never before been applied to the study of Tourette's. It is a refinement of the [nuclear magnetic resonance](#) technique and allows for the detection of changes invisible to conventional MRI scanners. Tissue alterations in comparison to controls were detected in brain areas involved in the selection, programming, initiation, and control of movement. The authors conclude, "We suggest that Tourette's is primarily caused by a dysfunction in prefrontal cortex areas rather than the basal ganglia, as has been previously thought".

Tourette's syndrome is estimated to affect between 1-10 children per 1000 and, although the severity of a person's tics tends to decline with age, as many as 1% of the adult population may have some form of tic disorder. Symptoms include various facial, phonic and other motor tics - the well-known propensity for 'un-voluntary' swearing is in fact relatively uncommon, only affecting about 10% of Tourette's patients.

Source: BioMed Central ([news](#) : [web](#))

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