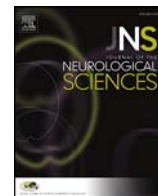


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## Headache 1

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WFN15-0334  
Headache 1**Relationship between *Chlamydia pneumoniae* infection and migraine**

J. Chaudhuri<sup>a</sup>, K.R. Mridula<sup>b</sup>, A. Keerthi<sup>c</sup>, P. Prakasham<sup>d</sup>, B. Balaraju<sup>d</sup>, V. Bandaru<sup>d</sup>. <sup>a</sup>Neurology, Yashoda Hospital, Hyderabad, India; <sup>b</sup>Neurology, NIMS, Hyderabad, India; <sup>c</sup>Neurology, Narayanadri Hospital, Tirupati, India; <sup>d</sup>Microbiology, Yashoda Hospital, Hyderabad, India

**Background:** Migraine is a chronic neurological disease affecting both genders. Studies have found infection and inflammation to contribute to migraine. There is an emerging evidence that *Chlamydia pneumoniae* (Cp) infection is associated with migraine.

**Objective:** To examine the relationship between the presence of Cp IgG positivity (as a marker of infection) and migraine in South Indian patients.

**Material and methods:** This study was carried out by the Department of Neurology, Yashoda Hospital, India. Study period was from August 2011 to December 2012, during this period we selected 250 migraine patients and 100 age and sex matched controls. Risk factors assessment and medical history were collected from both cases and controls. All case and controls underwent testing for Cp IgG antibody, C-reactive protein (CRP) and were assessed for depression using Hamilton Depression Rating Scale (HDRS).

**Results:** Out of 250 cases 65% were women, mean age was 48.48 ± 2.1 years (range 18–60 years). Among controls, mean age was 47.41 ± 3.1 years (range 18–59 years). Cp IgG antibody positivity was significantly higher in migraine patients 120 (48%) compared to controls 18 (18%) (p < 0.0001). Significantly higher CRP positivity 135 (54%) mean HDRS 8.9 ± 3.9 and history of sleep disturbance 50 (20%), were seen in cases compared to controls. After multivariate analysis Cp IgG antibody (Odds 2.1;95% CI: 1.4–3.4), CRP positivity (Odds 5.8;95% CI: 3.1–11.1) and female gender (Odds 2.2;95% CI: 1.9–2.9) had significant association with migraine.

**Conclusion:** This present study has established that Cp infection was independently associated with migraine. CRP positivity and female gender were also independently associated with migraine in South Indian patients.

**Key words:** Migraine, Cp, IgG antibody, CRP positive, HDRS South Indian patients.

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83  
WFN15-0346  
Headache 1  
**Familial limb pain and migraine: four generations and eight year follow-up**

H. Angus-Leppan<sup>a</sup>, R.J. Guiloff<sup>b</sup>. <sup>a</sup>Clinical Neurosciences, Royal Free London NHS Foundation Trust, London, United Kingdom; <sup>b</sup>West London Neuroscience Centre, Charing Cross Hospital Imperial College Healthcare NHS Trust, London, United Kingdom

**Background:** Limb pain in children and adults is not accepted as a migrainous manifestation in international classifications. There are no reports of familial forms of limb pain and migraine from childhood into adulthood.

**Objective:** To describe clinical and inheritance patterns of limb pain with migraine in a four generation family and review evidence for limb pain as a migraine manifestation.

**Methods:** Prospective clinical and pedigree analysis with eight year follow-up of a 27 member family.

**Results:** Eight members had benign recurrent limb pain associated with headache in an autosomal dominant pattern. Symptom onset was 6–30 years, with recurrences over 5–52 years from childhood into adulthood. Limb pain involved upper limbs, lower limbs, or both; and was unilateral but varied between episodes. Headache occurred before, during or after limb pain; with migraine (six), migraine and lower half headache (one), and isolated lower half headache (one). All had aura (visual, hemiparesis, sensory, or vestibular). Three had childhood recurrent abdominal pain and three motion sickness.

**Conclusions:** This is the first report of a family with recurrent limb pain and migraine headache from childhood into adulthood, or starting in adulthood, with autosomal dominant inheritance. Search for a genetic marker is indicated. Central convergence of nociceptive pathways in brainstem, cervical cord, thalamus and cortex may be relevant. Limb pain should be included as one of the periodic syndromes in childhood linked to migraine and recognised as part of the migraine spectrum in adulthood. This diagnosis is important for prognosis and management.

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WFN15-1067  
Headache 1  
**Migraine modulates the evolution of penumbra in acute ischemic stroke**

J. Mawet<sup>a</sup>, K. Eikermann-Haerter<sup>b</sup>, K. Park<sup>c</sup>, J. Helenius<sup>c</sup>, A. Daneshmand<sup>b</sup>, L. Pearlman<sup>b</sup>, R. Avery<sup>c</sup>, A. Negro<sup>b</sup>, M. Velioglu<sup>c</sup>, E. Arsava<sup>c</sup>, H. Ay<sup>c</sup>, C. Ayata<sup>b</sup>. <sup>a</sup>Centre d'Urgences Cephalées, Hopital Lariboisière, Paris, France;

<sup>b</sup>Neurovascular Research Laboratory Department of Radiology, MA General Hospital Harvard Medical School, Boston, USA; <sup>c</sup>Martinos Center for Biomedical Imaging and Stroke Service, MA General Hospital Harvard Medical School, Boston, USA

**Background:** Acute ischemic stroke treatment relies on vessel recanalization, providing there is salvageable tissue (penumbra), which can be assessed by DWI/PWI mismatch. The evolution of penumbra relies on time from onset to evaluation but also on age, gender, glycemia, collaterals, existence of reperfusion, haematocrit, hypoxia, and unknown conditions. Migraine may be another factor influencing the evolution of penumbra, as suggested by recent data in migraine mutant mice showing that cerebral hyperexcitability associated with migraine accelerates recruitment of ischemic penumbra into the core, resulting in faster infarct growth compared with wild type.

**Methods:** Retrospective case (45 patients)–control (27 patients) study in acute ischemic stroke patients (72 h of symptom onset) with documented migraine history. Measurement of lesion volumes on diffusion-weighted (DWI) and perfusion-weighted (PWI) MRI. Complete infarction pattern (i.e., no mismatch) was defined as PWI lesion <120% of DWI. IRB waived the requirement for informed consent because only a retrospective review of patient records was performed.

**Results:** Compared to controls, migraineurs who suffer an ischemic stroke have a significant increased risk of complete infarction pattern, indicating that the entire perfusion defect was recruited into the infarct by the time of MRI (22% vs. 4% in migraineurs and controls, respectively;  $p = 0.044$ ). The difference was even more prominent in migraineurs with aura (36% vs. 4%,  $p = 0.019$ ).

**Conclusions:** This study shows that a subset of migraineurs has an increased tissue vulnerability to acute cerebral ischemic injury. Prospective studies are needed to confirm this and to determine if migraineurs need specific management of acute ischemic stroke.

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WFN15-1490

Headache 1

**Endovascular treatment in idiopathic intracranial hypertension: clinical result and long-term follow-up**

R. Martinez<sup>a</sup>, W. Kurre<sup>a</sup>, H. Bänzner<sup>b</sup>, R. Unsöld<sup>c</sup>, H. Henkes<sup>a</sup>.  
<sup>a</sup>Neuroradiology, Katharinenhospital Klinikum Stuttgart, Stuttgart, Germany; <sup>b</sup>Neurology, Bürgerhospital Klinikum Stuttgart, Stuttgart, Germany; <sup>c</sup>Ophthalmology, Düsseldorf, Germany

**Purpose:** Idiopathic intracranial hypertension (IIH) is a disorder of increased intracranial pressure in the absence of any known causative factor. The most important clinical factor is the progression of the visual loss. Recently, stenting of stenotic dural sinuses has gained popularity as treatment, since these stenoses may contribute to an obstruction of the venous return. We evaluated the safety and efficacy of endovascular treatment in these patients.

**Methods and materials:** 38 patients with IIH underwent stenting. Most of them were women (73%) and clinically obese. Mean age was 38.5 years. 66% of the patients referred headache as clinical manifestation, 63% any type of visual problems. All patients presented papilledema in the ophthalmologic evaluation. 97% of the patients presented hyperintensity of the optic nerve sheath; 90%, empty sella syndrome; and all of them, venous stenosis. We performed stenting if symptoms persisted under medical treatment, repeated lumbar punctures, shunts procedures, or a combination of them.

**Results:** Resolution of the venous stenosis was possible in all the patients. There were no periprocedural complications. Improvement of papilledema was observed in 53% of the patients and 87% reported

improvement in the headache. In the long-term follow-up (median 31 months), only 6 patients (19%) presented re-stenosis; 2 of them, symptomatic.

**Conclusion:** Endovascular treatment with sinus stenting is an easy, safe and effective treatment in patients with IIH. The far majority of patients have a persistent clinical benefit.

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WFN15-1521

Headache 1

**Middle meningeal artery insonation in headache and migraine suffering patients – approach and significance**

T. Lepic<sup>a</sup>, M. Lepic<sup>b</sup>. <sup>a</sup>Clinic for Neurology, Military Medical Academy, Belgrade, Serbia; <sup>b</sup>Clinic for Neurosurgery, Military Medical Academy, Belgrade, Serbia

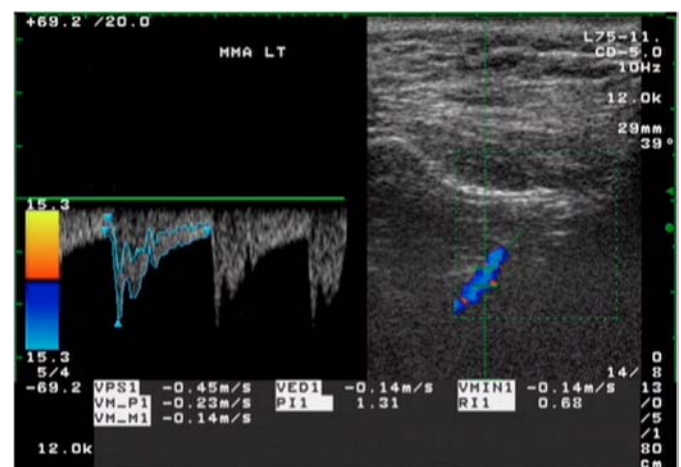
**Background:** Middle meningeal artery (MMA) is the largest artery which supply the meninges, it is typically the third branch of the retromandibular part of the maxillary artery, which branches off in the infratemporal fossa, and runs through the foramen spinosum to supply dura mater and inner aspect of cranial bones. MMA's role in headache and migraine is currently in the scope of researchers, and opinions on it's role vary drastically.

**Objective:** This approach was developed to perform the blood flow study of MMA, and to try to confirm headache vasoneural mechanisms, since there was no possibility to insonate the artery before.

**Patients and methods:** A total of 80 patients (40 suffering from headache and 40 healthy volunteers). To insonate the MMA a linear 7–11 MHz transducer was used in color duplex mode. Satisfying presentation of the artery at the depth of 20–30 mm was made below the zygomatic arch, in front of the temporomandibular joint, while keeping patients mouth widely opened. The artery presented good enough to evaluate in about 90% of patients and the flow analysis was performed.

**Results:** The blood flow velocity and volume were increased during the headache attack in more than 60% of cases.

**Conclusion:** Doppler sonographic examination of the MMA at least gives a glimpse into hemodynamic features of patients suffering from headache and migraine. The headache mechanism remains unconfirmed as it is to be determined whether the increased flow caused a headache, or a headache resulted in flow increase.



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WFN15-0112

**Headache 1****Migraine and idiopathic epilepsy connected heritability among twin pairs**

M. Knezevic-Pogancev. *Developmental neurology and Epileptology, Child and Youth Health Care Institute of Vojvodina, Novi Sad, Serbia*

The aim of the study was to determine connected migraine and idiopathic epilepsy heritability among the twin pairs.

Hereditability of migraine and idiopathic epilepsy was investigated by analyzing 396 twin pairs (42,4% monozygotic and 57,6% dizygotic) aged 3 to 21 years, on south part territory of Serbia.

Within the group of tested twins 30.2% had recurrent headaches, 21% non-migraine recurrent headaches 9.2% had migraine, 3% epilepsy, 2.4% had idiopathic epilepsy and recurrent headache and 0.76% had migraine headache and epilepsy.

Heritability quotient of recurrent headaches was 0.3882. Heritability quotient 0.8598 for migraine headache and 0.8898 for epilepsy clearly shows the heritability of the migraine syndrome, a well as epilepsy in our group.

Both correlation and determination quotient of the migraine syndrome of all the twins, monozygotic and dizygotic, show high degree of dependence of the migraine syndrome of one twin on the migraine syndrome of the other twin sibling, and higher dependence and significance of the difference with monozygotic twins. The same for idiopathic epilepsy was not proved in our group. In only one of our twin pairs (dizygotic) both of children had epilepsy and one of them had migraine headache.

Migraine depends on hereditary disposition factors which altogether, interacting with other surrounding factors. Idiopathic epilepsy heritability is known as high. In our twin observed group connected migraine and idiopathic epilepsy heritability among the twin pairs was not found. Stronger connection was proved between non-migraine recurrent headache and idiopathic epilepsy than between migraine and idiopathic epilepsy.

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WFN15-0281

**Headache 1****Pharmacological study of spreading depression. The effect of antiepileptic drugs used in migraine prophylaxis**

M. João, J. Houzel, C. Ienny. *Neurology, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil*

Spreading depression (SD) is an answer of the nervous tissue to a different type of local stimulus.

We analyzed the effects of antiepileptic drugs (AED), also used in migraine (MG) prophylaxis, on the spreading depression (SD) in isolated retina of chick (*Gallus gallus domesticus*). We studied five drugs: Topiramate (TP), Valproate semisodium (VS), Gabapentin (GP), Lamotrigine (LT) and Levetiracetam (LV). Chicks' retinas preparations were used. With this model, we measured the speed, the amplitude, the deflagration threshold and the absolute refractory period, with and without the drugs used in the study. The speed and amplitude parameters, were analyzed in an in vivo model. The GABA-transaminase enzyme (GABA-T) activity was determined, with and without the drugs. Analysis of variance was used to determine the activity of GABA-transaminase.

We verified that all the drugs, particularly Topiramate (TP), reduce the speed and amplitude in a dose-dependent and reversible manner, in vitro as well as in vivo. All the drugs also increase, in a reversible form, the deflagration threshold for the SD, after chemical stimulus with KC-, in specific concentrations. It was also verified, that all the drugs increase, in a reversible form, the absolute refractory period. Topiramate (TP) was considered the most effective drug in the context of the proposed parameters. The enzyme GABA-transaminase (GABA-T) displayed slight decrease activity, in the presence of Topiramate (TP), Valproate semisodium (VS) and Gabapentin (GP).

These results reinforce the notion that SD is a subjacent and relevant factor for the pathophysiology of migraine (MG), the treatment of this pathology must emphasize the use of antiepileptic drugs (AED), in special Topiramate (TP).

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