

The Almirall European Headache Awards 2009

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Abstract The Almirall European Headache Awards (AEHA) were organized in conjunction with the European Headache Federation. The awards were held in 2009, aiming to share clinical experience and best practice in headache-related disease management. 56 unusual and challenging cases of headache from 5 European countries (Belgium, France, Italy, Portugal and Spain) were judged by a Scientific Committee including expert representatives from participating countries, acting as reviewers. Three cases were selected from each country. The 15 resulting cases were presented to the Scientific Committee in Madrid, Spain in

November 2009 and awards were given to the top 5 presentations. This article presents details of these cases, including the award winning entries. They have been categorized into four main groups: (a) headaches in rare syndromes; (b) secondary headaches to infectious/autoimmune causes or post-trauma/mass occupation; (c) headache in unresolved cases; and (d) other relevant cases. First prize was awarded to a case involving a 55-year-old male with familial thrombocytopenia and a unilateral neuralgiform headache secondary to trigeminal vascular contact, and which was successfully treated with carbamazepine. Conclusions from the meeting include: rare syndromes do occur and require appropriate treatment to improve outcomes; concomitant diseases may impair adequate diagnosis and should be investigated; physicians should be cautious and treat possible serious underlying disease, whilst accurately clarifying the correct diagnosis; neurological examination and complementary tests may be required; consideration should be given to possible rare medication events; and some cases may remain without a clear cause or diagnosis and symptoms should be treated whilst investigations continue.

The Almirall European Headache Awards 2009 Scientific Committee included F. Antonaci, P. Cortelli, J.M. Lainez, J.P. Monteiro, K. Paemeleire, L. Savi, and D. Valade.

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Introduction

The Almirall European Headache Awards (AEHA) were organized in 2009 with the goal of sharing clinical experiences and improving best practices in headache-related disease management [1]. It was hoped that this could be achieved by

- providing a visible incentive for healthcare professionals working in the field to document and share

information regarding the diagnosis and treatment of rare/unusual cases involving patients with headache-and/or migraine-related disorders;

- ensuring that such information is made readily available;
- recognizing the work of headache specialists/neurologists so as to encourage future research and communication of medical best practices regarding rare and unusual cases of headache/migraine.

The scheme was initiated and sponsored by Almirall and supported by the European Headache Federation (EHF), and for the first award there were five participating European countries: Belgium, France, Italy, Portugal and Spain. Given the well-recognized need to promote and support ongoing training and communication in the field of headache differential diagnosis [2], it was decided that the awards for the AEHA would be in the form of educational grants/scholarships in this clinical setting.

The Scientific Committee responsible for judging and presenting the awards included the president of the EHF and representatives from each of the five participating countries.

Procedures and awards

Details for case submission were distributed across participating countries by the EHF via a newsletter and by Almirall during early 2009 and included the following instructions:

- The report must be of a maximum of 500 words (word document format, with Times Roman size 12 font and single-line spacing).
- Each case should be structured: medical history, physical examination, complementary tests, diagnosis, treatment and evolution, and a brief discussion.
- The report should be clear and comprehensive and no reference to the personal identity of patients and hospitals was allowed.
- Commercial brands must not be mentioned.
- A maximum of five references was allowed, indicated in the text and listed at the end of the report in the order of appearance.

The authors for the top 3 cases from each of the five participating countries were invited to present their work to the Scientific Committee in Madrid in November 2009. Presentations were performed in PowerPoint format, for a maximum duration of 15 min, and audiovisual material was permitted. The International Scientific Committee assessed the presentations according to the following parameters: content and presentation skills, overall relevance, originality, complexity, and educational impact of the clinical case. Five award winners were selected.

A total of 56 cases were received by the Scientific Committee. The 15 cases selected for presentation were divided depending on their characteristics into: (a) headaches in rare syndromes; (b) secondary headaches; (c) headache in unresolved diagnosis cases; and (d) other relevant cases (Table 1). The award winners are listed in Table 2.

Case summaries

Headaches in rare syndromes

Two cases of red ear syndrome were presented at the meeting. Red ear syndrome is a rare condition, characterized by attacks of unilateral pain, discomfort or burning sensation in the ear, as well as autonomic features including erythema in the ipsilateral ear [3]. The first case was presented by S. Shalchian of Liège. This involved a 35-year-old male with a 15-year history of paroxysmal episodes of reddening and burning sensation in his ears. The symptoms were triggered by fatigue, alcohol intake, physical contact with the ears or by exposure to temperature extremes. The symptoms lasted from 30 min to 1 h and were followed by a dull burning sensation. The patient had previously been treated with tramadol and amitriptyline, and retroauricular vascular ligation, without any significant improvement. On physical examination, there were no abnormal neurological findings. A sublingual nitroglycerin provocation test was performed and both ears became hyperaemic. Three further treatments were tried

Table 1 Characteristics of the 15 cases selected for presentation to the international Scientific Committee in Madrid, Spain in November 2009

Group	Characteristics	Sub-groups	Number of cases
A	Headaches in rare syndromes	N/A	6
B	Secondary headaches	B1: to infectious/autoimmune causes B2: post-trauma/mass occupation	3 2
C	Headache in unresolved diagnosis cases	N/A	3
D	Other relevant cases	A rare migraine presentation A migraine preventative treatment adverse event	1 1

Table 2 Winners of the Almirall European Headache Awards (AEHA)

Award	Recipient	Institution	Country	Case
1st	D. Grimaldi	Neurological Sciences Department, Bologna University	Italy	Unilateral short lasting headache attacks with autonomic signs
2nd	S. Batista	Neurology Department, University Hospital of Coimbra	Portugal	Migraine-like headache and recurrent coma
3rd	A. Poisson	Neurology Service, Hospital Croix Rousse, Lyon	France	Basilar migraine with inter-ictal nystagmus
4th	H.-L. Verschelde	Headache Clinic, Neurology Department, Ghent University	Belgium	The soldier incapacitated by physical exercise
5th	F. Vázquez-Sánchez	Neurology Department, Leon Hospital, Assistential Complex	Spain	New-onset stabbing headache

without success: nerve infiltration with betamethasone and lidocaine, verapamil, and methysergide. The patient is currently being treated with indomethacin and his condition has improved slightly. Lance [3, 4] suggested that red ear might be associated with upper cervical disorders, atypical trigeminal and glossopharyngeal neuralgia, temporomandibular joint dysfunction and local axon reflexes. Other cases have also been reported in association with primary headaches, including trigeminal autonomic cephalalgia [5]. Due to the various possible causes of this syndrome, there is no single treatment of choice and many patients remain treatment resistant. In the case of this patient, the nitroglycerin test induced a spontaneous attack and the authors postulated that the symptoms were likely due to primary trigeminal autonomic cephalalgia.

The second case of red ear syndrome was a 59-year-old woman with a 10-month history of paroxysmal, near-daily pain in bilateral auricles, accompanied by erythema, flushing and extreme warmth of both ears (C. Dallochio, Voghera). The pain attacks were spontaneous or less frequently precipitated by physical activity, and lasted from 30 min to 2 h. Treatment with non-steroidal anti-inflammatory drugs (NSAIDs) was ineffective; however, gabapentin 300 mg 3 times daily reduced the attack frequency. Physical examination revealed that all tendon reflexes increased and that the neck was short and squat with a moderate reduced mobility of the cervical spine. Magnetic resonance imaging (MRI) of the brain and cervical spine demonstrated herniation of the cerebellum-tonsils and the medulla oblongata. The patient underwent a posterior craniovertebral decompression procedure with realignment of the spine. Two weeks following surgery, symptoms resolved and the patient stopped taking gabapentin. She has had no recurrences for several months. A similar case has been reported in the literature in which a dental plate was curative in a patient with temporomandibular joint dysfunction [6].

The third case presented in this category, which was awarded third place overall, involved a 13-year-old girl who came to the outpatient clinic with a history of recurrent and severe headaches that began when she was 9-year

old (A. Poisson, Lyon). There was a family history of migraine without aura and personal medical records included the appearance of a vertical nystagmus at the age of 2 years. The patient also suffered from recurrent headaches which began with retro-orbital and temporal pain, followed by abdominal pain, vomiting, paraesthesia of the upper limbs, vertigo and ataxia. A diagnosis of basilar migraine was made at the age of 9 years. Consultation with a neurologist and neuro-ophthalmologist confirmed vertical nystagmus and identified saccadic pursuits and an absence of vestibulo-ocular reflex inhibition during visual fixation. Previous acute (paracetamol, ketoprofen, sumatriptan) and preventative (propranolol and dihydroergotamine) treatments were ineffective. Despite the original diagnosis of basilar migraine, the absence of aura was an uncommon feature [7], and poor responses to benchmark migraine treatments suggested an alternative cause. Genetic screening of CACNA1A gene showed a typical nucleotide substitution situated on exon 13, confirming a diagnosis of episodic ataxia type 2 (EA2). EA2 is characterized by sporadic episodes of vertigo and ataxia lasting from hours to days, variably associated with inter-ictal nystagmus [8, 9]. These features were present in the current case. Administration of topiramate 30 mg/day was successful as the patient no longer suffered headache and ataxia. EA2 is associated with variable gene mutations and whilst family history regarding migraine should be documented, as it was in this case, it should not delay accurate diagnosis.

A further case of headache in rare syndromes was a 54-year-old male admitted to the emergency room with headache and transient visual loss (G. Ruiz-Ares, Madrid). About 6 months before, episodes of unilateral transient visual loss had started to occur. He had a history of untreated dyslipidemia, mitral stenosis and monthly unilateral pulsating headaches. Physical examination revealed a grade 3 systolic heart murmur which was maximal along the right sternal border. Neurological examination did not highlight any deficits. A complete ophthalmological examination showed a mild inferior altitudinal scotoma in the visual field of the right eye. Laboratory tests were

normal except cholesterol (288 mg/dl). Ocular duplex ultrasound identified irregular flow in the central retinal artery with episodes of lack of flow during the longest diastolic periods. Holter-ECG monitoring confirmed paroxysmal atrial fibrillation. Transesophageal echocardiography showed moderate mitral stenosis without thrombus in a normal diameter left atrium. The patient was diagnosed with a posterior ischemic optic neuropathy (PION). Oral anticoagulants and atorvastatin were prescribed and the patient has not experienced any new visual attacks. Almotriptan has successfully treated the episodes of headache. However, the visual field defect has not changed. The possibility of PION should be considered in the differential diagnosis of retrobulbar neuropathies.

A 47-year-old male experienced pain within a well-defined elliptical area (8 × 6 cm) located in the right parieto-occipital region (A. Guerrero, Valladolid). The pain had persisted for 8 months and did not present with any associated symptoms. The patient had 12–14 attacks per day, usually stabbing/severe pain for 10 s and in the same area. In addition, he experienced 6–8 paroxysms per day with throbbing pain radiating to the ipsilateral eye, presenting with lacrimation. Neurological examination did not reveal any deficits. The symptomatic area was tender, but there was no sensitivity to palpation of other pericranial structures. The patient was diagnosed with nummular headache (NH) and epicrania fugax (EF). Gabapentin was initially prescribed, but this was ineffective. High doses (up to 200 mg daily) of carbamazepine improved the pain and paroxysms. NH was first described in 2002 [10], and is defined as a primary, focal, continuous pain, restricted to a small well-defined round or elliptical-shaped area of the head surface [11]. EF is a novel syndrome recently proposed in a group of patients presenting with ultra brief shooting pain paroxysms, starting in posterior cephalic regions and rapidly spreading to the ipsilateral eye. Focal stemming area presents a well-shaped inter-ictal pain together with in situ exacerbations, which may be representative of a link between NH and EF. Evidence suggests that NH is a non-generalized disorder with a peripheral source [12].

The case study which was voted first in the AEHA awards involved a 55-year-old male with familial thrombocytopenia who had experienced severe burning-like pain, daytime headaches in the right orbital and temporal areas for 9 years (D. Grimaldi, Bologna). These attacks were associated with ipsilateral conjunctival injection, ptosis, lacrimation and rhinorrhea which were spontaneous or triggered by chewing or touching the face. The episodes lasted from seconds up to 40 min, and occurred 1–6 times per day for 1 month per year. Initial treatment was with gabapentin, but the attacks recently became more frequent. Pregabalin, verapamil, and methylprednisolone were ineffective. MRI demonstrated an aberrant loop of the right

superior cerebellar artery which was compressing the trigeminal nerve, but surgery was not considered an option due to thrombocytopenia. Treatment with indomethacin and carbamazepine was successfully implemented, and efficacy was maintained following the withdrawal of the indomethacin after the first month. The patient was diagnosed with Short lasting Unilateral Neuralgiform headache with Conjunctival injection and Tearing (SUNCT), secondary to trigeminal vascular contact. Based on these findings, brain imaging is recommended when trigeminal neuralgia and SUNCT are both present.

Secondary headache

Headaches secondary to infectious/autoimmune causes

The first case of a patient with headache secondary to infectious disease discussed at the meeting involved a 56-year-old insulin-dependent diabetic male who presented at the emergency department with a slow progressive headache, associated with difficulty swallowing and sleeping (C. Burcin, Paris). Six months earlier, the patient had developed frequent headaches. He had previously been diagnosed with otitis and sinusitis and treated with antibiotics and oral prednisone, with short-lasting improvement before recurrence of symptoms. Prominent bilateral cervical pain developed, which was increased by the motion of the neck and decubitus. Dysphonia, dysphagia and mild dysarthria developed progressively over the next few weeks. Physical examination revealed mild left ptosis, left hearing loss, and deviation of the tongue to the right. The patient showed diffuse hyper-reflexia with flexor plantar response and his gait was slow but stable. The results of a lumbar puncture reported 17 leukocytes, 1 erythrocyte and elevated protein (0.88 g/l). MRI revealed spondylodiscitis in the cranio-cervical junction and a computerized tomography (CT) scan showed diastasis of the odontoid. The patient was diagnosed with pyogenic osteitis. Lesion biopsies identified multiple types of bacteria; however, IV (intravenous) antibiotics did not prevent lesion progression. A neurosurgical procedure was performed with posterior stabilization and anterior decompression. After minor complications, the patient stabilized and was sent home. This case underlies the importance of a complete examination in the case of posterior headache, particularly if accompanied by bulbar deficits. Pyogenic osteitis of the spine often involves the lumbar segment and cervical involvement is rare [13]. Predisposing factors are advancing age and compromised immunity, with diabetes being a frequent co-morbidity [14].

A 26-year-old man being treated for hypothyroidism attended the emergency department due to a 7-day progressive bilateral frontal headache, accompanied with

nausea and vomiting (E. Leroux, Paris). A CT scan was normal and the patient was sent home with analgesics. However, he returned to the clinic due to persisting pain and nausea. He appeared apathetic and spoke in few words, with occasional distraught gaze. He scored 22/30 in the Mini Mental State Examination, and clock and simple copy drawing tests were both abnormal. A lumbar puncture was performed, and the results showed 340 white cells (99% lymphocytes), 4 red cells and elevated protein (0.94 g/l). The patient was hospitalized with suspected viral encephalitis. Thyroid stimulating hormone (TSH) was normal, but antibodies for thyroxin peroxidase (TPO) and thyroglobulin (TG) were both positive. The patient was diagnosed with Steroid Responsive Encephalopathy with Autoimmune Thyroiditis (SREAT) and was treated with IV prednisolone; the headaches disappeared and cognitive function improved. One month later, the patient was headache free, but continued to complain of fatigue. This case emphasizes the importance of cognitive testing in the emergency department when facing a patient with headache and unusual behaviour. SREAT is a rare but treatable form of encephalitis and may initially present with isolated headache and subtle cognitive deficits. A trial of prednisolone is both diagnostic and therapeutic, after other causes of encephalopathy are excluded.

A third case of headache secondary to infectious/autoimmune causes involved a 32-year-old woman with a history of headache (>4 per month), treated with NSAIDs (F. De Santis, Avezzano). The patient visited a neurologist due to the onset of a persisting hyperacute frontal tension headache. Neurological examination showed dysphasia, agitation and confusion, without neck rigidity. Cerebrospinal fluid (CSF) leakage was found, with >10 cells/mm³ and increased protein concentration (73 g/l). There was a dramatic improvement in behavioural and language disturbances following a lumbar puncture. An electroencephalogram (EEG) demonstrated polymorphic delta waves on the front-temporal sides. The patient was diagnosed with viral encephalitis and received an IV infusion of mannitol, dexamethasone, and antibiotics. Carbamazepine 200 mg and alprazolam 0.25 mg were also administered. This case underlines the clinical relevance of a headache with unusual characteristics accompanied by neurological focal symptoms. The sudden improvement of symptoms following lumbar puncture suggested the presence of a very early onset endocranic hypertension [15, 16], which previously has been reported in meningoencephalitis and in encephalitis of specific aetiology [17, 18].

Post-trauma/mass occupation secondary headaches

The fourth AEHA prize was awarded for a presentation of a case involving a 46-year-old male soldier who

developed a bifrontal stabbing headache and neck pain 1 week after a minor accident (H.-L. Verschelde, Ghent). The headache was exacerbated by exercise, and was relieved after lying down. Initially, a diagnosis of post-traumatic “cervicogenic headache” was proposed, but treatment was ineffective. CSF hypovolemia was suspected and the patient administered IV caffeine; however, this was unsuccessful. A lumbar blood patch temporarily relieved the pain, but a second blood patch was not effective. Due to the pain after physical exercise, primary exertional headache was suspected and a partial response was achieved with indomethacin. The patient was then treated with propranolol and improved over the course of weeks. Upon review 2 years following the initial symptoms, the patient was pain-free but avoided physical exertion as it provoked headache. Indeed, 1 year later there was a recurrence following exercise. Propranolol was restarted, but it was only partially effective. A few months later, the patient suffered an orthostatic headache which was relieved by rest. A brain MRI indicated meningeal enhancement, suggestive of CSF hypovolemia. The patient was treated with a cervicodorsal blood patch, with complete recovery indicating that the leak was likely located at cervicodorsal level. Intracranial hypovolemia often presents as an orthostatic headache, which may become a lingering chronic daily headache. In this case, headache exacerbations were provoked by physical exercise and therefore mimicked exertional headache, impairing diagnosis.

A 36-year-old woman with a history of long-term migraine presented at the clinic with a stabbing headache (F. Vázquez-Sánchez, León). The “jabs” were of brief duration, severe intensity and were located mainly in the parieto-temporal areas. They appeared several times per day, with no associated triggers or other symptoms. A MRI scan showed a mass located in the pituitary, displacing the optic chiasm and compressing the posterior pituitary lobe and both cavernous sinuses. Hormonal tests demonstrated elevation of growth hormone and somatomedin C. The patient was diagnosed with stabbing headache, secondary to acromegaly. Initial treatment with indomethacin 75 mg was ineffective and this was changed to topiramate 50 mg which produced a complete recovery. Adult patients who have new-onset stabbing headache should undergo a diagnostic evaluation to exclude secondary causes [19]. A recent publication reported that patients with pituitary tumours who suffered headaches had pain indicative of primary stabbing headache in 27% of cases [20]. Pharmacological treatment is necessary for patients who have frequent attacks and indomethacin is usually the medication of choice. There are no previous reports describing the use of topiramate for the treatment of stabbing headache.

Headache in unresolved diagnosis cases

The case awarded second prize described a 51-year-old woman who had experienced four episodes of coma preceded by migraine-like headaches within the last 2 years (S. Batista, Coimbra). Headaches started without apparent triggers, presenting with a migraine-like throbbing pain with nausea, photophobia, aphasia, ataxia and fluctuating levels of attention and alertness; followed by a generalized tonic-clonic seizure. The patient entered a comatose state, responding only to painful stimuli. The fourth episode was the most severe, with deep coma requiring orotracheal intubation. The attacks typically lasted 5 days with progressive recuperation before returning to baseline functioning. However, after the last episode, a significant cognitive impairment persisted. A single photon emission computed tomography (SPECT) scan demonstrated that cerebral perfusion was slightly decreased and it had an irregular distribution. During comas, EEG showed continuous generalized slow wave activity and intermittent rhythmic theta activity. In all critical episodes, there were high CSF proteins (150–160 g/l) without pleocytosis. Diagnosis was unclear but autoimmune neuronal channelopathy was suspected. Acute attacks were treated with dexamethasone 5 mg IV, phenytoin 250 mg IV, and valproic acid 300 mg IV. The patient was also regularly treated with valproic acid 500 mg, acetazolamide 250 mg, and phenytoin 300 mg. After the fourth episode, IV immunoglobulin G 25 g/month was initiated. Since this treatment was initiated the patient has had only one minor attack which did not progress to the generalized seizure and a comatose state. Structural lesions, infectious, metabolic and toxic disorders were excluded and the patient was diagnosed with neuronal channelopathy [21]. The presence of CSF albumin-cytologic dissociation suggests autoimmune neuronal channelopathy [22, 23], and provides a rationale for immunomodulator treatment.

A second case of unresolved, undiagnosed headache involved a 60-year-old woman who had suffered from episodic migraine with aura since puberty and a more-recent 2-year history of left episodic orbitofrontal headache (C. Sánchez Bueno, Portimão). The headaches persisted for more than 4 h and invariably were severe and presented with vomiting and periorbital, anterior neck and upper trunk ecchymosis. They improved following administration of analgesics. Blood tests were normal. The patient was diagnosed with episodic migraine with aura/tension type headaches with associated ecchymosis. Preventative treatment with topiramate 100 mg was stopped due to drowsiness, but the attacks restarted, so administration was resumed. Acute episodes were treated with zolmitriptan 5 mg and almotriptan 12.5 mg. The relationship between migraine and other trigeminal-mediated headaches has

been described in the literature without a conclusive explanation [24–26]. The improvement of the ecchymosis depends on headache control as there is no specific treatment for this condition. There are few cases published and the pathophysiology is unknown.

Other relevant cases: a rare migraine presentation/ a migraine preventive treatment adverse event

A 41-year-old woman was diagnosed with hemiplegic migraine at the age of 13 (E. Verhellen, Bruges). Attacks usually started with visual disturbances, followed by numbness and a hemiparesis, lasting for 30 min. The patient developed a throbbing headache with photophobia, phonophobia and vomiting, which usually lasted for periods of up to 2 days. She suffered several episodes per month and was treated with sotalol and topiramate. The patient presented at the emergency room with fever, axial rigidity, and stupor following one of her attacks. An EEG showed generalized slowing with paroxysmal delta activity, higher in the right hemisphere, but without signs of epileptic activity. A SPECT scan showed diminished perfusion in the left parietal and right frontal lobe and IV valproate and dexamethasone were administered. Due to suspected meningitis, antibiotics and acyclovir were also prescribed. A lumbar puncture was normal and no evidence of meningitis was found. The patient was diagnosed with hemiplegic migraine with fever and stupor. After 1 week, the patient completely recovered. Cases with hyperpyrexia and impaired consciousness have previously been described in the literature, which may simulate meningitis, resulting in inaccurate diagnoses [27–29].

The final case presented was a 22-year-old woman attending the emergency department due to bilateral “blurred” vision, which had developed over the last 12 h but it was not associated with pain (F. Palavra, Coimbra). She had taken topiramate 100 mg/day for the previous 2 days. The patient had a history of frequent episodes of intense and pulsating headaches since adolescence. These episodes lasted more than 24 h, at a frequency of 4 per month and were affecting her daily activities. Other than pain, she also reported nausea, vomiting, photo- and phonophobia and a loss of pain relief with her usual medication (oral nimesulide 100 mg and lysine acetylsalicylate 1,000 mg). Based on the clinical presentation, a diagnosis of migraine without aura was made and the patient began regular prophylaxis with topiramate (the dose increased by 25 mg/week, until a target dose of 100 mg/day was reached) and zolmitriptan was administered for acute relief depending on the severity of symptoms. However, the patient also had glaucoma, with raised intra-ocular pressure and some morphological abnormalities in the iris. Topiramate-induced acute

myopia was diagnosed and this drug was immediately discontinued. The patient was treated with timolol 0.5% eye drops for 2 weeks and 4 days later her visual acuity was improved and this improvement has been maintained ever since. Acute topiramate-induced myopia is a rare idiosyncratic reaction [30], usually presenting with sudden bilateral blurred vision [31]. Topiramate is a sulphamate-substituted monosaccharide which induces ciliary body oedema and increases aqueous humour production; these effects contribute to forward movement of the iris. A sudden closure of the anterior chamber angle can precipitate acute glaucoma, which is a potentially serious condition, although, as in this case, it does resolve with drug discontinuation [32, 33].

General comments and conclusions

Headache represents one of the most common reasons for a patient to consult their general practitioner (GP). Whilst the majority of cases are straightforward and easily resolved, this is not always the case. Indeed, the recent Headache Management Pattern (HMP) survey highlighted areas of weakness in the diagnosis and treatment of patients with headache at the primary care level, particularly with regard to chronic migraine, medication abuse headache and tension-type headache [2]. The authors concluded by emphasizing the need for both continuing medical education and also improved referral to specialist care. The goal of the AEHA is to encourage physicians to share their experiences of unusual/rare cases of headache so as to increase the awareness of the medical community.

The AEHA presented 15 varied and interesting headache-related challenging case reports from five European countries. In this regard, the AEHA can be considered a success and has provided useful information for physicians working in this field. Specific conclusions are difficult given the diversity and complexity of the cases presented. However, general conclusions which may improve diagnosis and care of patients include:

- Rare syndromes do occur and require appropriate treatment to enhance quality of life for the patient.
- Concomitant diseases may impair adequate diagnosis of headache and should be considered.
- Full neurological examinations and complementary tests may be required.
- Infections, trauma, cancer or autoimmune disease may be behind chronic or acute headaches and complementary tests offer invaluable help.
- Low frequency symptoms in some headaches may cause misdiagnoses.

- Physicians should be cautious and treat possible serious underlying disease, whilst accurately clarifying the correct diagnosis.
- A further consideration is the possibility of a rare medication-related event.
- Some cases may remain without a clear cause or diagnosis and symptoms should be treated whilst continuing to assess the true origin.

Finally, all those involved with the AEHA considered the programme a success, providing an interesting forum for advancing our knowledge about diagnosis, treatment and safety issues relating to rare and unusual cases of headache/migraine.

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