recognized in the first post-natal year. Up to 25% of malformations recognized by the end of the first year had not been detected by, or soon after, birth. Within a month of delivery, 64 of the 1245 pregnancies (5.1%) and 69 of the 1268 fetuses (5.4%) had involved FMs. By the end of the post-natal year, 85 of the pregnancies (6.8%) and 90 of the fetuses (7.1%) involved FMs. Excluding cases born <1 year before time of data analysis, the rates of occurrence of FMs were 7.4% and 7.7%, respectively. The additional pregnancies involving fetal malformations recognized by 1-year post-partum represented 21 of all the 85 pregnancies with malformations (24.7%) and 21 of the 90 fetuses with malformations (23.3%). Of 13 pregnancies aborted because of malformations, 8 were exposed to AED monotherapy, as valproate in 5, lamotrigine in 2, carbamazepine in 1; in 5 exposure occurred as AED polytherapy, including VPA in 5, LTG in 2, topiramate in 1, and acetazolamide in 1. Early and late assessments of FM are complementary, but omission of an early assessment may result in biases and loss of subjects to follow-up. (Vajda FJE, Graham J, Hitchcock AA, O'Brien TJ, Lander CM, Eadie MJ. Foetal malformations after exposure to antiepileptic drugs in utero assessed at birth and 12 months later: observations from the Australian pregnancy register. **Acta Neurol Scand** July 2011;124:9-12). (Response: FJE Vajda, Department of Medicine and Neurosciences, Royal Melbourne Hospital and University of Melbourne, Parkville 3050, Australia. E-mail: vajda@netspace.net.au).

COMMENT. Previous studies of late recognition of fetal malformations (FM) have compared frequencies at birth and several years later, with similar findings (Annegers et al 1978, cited by authors). Drugs associated with FM differed between the early abnormalities and the late detected. VPA-associated malformations were detected at birth, while carbamazepine and lamotrigine were involved in those detected late. Spina bifida with hydrocephalus and cleft lip and palate were recognized at birth, while skull abnormalities were detected late. For an accurate assessment, FM rates with AED therapy during pregnancy should be checked at or soon after birth and again at 6-12 months later.

HEADACHE DISORDERS

CLINICAL/MRI CHARACTERISTICS OF ACUTE MIGRAINOUS INFARCTION

Clinical and MRI characteristics in 17 patients with acute migrainous infarction were assessed by researchers at the University of Heidelberg, Mannheim, Germany. Mean age was 44.6 +/- 15.9 years, range 20-71 years, 4 male and 13 female. All had undergone a stroke workup including diffusion-weighted imaging (DWI) between 2 hours and 7 days after onset. DWI lesions affected the posterior circulation in the majority (70.6%), and 29.4% had middle cerebral artery infarction. Multiple lesions were found in 41.2%. MRA was normal in 5 patients; in 4 the artery involving the ischemic territory showed reduced flow. Chronic white matter lesions were demonstrated in 3 cases. Patent foramen ovale was detected in 64.7%. One other risk factor for ischemic stroke was present in 94.1% patients: arterial hypertension in 47.1%, contraceptives 41.2%, nicotine abuse (35.2%), and hyperlipidemia in 35.2%. Coagulation abnormalities occurred in 2 patients. Presentation at the ED varied between 30 min and 5 days after

onset of symptoms and deficits, aura symptoms persisting beyond headache relief. Visual aura was the most common symptom (82.3%). Six patients (35.3%) reported residual symptoms from the index event. Differentiation between migrainous infarction and prolonged migraine aura is difficult and associated with delayed admission. (Wolf ME, Szabo K, Griebe M et al. Clinical and MRI characteristics of acute migrainous infarction. **Neurology** May 31, 2011;76:1911-1917). (Response and reprints: Dr Marc E Wolf, Department of Neurology, University of Heidelberg, Mannheim, Germany. E-mail: wolf@neuro.ma.uni-heidelberg.de).

COMMENT. It is controversial whether the migrainous attack is the cause or the symptom of ischemic stroke. By definition (HIS), migrainous infarction is a typical attack of migraine aura in a patient with previous history of migraine with aura and MRI evidence of cerebral ischemia. For cases with concomitant etiology (eg coagulation abnormality), "ischemic stroke coexisting with migraine" is the accepted term. Migrainous infarction is a rare disorder, and prophylactic treatment has not been evaluated. Patent foramen ovale closure may result in decreased frequency of attacks (Morandi E et al, 2003, cited by authors).

Cases meeting the diagnostic criteria for acute migrainous infarction are reported in children. Of 7 children with attacks confirmed by CT, 4 followed for 2 years show no severe residual effect. It is concluded that childhood migraine can be a contributory risk-factor for stroke (Rossi LN et al. **Dev Med Child Neurol** 1990;32(11):1016-1021). Two children with acute confusional migraine and one with migrainous infarction, aged 7-12 years, showed almost complete resolution of symptoms within 24 hrs. Transient occipital slowing on EEG lasted >24 hrs. MRI and MR angiography were normal, but SPECT performed within 48 hrs of migraine attacks revealed a regional change in cerebral blood flow, with hypoperfusion in the posterior cerebral territory (Nezu A et al. **Brain Dev** 1997;19(2):148-151).

DIAGNOSIS OF ABDOMINAL MIGRAINE

Researchers at the Children's Hospital of the King's Daughters, Norfolk, VA conducted a retrospective chart review on patients referred with the clinical complaint of recurrent abdominal pain, and ICHD-2 criteria were applied to identify those fulfilling criteria for abdominal migraine (AM). Of 458 patients with chronic, idiopathic, recurrent abdominal pain, only 20 (4.4%) met ICHD-2 criteria for AM and another 50 (11%) had probable AM, lacking at least one criterion for the diagnosis. No child seen in this gastroenterology practice between 1/1/2006 and 12/31/2007 had been diagnosed with AM during the 2-year observation period. AM is under-diagnosed in the US. Increased awareness of cardinal features of AM may result in improved diagnosis and early use of specific therapy. ICHD-2 2004 criteria for AM are listed as follows: A. At least 5 attacks with criteria B-D; B. Abdominal pain lasting 1-72 hrs; C Abdominal pain in midline, periumbilical, dull, and moderate or severe; D. At least 2 of the following during pain: anorexia, nausea, vomiting, pallor; E. Pain is not attributed to another disorder, and gastrointestinal or renal disease has been ruled out. (Carson L, Lewis D, Tsou M, et al. Abdominal migraine: an under-diagnosed cause of recurrent abdominal pain in children. **Headache** May 2011;51:707-712). (Response: Dr Donald Lewis, Division of Pediatric