MR Imaging Malformations of the Corpus Striatum

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Purpose
Few reports of malformations involving the Corpus Striatum have been published. Our purpose was to describe the MR imaging findings in children with anomalies of the Corpus Striatum and outline the associated clinical features.

Materials & Methods
Eleven MR studies demonstrating malformations of the Corpus Striatum were identified in 5 boys and 6 girls. The patient's ages ranged between newborn and 8 years old. The MR studies were classified into four groups based on unilateral or bilateral striatal involvement and the presence or absence of cortical malformations. The integrity of the corpus callosum and commissural fibers was recorded also and the children's clinical records were reviewed retrospectively.

Results
A dysplastic or malformed Corpus Striatum presented as a gray matter mass with incomplete separation of the caudate nucleus and putamen and always was associated with aplasia of the anterior commissure. Four of 11 cases (group 1A), demonstrated bilateral striatal involvement with cortical malformations while 2/11 (group 1B), had a unilateral striatal malformation and ipsilateral cortical anomalies. The remaining 5 cases were striatal malformations without associated cortical anomalies; 2 showed bilateral involvement (group 2A), and 3 were unilateral (group 2B). In all cases the cerebral hemispheres and/or ventricles were asymmetric, and in group 2B, the lateral ventricle adjacent to the malformed striatum was dilated. Callosal dysgenesis was found in 6 patients, with 5/6 associated with cortical malformations. The severity of the clinical symptoms paralleled the extent of cortical and striatal malformation. Severe mental retardation, epilepsy, and cerebral palsy were invariable in group 1A (bilateral striatal malformation with cortical anomalies), with the exception of a case of bilateral perisylvian polymicrogyria without subcortical heterotopia. In group 1B and 2A (unilateral malformations with cortical anomalies or bilateral isolated striatal involvement), mental retardation, epilepsy, and cortical spinal signs were found solely or in combination. In group 2B (isolated unilateral striatal malformation) motor symptoms and mental retardation were very mild or absent and epilepsy occurred in only one patient.

Conclusion
Identification of a malformed Corpus Striatum is facilitated by searching for malalignment of the caudate nucleus and putamen in MR studies showing asymmetric lateral ventricles of unknown etiology. Striatal malformations may be linked to maldevelopment of the ipsilateral cerebral cortex but isolated cases can occur. Although the clinical symptoms may be related to the cortical malformation, cases of isolated striatal anomalies also display neurologic symptoms.