MR Imaging of Hypertensive Encephalopathy in Pediatric Patients

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Purpose: The purpose of this study was to find out characteristic MR imaging findings of hypertensive encephalopathy in pediatric patients.

Materials and Method: Eight pediatric patients (six boys and two girls, age ranged from three to 17 years) with hypertensive encephalopathy (blood pressure ranged from 150/95 to 250/160 mmHg) were included in this study. Of them, three had intra-abdominal tumors (an adrenal pheochromocytoma, a paraaortic paraganglioma and a paraaortic ganglioneuroma encasing the left renal artery). Three were treated with cyclosporin for nephrotic syndrome, renal transplantation and Langerhan's cell histiocytosis X, respectively, one with steroid as a chemotherapeutic regimen for leukemia and the remaining one had hemolytic uremic syndrome. Initial cranial MR imaging findings were evaluated with particular emphasis on the distribution of the lesions. Follow-up MR imaging was obtained in six patients at 1 week to 1 year after treatment of underlying causes or cessation of causative agents, to evaluate possible sequelae. In one case, proton MR spectroscopy was performed.

Results: Clinical manifestations included severe headache with vomiting in three, convulsion in four, extremities weakness in one, total blindness in one, visual disturbance in one, respectively. Characteristic distribution of lesions in the occipital subcortical white matter were identified in all cases regardless of the causes of hypertensive encephalopathy. Parietal lobe, cerebellum, basal ganglia are involved in seven, four, and two cases respectively. Both subcortical white matter and cortex are involved in four cases. The distribution of lesions were bilateral and asymmetric. Contrast enhancement was identified in four cases, and small hemorrhagic foci are noted in one case. In six patients, clinical and MR imaging findings were improved without significant sequelae on follow-up after cessation of causative drugs and surgical removal of intra-abdominal tumors. In one patient, in whom proton MR spectroscopy was performed, high lactate peak was noted at initial exam with normalization on follow-up.

Conclusion: MR imaging findings of hypertensive encephalopathy is characteristic in their distribution along the posterior circulation, and their reversibility on follow-up study. In pediatric patients with hypertensive encephalopathy of unknown causes, efforts should be made to search for the intra-abdominal tumors.