presurgical intracranial monitoring of the EEG. Patients who underwent implantation of subdural grids and/or depth electrodes had received prior noninvasive assessment including video-EEG monitoring. Indications for invasive EEG recording included an MRI-negative focal epilepsy, discordant imaging and electroclinical data, suspected multifocal epilepsy, and seizures arising adjacent to eloquent cortex. Mean age at surgery was 10.8 years (range, 0.7-18.5 years). Mean age at the time of the first seizure was 3.4 years (range, 3 days-12 years). Mean number of seizures per month was 239.5 (range, 1-1000; SD 239). The mean number of grids or strips implanted per patient was 3 (range, 1-6). A depth electrode was placed in 31 patients.

Subdural grid recording was uneventful in 51.1% cases. Adverse events in 49% included subdural hemorrhage in 17% patients, wound infection in 14.9%, CSF leak in 10.6%, and symptomatic brain swelling in 6.4%. Adverse events were grade 1 in 19.1% (18 patients with no lengthening of hospital stay); grade 2 in 13.8% (13 with prolonged hospital stay); grade 3 in 16% (15 patients with a reduction in the Glasgow Coma Score); none was grade 4, an adverse event that would result in death. The frequency of adverse events was 20% in children <2 years of age and 50% in children >2 years of age. Of the 46 patients with adverse events, unplanned surgery had to be performed in 17 cases. No permanent neurologic deficits incurred as a result of any adverse event. Predictors of adverse events included age (brain swelling occurred in older patients >5 years); and length of recording (shorter with a complication such as hemorrhage). Functional cortical mapping with stimulation in 68 (71.6%) cases allowed identification of localized seizure onset zone in 68.9% patients. It was inconclusive in 18.9% (17 patients). The outcome of surgery was significantly related to the localizing accuracy of the invasive recording. (Blauwblomme T, Ternier J, Romero C, et al. Adverse events occurring during invasive electroencephalogram recordings in children. **Neurosurgery** December 2011;69:169-175). (Respond: Mr William Harkness MD, FRCS, Department of Paediatric Neurosurgery, Great Ormond Street Hospital for Children, Great Ormond St, London, WC1N 3JH, UK. E-mail: harknw@gosh.nhs.uk).

COMMENT. Two US neurosurgeons, Drs JG Ojemann and HL Weiner, each compliments the authors on this important contribution to the surgical management of medically refractory epilepsy. The cerebral swelling and other temporary complications of invasive monitoring are a concern. Advances in intraoperative electrocorticography in the future may lessen the need for preoperative invasive recordings.

HEADACHE DISORDERS

HEADACHE AND MOBILE PHONE USE

Researchers at Hallym University, Anyang, Korea investigated the clinical features of headache associated with mobile phone (HAMP) use among 247 medical students. Their median age was 23.6 years; 39.6% were women and 60.4% men. Following a 14-item questionnaire, individual telephone interviews were conducted with participants who reported HAMP more than 10 times during the previous year. HAMP was defined as a headache attack during MP use or within 1 hour after MP use. Of 214 (86.6%) students who completed the questionnaire, 40 (18.9%) experienced HAMP more

than 10 times during the previous year. The majority of those affected (97.4%) reported that HAMP was triggered by prolonged MP use (mean time 49.7 +/- 36.7 minutes); 52.6% reported HAMP occurred every time they used a MP. The headache was mild in intensity, and dull or pressing in quality in 79%, ipsilateral to the side of MP use (orbital or periorbital) in 84.2%, associated with a burning sensation in 71.1% and dizziness in 39.5%. Phonophobia was more prevalent among participants with HAMP compared to those without HAMP. The proportion of HAMP participants who suffered from migraine was 10.8%, and among none-HAMP participants it was 8.4% (NS). (Chu MK, Song HG, Kim C, Lee BC. Clinical features of headache associated with mobile phone use: a cross-sectional study in university students. **BMC Neurology** Nov 2011;11:115-122). (Respond: Dr MK Chu, Department of Neurology, Hallym University College of Medicine, Anyang, Korea. E-mail: 55brain@hallym.ac.kr).

COMMENT. The authors discuss the mechanism of HAMP and its possible relation to radiofrequency fields, psychological factors, temperature change, and noise. Only one participant in this cohort reported headache provocation by regular telephone use, and HAMP did not occur when using hands-free equipment. HAMP shows stereotyped clinical features.

METHYLENETETRAHYDROFOLATE REDUCTASE GENE VARIANT AND MIGRAINE

Researchers at McMaster University, Hamilton, ON, Canada performed a systematic review and meta-analysis of 15 studies of methylenetetrahydrofolate reductase gene (MTHFR C677T) and migraine in 447 patients selected from the Depression Case Control study (age 18 years or older). MTHFR C677T polymorphism was associated with migraine with aura (MA) (p=0.039), and the association remained significant after adjusting for age, sex and depression status. T allele homozygosity is significantly associated with MA and total migraine, but not migraine without aura. In studies of non-Caucasian population, the TT genotype was associated with total migraine, whereas in studies of Caucasians this variant was associated with MA only. (Samaan Z, Gaysina D, Cohen-Woods S, et al. Methylenetetrahydrofolate reductase gene variant (MTHFR C677T) and migraine: a case control study and meta-analysis. **BMC Neurology** Nov 2011;11:66-75). (Respond: Dr Z Samaan, Department of Psychiatry and Behavioral Neurosciences, McMaster University, Hamilton, ON, Canada. E-mail: samaanz@mcmaster.ca).

COMMENT. This study adds to the evidence for the role of MTHFR C677T gene variant in migraine with aura and shows a significant association between this genetic variant and MA in Caucasian population and total migraine in non-Caucasian population. A common polymorphism from the MTHFR gene, the C677T, is reported to be associated with both migraine and depression independently.

A population-based longitudinal community study of major depression and migraine in patients age >12 years found respondents with migraine were 60% more likely to develop major depressive episodes (MDE) compared with those without migraine. Similarly, respondents with MDE were 40% more likely to develop migraine