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HEADACHE DISORDERS

DIAGNOSTIC UTILITY OF CT SCAN FOR ACUTE HEADACHE

ED records for 364 children 2 to 5 years of age who presented to the Children's National Medical Center ED, Washington, DC, between July 1, 2003, and June 30, 2006, with headache as their chief complaint, were examined to determine whether CT scans led to better acute management, justifying the risk of radiation. On the basis of initial history and physical examination findings, 306 children (84%) had secondary headache (nonneurologic viral/respiratory/febrile illness in 222 (72%), trauma in 47 (15%), v-p shunt in 14 (4.5%), brain tumor in 7 (2.3%), meningitis 4 (1.3%), seizures 2 (0.7%), and misc. Primary headaches accounted for 57 (15.7%) cases; of these, 5 (8.7%) were migraine, and 52 (91.3%) unclassified. No family history was recorded for 59% of children with primary headache. Of 58 children (16%) with no recognized CNS disease or systemic illness at presentation, 16 (28%) had CT scans performed. One scan was abnormal (6%), showing a brainstem glioma, and this patient's neurologic exam was abnormal at presentation. For 15 (94%) cases, CT scans were normal, and did not contribute to the diagnosis or management. (Lateef TM, Grewal M, McClintock W, Chamberlain J, Kaulas H, Nelson KB. Headache in young children in the emergency department: Use of computed tomography. **Pediatrics** July 2009, 124:e12-e17). (Respond: Tarannum M Lateef M D, Department of Neurology, Children's National Medical Center, 111 Michigan Ave, Washington, DC 20010. E-mail: tlateef@cnmc.org).

COMMENT. CT scan is not useful in the diagnosis and management of young children presenting with headache in the ED. The test is rarely contributory in patients with normal neurologic examination, it is expensive and not without risk. The majority of acute headaches are caused by nonneurologic febrile illness. In the rare case having an abnormal

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CT scan, the history and neurologic examination are abnormal, pointing to a neurologic cause with symptoms and signs of raised intracranial pressure. The value of a thorough neurologic history and examination outweighs that of a CT scan. In patients with primary headaches, the family history is frequently positive for migraine and provides reassurance in a decision to defer neuroimaging of young children with headache in the ED.

Brain imaging in children referred to a pediatric neurology clinic for headache was also found of very limited value, in a retrospective study of 133 patients ages 3 to 18 years at Schneider Children's Hospital, NY. (Maytal J et al. **Pediatrics** 1995;96:413-416). The indications for brain imaging in 78 patients were atypical headache pattern in 12, parental concern in 12, physician concern about cerebral tumor in 11, systemic symptoms of fatigue and weight loss in 11, focal symptoms or signs during headaches in 7, neurologic or ocular abnormalities in 6, increasing severity or frequency of headache in 5, and unspecified in 17. Abnormal scans in 11 (14%) patients included evidence of chronic sinusitis in 7, neuroepithelial cyst near the foramen of Monroe in 1, temporal lobe arachnoid cyst in 1, cerebral hemiatrophy in 1, and Dandy-Walker malformation in 1. None of the scans showed lesions requiring neurosurgical intervention. MRI indications proposed by the authors include 1) atypical recurrent headaches, 2) recent change in character of headache, 3) persistent vomiting, 4) abnormal neurologic findings, and 5) occurrence in younger age groups. Headache associated with abnormal EEG should also be considered for MRI. In a young child with recurrent headache seen by a neurologist in a single consultation, without prospect of follow-up, deferral of imaging may not be practical or judicious.

SEIZURE DISORDERS

SINGLE-PULSE ELECTRICAL STIMULATION IN IDENTIFICATION OF EPILEPTOGENIC CORTEX

Single-pulse electrical stimulation (SPES) was evaluated in 35 children who underwent intracranial subdural electroencephalographic (EEG) monitoring at Great Ormond Street Hospital for Children and King's College Hospital, London, UK. Median age was 14 yrs 2 mos (range 9 mos to 17 yrs 7 mos). Using a series of 10 or more single, brief (1 ms) electrical stimuli, the cortical responses were examined for associations between response type, ictal onset zone, lesion boundary, and seizure outcome. Studies were conducted during interictal periods, while the patient was awake, and in parallel with video-EEG. Subdural grids (in 25 patients), subdural strips (in 30 patients), or depth electrodes (9 patients) covered a number of areas in each patient. The median number of electrodes in each patient was 54 (range 17-78). Abnormal responses to SPES indicative of epileptic cortical excitability were present in 54% of cases, and were "delayed"(DR) or "repetitive"(RR) in type. The DR is a sharp wave or spike, occurring later than 100 ms after stimulus, and corresponding with the area of seizure onset. The RR has the form of a successive repetition of an early response (ER), a sharp wave followed by a slow wave, typically lasting for a second or longer. Removal of the entire area responsible for abnormal responses to SPES was associated with good outcomes. (Flanagan D, Valentin A, Seoane JJG, Alarcon G, Boyd SG. Single-pulse electrical stimulation helps to identify epileptogenic cortex in children. **Epilepsia** July