

In the name of God

7th

Iranian International Headache

&

2nd

joint Headache-Pain congress

20-22 Oct 2022

سرشناسه: هفتمین کنگره بین المللی سردرد و دومین کنگره مشترک درد و سردرد ایران
عنوان و نام پدیدآور: 7th Iranian International Headache & 2nd joint Headache-Pain congress
(Oct 2022 20-22)
Collector: Mohammad Reza Ashtiani.

مشخصات نشر: تهران: انتشارات رسانه تخصصی، ۱۴۰۱.

مشخصات ظاهری: ۹۶ ص: جدول.

شابک: ۹۷۸-۶۰۰-۲۹۳-۵۵۵-۷

وضعیت فهرست نویسی: فیپا

یادداشت: زبان: انگلیسی.

موضوع: سردرد -- کنگره‌ها

موضوع: Headache -- Congresses

موضوع: میگرن -- ایران

موضوع: Migraine -- Iran

اطلاعات رکورد کتابشناسی: فیپا

7th Iranian International Headache & 2nd joint Headache-Pain congress

Collector: *Mohammad Reza Ashtiani*

Executive and Business Affairs: *Hamid Reza Eskandari*

Designer and Layout: *Hamed Khalili-Fatemeh Ghiasvand*

Printing turn: *First /2022 (1401)*

ISBN: 978-600-293-555-7

This book is freely available for congress participants and related companies.

Address: Unit 1, No.8, Kandovan alley, Enghelab Street, Ferdowsi Square,

RASANE TAKHASSOSI PUBLISHING

Tel : 982166737133- 66737332- 989123049109

email: Rasane_takhassosi@yahoo.com **Site:** Rasanetakhassosi.ir



Contents

Welcome message from congress president	4
Congress Organization	5
Scientific committee.....	5
Executive committee.....	5
Scientific program	6
About IHA	9
Oral presentations abstracts	11
Poster presentations	77

Welcome message from congress president

■ Mansoureh Togha, MD

Professor of Neurology Tehran University of Medical Sciences

President of Iranian Headache Association



Dear Friends and Colleagues

On behalf of the Iranian Headache Association (IHA), I am delighted to welcome you to the 7th Iranian International Headache & 2nd joint Headache-Pain Congress that will be held on October 20-22, 2022.

The event is under the auspicious of the International Headache Society and supported by the Iranian Neurological Association, Iranian Pain Association, Iranian Child & Adolescent Neurology Society and Iranian Association of Physical Medicine and Rehabilitation.

Globally, headache has been reported as the second cause of disability world while. This scientific meeting provides the most useful and updated information on headache and cervical pain disorders presented by distinguished national and international clinicians and scientists.

During this international meeting, attendees will have an excellent opportunity to learn more about the diagnosis and management of headache, cervical and face pain disorders, new developments in the science of headache medicine and the care of headache sufferers. Also, there will be a chance to share their information and also become acquainted with the beautiful natural scenery and ancient history of Iran by prepared video clips.

Congress Organization

Chair:



Prof. Mansoureh Togha

Professor of Neurology
Tehran University of Medical Sciences
President of Iranian Headache Association

**Vice
Chair:**



Dr. Elham Jafari

Neurologist,
Tehran University of Medical Sciences.

Scientific committee

Alphabetical order

Dr. Ansari Hossein

Prof. Ashrafi Mahmoudreza

Prof. Fayyaz Ahmed

Prof. Ghafarpour Majid

Dr. Gheini Mohammadreza

Prof. Harirchian Mohammad Hossein

Dr. Hashemi Masoud

Dr. Jafari Elham

Prof. Khorvash Fariborz

Prof. Motamedi Mahmoud

Prof. Nafisi Shahriar

Dr. Nasergivehchi Somayeh

Prof. Pakdaman Hossein

Dr. Reza-Soltani Zahra

Prof. Togha Mansoureh

Dr. Yamani Nooshin

Executive committee

Prof. Togha Mansoureh

Dr. Jafari Elham

Dr. Rezaei Zahra

Dr. Sadat Rajaei Shima

Dr. Razeghi Soudeh

Dr. Rahman Nazanin

Mr. Ghasemi Hamid

Ms. Salami Zhale

Mr. Rafiee Amir

Mr. Ghadbeigi Davoud

Scientific program

Thursday 28 Mehr, Oct 20th, Main Hall

Time	Lecturer	Topic
------	----------	-------

Chairs: Dr. A.Tafakhori, Dr. N.Beladi Moghadam, , Dr. H. Pakdaman, Dr. MH. Harirchian

9:00-9:25	Opening program	
9:25-9:40	Dr. Mohsen Foroughipoor	Thunderclap headache
9:40-10:00	Dr. Fatemeh Namakian	New onset / changes in characteristics and patterns of headache during Covid19 pandemic
10:00-10:20	Dr. Mohammadreza Gheini	Neuroimaging in headache
10:20-10:40	Dr. Sheida Shaafi	Updates in the diagnosis and management of tension type headache
10:40-11:00	Break time	

Chairs: Dr. H. Ayramlou, Dr. M.Moghadasi, Dr. M. Ghaffarpour, Dr.F.Fatehi

11:00-11:20	Dr. Farhad Assar zadegan	Updates in the management of cluster headache
11:20-11:40	Dr. Elham Jafari	Updates in the management of other TACs
11:40-12:00	Dr. Abbas Rahimi Jaberi	Updates of acute migraine treatment
12:00-12:20	Dr. Nooshin Yamani	Updates of preventive migraine treatment
12:20-12:40	Dr. Leila Kouti	Drug-drug interactions of preventive migraine therapies
12:40-13:00	Dr. Fariborz Khorvash	Updates in the management of medication-overuse headache
13:00-14:00	Prayer and Lunch time	

Chairs: Dr. M. Hashemi, Dr. F. Ashrafi, Dr. N. Ashjaizadeh

14:00-14:20	Dr. Fahimeh Vahabzad	Approach to Trigeminal neuralgia
14:20-14:40	Dr. Fereshteh Naderi	Other cranial neuralgias
14:40-15:00	Dr. Habib Zakeri	Trigeminal ganglion block indications and methods
15:00-15:20	Dr. Karim Hemmati	SPG block indications and methods
15:20-15:40	Dr. Ebrahim Golmakani	Occipital nerve block in the treatment of headache
15:40-16:00	Break time	

Chairs: Dr. H.Majedi, Dr. F.Imani, Dr. P.Dadkhah

16:00-16:20	Dr.Mohamadreza Abootorabi	The role of ultrasound in head and neck therapeutic interventions
16:20-16:40	Dr. Shima Rajaee	Interventional pain management techniques for Cervicogenic Headache
16:40-17:00	Dr. kasra Dehghan	Diagnostic and therapeutic interventions in different types of headache classification
17:00-17:20	Dr. Ali Hosseini pour	The role of cervical facet syndrome in headaches and neck pain

Workshop

Thursday 28 Mehr, Oct 20th, Farhang Hall

14:40-15:40	Workshop: Botulinum toxin injection in migraine Moderator: Dr. Hosein Ansari, Dr. Mansoureh Togha	
-------------	--	--

Friday, 29 Mehr, Oct 21th, Main Hall

Time	Lecturer	Topic
Chairs: Dr. M.Saadatnia, Dr. M.Maghbuli, Dr. A.Hejazi, Dr. A.Samaie		
9:00-9:20	Dr. Mehrdad Jafari	Rhinogenic and Sinus headache
9:20-9:40	Dr. Amir Jalal Abbasi	Headache Because of Problems with Teeth, Mouth, Jaws, or Dentures
9:40-10:00	Dr. Fedra Hajizadeh	Ocular Causes for Headache
10:00-10:20	Dr. Mansoureh Togha	Post traumatic headache
10:20-10:40	Dr. Farnaz Etesam	Psychological factors and headache
10:40-11:00	Break time	
Chairs: Dr. Mansoureh Togha, Dr.M.Motamedi		
11:00-11:15	Dr. Somayeh Baghizadeh	Diagnosis and medical treatment of IIH
11:15-11:30	Dr. Hossein Ansari	Diagnosis and management of SIH
11:30-11:45	Dr. Aidin Taghiloo	Imaging findings of spontaneous intracranial hypotension
11:45-12:00	Dr. Ahmad Pour-Rashidi	Surgical interventions in CSF dysregulation
12:00-12:15	Dr. Mohammad Reza Najafi	The Survey of the diagnostic challenges of spontaneous intracranial hypotension
12:15-12:35	Dr. Mohammad Hassan Paknejad	Case presentation
12:35-13:00	Questions and Answers	
13:00-14:00	Prayer and Lunch time	
Chairs: Dr. RS.Badv, Dr. A. Nikkhah, Dr. MM. Taghdiri		
14:00-14:20	Dr. Zahra Rezaee	Approach to headache in children
14:20-14:40	Dr. Ali Nikkhah	Clinical manifestations of headache in children
14:40-15:00	Dr. Reza Shervin Badv	Migraine variants
15:00-15:20	Dr. Mahmoud Reza Ashrafi	Prophylactic treatment of migraine in children
15:20-15:40	Dr.Sareh Hosseinpour	Emergency treatment of pediatric headache
15:40-16:00	Break time	

Friday, 29 Mehr, Oct 21th, Farhang Hall

Time	Lecturer	Topic
14:00-14:20	Dr. Mohammad Karimi	Cerebral venous sinus stenting for resistant IIH
14:20-14:40	Dr. Behnaz Sedighi	Multiple Sclerosis and Headache
14:40-15:40	Workshop: Botulinum toxin injection in other headache disorders Moderator: Dr. Fayyaz Ahmed	

Saturday, 30 Mehr, Oct 22nd, Main Hall

Time	Lecturer	Topic
Chairs: Dr. S.M. Rayegani, Dr. F.Rezaimoghadam, Mrs. A.dadarkhah		
9:00-9:20	Dr. Sharif Najafi	Cervicogenic headache: pathophysiology and diagnosis
9:20-9:40	Dr. Seyed Ahmad Raeissadat	Examination of the cervical and thoracic spine in cervicogenic headache, considering forward head posture
9:40-10:00	Dr. Zahra Reza-Soltani	The role of cervical and thoracic manipulation in treatment of cervicogenic headache
10:00-10:20	Dr. Kamran Azma	Pattern of trigger point producing headache in various muscles
10:20-10:40	Dr. Mohadeseh Azadvari	Myofascial pain management and trigger point injection
10:40-11:00	Break time	
Chairs: Dr. M.Togha, Dr. H.Cheraghmakani , Dr.M.Rohani		
11:00-11:20	Dr. Alan M Rapoport	Review of the new headache devices
11:20-11:40	Dr. Derya Uludüz	Peripheral interventional treatment in headaches
11:40-12:00	Dr. Stefan Evers	Chronic headache disorders: systematic approach
12:00-12:20	Dr. Hayrunnisa Bolay	Sensorial dysfunctions in migraine: translational aspect
12:20-12:40	Dr. Aynur ÖZGE	Refractory headache management in children and adolescents
12:40-13:00	Dr. Muhammad Nasrullah	Trigeminal neuralgia
13:00-14:00	Prayer and Lunch time	
Chairs: Dr. M.A Sahraian, Dr.H.Ansari, Dr. A.Ghorbani		
14:00-14:20	Dr. Somaye Nasergivehchi	The effect of Covid19 vaccines on headache
14:20-14:40	Dr. Fayyaz Ahmed	Guidelines for acute and preventative treatment of migraine
14:40-15:00	Dr. Hossein Ansari	Headache secondary to autoimmune disorder
15:00-15:20	Dr. Soodeh Razeghi Jahromi	Headache and dietary supplements
15:20-15:40	Dr. Hamed AmiriFard	Headache and sleep disorders
15:40-16:00	Closing program	

Workshop

Saturday, 30 Mehr, Oct 22nd, Farhang Hall

Time	Lecturer	Topic
09:00-09:30	Dr. Fayyaz Ahmed	Secondary headaches; case based presentation
09:40-10:40	Workshop: Pericranial nerve blocks in headache disorders Moderator: Dr. Fayyaz Ahmed	



About IHA

Iranian Headache Association (IHA) is a national, nonprofit organization that is supervised by the Iranian Neurological Association (INA). It was founded in 2013 by Professor Mansoureh Togha and was affiliated as a member of the International Headache Society (IHS) and the European Headache Federation (EHF) in 2015.

The scientific activities of IHA has started since 2010 as the headache scientific committee by presenting scientific programs in annual neurology congresses and public educational programs. Since the formation of the association, the activities have been promoted with a greater scope by holding annual international congresses and headache schools, with the cooperation of global experts in this field.

IHA has played a prominent role in educating general practitioners, residents and specialists of neurology in these years, and has taken an important step in improving the diagnosis and treatment of headache disorders in Iran, by holding various seminars and workshops. In addition, this association has done a lot of research work in the field of headache and related disorders, the results of which have been published in international high impact journals.

The prevalence of migraine has been estimated as 14% in Iran (higher than the global average of 12%) and medication overuse headache as about 4%, which is 2 times the global average. The number of patient referrals to outpatient, inpatient and health care centers is very high. This issue requires more general and specialized training in this field. The purpose of the IHA is to improve the lives of people impacted by migraine and other headache disorders. The Society's objective is to promote the exchange of information and ideas concerning the causes and treatments of headache and related painful disorders. In this regard, IHA has organized six international headache congresses and two headache schools, with participation of experts in headache science, including four presidents of IHS and one president of EHF.



Oral presentations abstracts

**7th Iranian International Headache &
2nd joint Headache-Pain Congress**

20-22 Oct 2022

Thunderclap headaches

Dr. Mohsen Forughipoor

Professor of Neurology, Department of Neurology, School of Medicine, Mashhad University of Medical Science.

Thunderclap headache (TCH) is an extremely pain full Headache that comes on suddenly. This type of headache reaches its most severity of pain within about one minute, last at list 5 minutes, and begin with any warming.

Some TCH have no known causes and others because of a problem in the brain, like rapture of blood vessels (aneurysm, AVM and), cerebral vein Thrombosis – vasculitis, sudden sever rise of blood pressure, cerebral vessels spasm, pituitary gland apoplexy and migraine.

The mine symptom of TCH is severe pain with or without nausea -vomiting, confusion – numbness, weakness, seizure or change in vision. Risk factors for TCH are high blood presser, weak blood vessels wall, hypercoagulopathy state, heavy exercise, migraine, and pituitary gland adenoma and drug consumption.

Treatment of TCH depends on the cause. If TCH is associated with no known cause, treatment with medication for reduce pain is enough, but if TCH associated with a known etiology, specific treatment also needed.

Prognosis for TCH depend on the specific cause. TCH with not known etiology are not dangers and has a good prognosis but in some cases with vessel etiology TCH can be fatal without prompt treatment (rupture AVM – Aneurysm CVT...).

New onset / changes in characteristics and patterns of headache during Covid19 pandemic

Dr. Fatemeh Namakian

Neurologist, Kermanshah University of Medical Sciences



Background: Headache is a frequent symptom of COVID-19 and understanding its management is important for health-care professionals involved in treating the disease.

Therefore, we explain the most remarkable findings concerning headache secondary to COVID-19, specifically focusing on epidemiology, characteristics, pathophysiology, and treatments.

Recent Findings: The real prevalence of headache as a symptom of COVID-19 is ranging from 10 to 70%. The headache usually begins early in the symptomatic phase, is bilateral, moderate to severe, and has a similar pattern to tension-type headache.

All studies found the migraine pattern and the tension-type headache pattern to be frequent patterns. This finding suggests that a likely pathophysiological mechanism is the activation of the trigeminovascular system. SARS-CoV-2 neurotropism can occur by trans-synaptic invasion through the olfactory route from the nasal cavity, leading to anosmia, which has been associated with headache. However, other mechanisms such as brain vessels inflammation due to SARS-CoV-2 damage to the endothelium or systemic inflammation in the context of cytokine storm can not be ruled out. Interestingly, headache has been associated with lower COVID-19 mortality.

Common analgesics and nonsteroidal anti-inflammatory drugs are the most commonly used drugs for headache in the acute phase of COVID-19.

Summary: Studies show that investigating COVID-19 headache represents an opportunity not only to better understand COVID-19 in general but also to advance in the knowledge of both secondary and primary headaches.

The effect of Covid19 vaccines on headache

Somayeh Nasergivehchi

Board Certified Neurologist, Tehran University of Medical Sciences.



Headache is common in severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections. Global vaccination appears the mainstay for contrasting the ongoing coronavirus disease 2019 (COVID-19) pandemic outbreak. According to the available data, the vaccines approved by regulatory authorities have a positive efficacy and side-effect profile. Headache is the most common neurological symptom in

over 50% of those vaccinated. Very few studies evaluated headache characteristics and their related determinants following COVID-19 vaccines.

This headache showed heterogeneous character. Headache was mostly bilateral without accompanying phenomena, less severe, and shorter than COVID-19 related headache, and associated with fever and other vaccine-related adverse events. Also suggested that COVID-19 vaccine-related headache was a different and simple secondary headache entity.

Studies found that this frequent adverse event was mostly experienced by females and was significantly associated with pre-existing primary headaches and headaches during COVID-19 course.

Imaging of Headache

Mohammad Reza Gheini

Assistant Professor of Neurology, Tehran University of Medical Sciences, Sina Hospital.



Headache is one of the most common complaints in any neurologic clinic and in emergency departments. Most of the headaches have a benign cause and a great number of them are primary headaches. Diagnosis of primary headaches is clinical and there is no need for any imaging routinely. Imaging for all the patients with headache isn't cost-effective according to many studies. A detailed his-

tory and physical examination are the best guide for selecting the patients who need more diagnostic studies such as brain imaging.

In this lecture, at first the criteria for selecting of headache patients for imaging is discussed. Then imaging findings of some disorders which could be presented mainly with headache are explained. Some examples of these disorders are Cerebral Venous Thrombosis (CVT), Subarachnoid Hemorrhage (SAH), Dissection, Benign intracranial hypertension (BIH) and Spontaneous intracranial hypotension (SIH)

Headache in a pregnant woman is one of the challenging topics in management of headache. Neuroimaging has an important role in workup of these patients. At the end there is a short speak about indications and risk of imaging in pregnant women with headache.

Updates in tension type headaches diagnosis and treatment

Dr. Sheida Shaafi

Neurologist, Tabriz University of medical science.



Background: Tension-type headache (TTH) is characterized by a bilateral, nonthrobbing headache of a mild to moderate intensity, typically without other associated features. TTH is very common, with a lifetime prevalence in the general population 30% to 78%. Over 2 billion people are suffering from this headache worldwide. TTH is more common in women (1.2:1).

Methods: TTH is divided into: Episodic: fewer than 15 days each month and the Chronic type more than 15 days each month with or without pericranial tenderness.

Symptoms include dull, nonpulsatile, bilateral, constricting pain; with pericranial tenderness (common) and duration (30 min to 7 days).

Unlike migraine there is no significant nausea, vomiting, and a lack of aggravation by routine physical activity.

Results: Tension type headache usually responds to simple analgesics; preventive treatments have less evidence for their effectiveness.

Amitriptyline is the treatment of choice for frequently recurring episodic TTH or chronic TTH.

It is important to beware of creating cases of medication-induced headache. Those at risk are patients using analgesics (or triptans) for more than 17 days a month.

Conclusion: When a new headache with the characteristics of tension-type headache occurs for the first time in closed time relation to another disorder known to cause headache, the new headache is coded as a secondary headache. When pre-existing tension-type headache becomes chronic or significantly, worse, both the initial tension-type headache diagnosis and the secondary diagnosis should be given.

Update in acute treatments of migraine attack

Dr Abbas Rahimi Jaberi

MD, Assistant professor of neurology, Shiraz University of Medical Sciences



Migraine is one of the most frequent disabling chronic neurological conditions that causes significant effect in quality of life in patients. Migraine is a chronic disorder that characterized with attacks. Attacks are characterized by moderate–severe, often unilateral, pulsating headache attacks, typically lasting 4 to 72 hours, generally associated with nausea and/or light and sound sensitivity.

The acute treatment of migraine attacks, ranges from use of simple analgesics such as nonsteroidal anti-inflammatory drugs (NSAIDs) or acetaminophen to triptans, antiemetics, calcitonin gene-related peptide (CGRP) antagonists, lasmiditan, and dihydroergotamine. Noninvasive neuromodulation devices are used for patients who do not respond to or tolerate drug treatments and those who wish to avoid medications.

Early use of migraine-specific medications for severe attacks provided the best outcomes especially parenteral sumatriptan.

The patient should be treated early in the attack, use an adequate dose and formulation of a medication. Ideally, acute therapy should be restricted to no more than 2 to 3 days per week to avoid medication overuse headache

Key words: Migraine, treatment, Acute, attack

Drug-drug Interactions of Preventive Migraine Therapies

Leila Kouti

Clinical pharmacy department, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Background: A drug interaction can lead to adverse drug reactions and is of a great concern if patient's condition is common, episodic and chronic (like headaches).

Patients with primary headaches are given prescriptions to take a certain drug whenever they have an attack and sometimes they seek over the counter medications for their pain. In all these cases, they can develop a drug interaction.

Methods: Pharmacokinetic interactions are when absorption, metabolism, excretion or distribution of the drug is affected. Pharmacodynamic interactions are when the target organ is affected directly by a drug's agonism or antagonism, or drug-receptor changes. Other factors that can potentiate the development of DDIs are age, gender, co morbid diseases, different metabolism, and number of drugs used by the patient.

Results: A study was published in 2014 in the journal of pharmacy practice which evaluated 8900 patients in Utah, USA through 2005-2009 in terms of drug interactions. 80.2% of the interactions were pharmacodynamic. Pain relievers and migraine control drugs were the second most common group that caused DDIs 956.6%). In other studies the rate of DDI development has been reported between 4.7-8.8%.

Conclusion: Propranolol can reduce the clearance of zolmitriptan, rizatriptan and eletriptan and therefore patients are at more risk of developing adverse effects with these drugs.

Antiepileptic drugs have many interactions with several other drugs including cytotoxic drugs, metabolism inducers and inhibitors, and each other.

SSRIs can inhibit CYP450 enzymes. Citalopram and Escitalopram have less inhibitory effects and hence are preferred when drug interactions are probable. Sertraline is the next choice.

Update on medication overuse headache

Fariborz Khorvash

Professor of Neurology, Isfahan University of Medical Sciences



The frequent and regular intake of drugs to treat acute headache episodes, migraine attacks in patients with primary headache disorders, can result in an increase in headache frequency and finally lead to chronic headache. This condition is called medication overuse headache (MOH) by the classification of the International Headache Society (ICHD3).

In Europe, the prevalence of MOH in the general population is around 1–2%, with a preponderance in women (up to 93%). Migraine is the underlying primary headache disorder in 80% of patients with MOH. Most of the remaining patients have tension-type headache or, more rarely, post-traumatic headache, new daily persistent headache or other secondary headaches. Triptans, simple analgesics, combination analgesics and opioids are the drugs most commonly associated with MOH. Importantly, patients with episodic headache may develop MOH if they use pain medication for other causes such as arthritis. The most important questions should be answered in treatment of MOH are the role of information and education for the prevention of MOH, pharmacological preventive therapy effectiveness in the prevention of MOH, education and counselling effectiveness in the treatment of MOH, preventive medical and non-medical treatment effectiveness in MOH, withdrawal from overused medication(s) effectiveness in MOH, treatment of the symptoms that subjects with MOH develop during medication withdrawal and finally prevention of relapse after successful treatment of MOH.

Keywords: MOH, Treatment, Diagnosis, ICHD3

Other cranial neuralgia

Dr Fereshteh Naderi Behdani

Neurology department, Ziaiean Hospital, Tehran University of Medical Science



Background: The quality of neuralgic pain is stabbing or like an electric shock. Its duration is short and from about 30 seconds to two minutes. It starts and ends quickly and usually occurs in the path of a nerve. The most popular form is trigeminal neuralgia but there are some unusual forms included Glossopharyngeal neuralgia, Occipital neuralgia, nervus intermedius neuralgia and post herpetic neuralgia.

Results: Vago-Glossopharyngeal Neuralgia (VGN) is a rare form among the neuralgic pains. It accounts 0.2-1.3 % of all cranial neuralgia. It is more common in left side that is opposite the trigeminal neuralgia. The signs and symptoms are divided in two categories. The first is neuralgic pain distributed to parts that innervated by glossopharyngeal and vague nerves. It is confined to 1/3 of posterior of tongue, mastoid and middle canal of ear. The second group is cardiac manifestations; bradycardia, hypotension, syncope and asystole.

Post herpetic neuralgia (PHN) is another form of neuropathic pain that persists after varicella reactivation for more than 3 months. This neuropathic pain has multiple types of pain; it usually has persistent pain which neuralgic attacks superimposed on it.

Occipital neuralgia (ON) is a kind of neuralgia that distributed along greater occipital nerve (GON) or lesser occipital nerve (LON). The main causes categorized in vascular, neurogenic and osteogenic. Contracted muscles and spondylosis in upper cervical bones may produce irritation in these nerves which makes neuralgia.

Conclusion: the quality of pain in the different neuralgias is similar, so the medications that use to suppress them are the same too. Although, the treatment are the same but the precise definition is so important, because physicians should apply interventional approaches in the recurrent cases.

Key word: glossopharyngeal neuralgia, occipital neuralgia, post herpetic neuralgia

Approach to trigeminal neuralgia

Fahimeh Vahabizad

Assistant professor of Neurology, Tehran University of Medical Sciences, Sina Hospital



Trigeminal neuralgia (TN) is described as recurrent short-lasting electric shock episodes of pain in the distribution of the trigeminal nerve, which can be triggered by innocuous stimulation. Most cases of TN are caused by compression of the root entry zone, particularly by an aberrant loop of the artery or vein. Presenting with bilateral TN, being young, and having sensory deficits in the distribution of a

trigeminal nerve, can be the red flags of secondary TN. Some conditions include cracked teeth, caries/pulpitis, dry socket, temporomandibular joint disorders, giant cell arteritis, sialadenitis, first bite syndrome, primary stabbing headache, postherpetic neuralgia, other cranial neuralgia, and SUNA/SUNCT can mimic TN. Regarding the diagnosis of TN, Brain MRI with IV contrast and high-resolution thin cuts of the posterior fossa is the preferred paraclinical evaluation. Brain MRA can show additional visualization of arteries. The usefulness of trigeminal reflex testing applies to patients with secondary trigeminal neuralgia. Pharmacological treatment either with carbamazepine (200 mg/d to 1200 mg/d) or oxcarbazepine (300 mg/d to 1800 mg/d) is the mainstay of the initial treatment. Weak evidence shows that Lamotrigine, gabapentin, or onabotulinumtoxinA injections, followed by eslicarbazepine acetate, baclofen, topiramate, valproate, levetiracetam, and phenytoin, can be alternatives to carbamazepine. For urgent treatment of patients with refractory TN, IV lidocaine, IV fosphenytoin, or peripheral blocks may be required. Patients who are refractory to medical therapy should be referred to a neurosurgeon. If neurovascular compression is evident in brain imaging, microvascular decompression is considered first. If not, a neuroablative procedure is considered.

Trigeminal ganglion block indications and methods

Dr. Habib Zakeri



Trigeminal neuralgia is a painful condition involving the face. It is the most frequently diagnosed form of facial pain, with a prevalence of 4 per 100,000 in the general population.

The first-line treatment remains anticonvulsant medical therapy.

Patients who fail medical management due to persistent pain or unacceptable side effects have interventional options.

Percutaneous approaches to the trigeminal nerve usually involve needle localization of the Gasserian ganglion through the foramen ovale.

Specific approaches may vary, but in general, variations of the Hartel percutaneous route are used, where a rhizotomy needle is inserted and advanced via fluoroscopic guidance toward the intersection point of the medial canthus and approximately 3 cm anterior to the internal auditory meatus. On the lateral view, the needle should be pointed toward the petrous bone and clivus and should be around 10 mm posterior to the dorsum sellae. Care must be taken to avoid the oral cavity and injury to adjacent vascular structures such as the internal carotid artery and jugular vein.

As the needle passes through the foramen ovale, tactile feedback may be noted as a give or loss of resistance. There may also be a reflexive jaw jerk, which occurs due to irritation of motor branches of the trigeminal nerve. In some cases, entering Meckel's cave may result in CSF flowing through the needle when the stylet is withdrawn. The position of the needle may be confirmed with contrast or air injection under live fluoroscopy.

By percutaneous approaches under the fluoroscopy guide, we can do the balloon micro-compression, Percutaneous chemodenervation, Radiofrequency Ablation, and Combined Glycerol and Radiofrequency Ablation. These methods are so effective with neglectable side effects.

SPG block indications and methods

Dr.Karim Hemati

Professor of Anesthesiology, Pain Fellowship

The sphenopalatine ganglion block is an older and relatively simple pain management block for treatment of headache (cluster and migraine) and facial neuralgias. The sphenopalatine ganglion (pterygopalatine, nasal, or Meckel ganglion) located in the: pterygopalatine fossa, posterior to the middle nasal turbinate.

Indications: acute migraine headache, acute cluster headache, a variety of facial neuralgias, including Sluder, Vail, and Gardner syndromes. Contraindications: **Absolute:** local infection (skin or paranasal sinus); coagulopathy. Relative: anatomic abnormalities of sinuses secondary to genetics, trauma, or surgery.

Technique and Aproches: Transnasal approach, Intraoral Sphenopalatine Ganglion Block, Sphenopalatine Ganglion Block via Fluoroscopic Approach

Occipital nerve block in the treatment of headache

Ebrahim Golmakani MD

Anesthesiologist, Pain fellow, Associate professor. Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.



Occipital nerve block with steroid and local anesthetic can be used as the primary treatment of headaches but are more often used to treat intractable headaches when other methods have failed. It is most effective on the occipital neuralgia, moreover some evidence also supports it may help with cluster headache, cervicogenic headache, migraines and medication overuse headaches.

Three occipital nerves arise from C2 and C3 spinal nerves and innervate the posterior scalp region.

Greater occipital nerve (GON) and lesser occipital nerve (LON) block is useful method in the diagnosis and treatment of occipital neuralgia. This modality has some attractive features such as easy technique, minimum invasiveness, safety, no drug-to-drug interactions, and negligible cost; then it can be tried for treatment in various headache disorders. meanwhile its effectiveness and duration of relief can vary significantly from person to person. This procedure can perform by three techniques: landmark, fluoroscopic and ultrasound guided.

Third occipital nerve (TON) block is useful in the diagnosis and treatment of third occipital nerve headache. It can also to be used in a prognostic manner to assess the potential efficacy of RF lesioning. This technique can be done by two means fluoroscopy and ultrasound guided.

Radiofrequency lesioning of occipital nerve block is useful in selected patients who have experienced short term relief with occipital nerve blocks with LA or steroid and have failed to respond to other conservative therapies.

Any patient with headache severe enough to require neural blockade as part of treatment plan should undergo brain MRI and cervical spine X-Ray to rule out unsuspected intracranial diseases.

Key words: Occipital headache, Occipital nerve block, Radiofrequency lesioning

The role of ultrasound in head and neck therapeutic interventions

Seyed mohammadreza haji seyed abootorabi

Anesthesiologist, Pain fellowship, private practice



Ultrasonography has multiple advantages over traditional radiologic imaging modalities when used for interventional procedures. It allows improved visualization of the anatomy while avoiding ionizing radiation and risks associated with contrast use. It has proved superiority at accuracy of delivery and procedural effectiveness over blind procedures when used in association with interventional pain procedures. Al-

though limited in its ability to see through bony structures, ultrasound has utility in visualizing soft tissues and vascular structures in anatomic regions of interest resulting in increased use for posterior neuraxial, periaxial, peripheral nerve and joint-related structures. Current evidence for use in these settings is presented here. In some cases, optimal utility may be improved by combining ultrasonography with other imaging modalities.

Ultrasound imaging is a suitable and reliable tool to study the muscles and fasciae of the head and neck region.

cervical sympathetic ganglion block, trigeminal nerve and greater occipital nerve block, third occipital nerve and medial branch block, and cervical selective nerve root block are discussed. The review begins with in depth discussion about the anatomy of the target nerve, followed by reviewing the available literature on the indications for the procedures. Detailed description of the procedure techniques is also presented. The volume and selection of medications is also discussed if there is available research. The review will conclude with summary of side effects, complications and precautions

Interventional pain management techniques for Cervicogenic Headache

Dr. Shima Sadat Rajaei

Assistant Professor of pain management



Cervicogenic headache (CH) is a secondary headache that originates from the cervical spine and its anatomical structures mainly innervated by the C1, C2, and C3 spinal nerves. It was first described in 1983 by Sjaastad et al.

Involvement of the C2-3 zygapophyseal joint is the most frequent source of cervicogenic headache (almost 70% of cases). Patients with cervicogenic headache sometimes have a history of injury or trauma to the neck (whiplash injury), but it can also happen without trauma.

Diagnosis and treatment of CH is difficult. In the third edition of the International Classification of Headache Disorders (ICHD-3), diagnostic criteria for CH have been revised. At present, positive responses to controlled diagnostic blocks of putative cervical sources are considered the major criterion in the diagnosis of cervicogenic headache.

There is no proven effective treatment for CH. However, a number of different treatment modalities are available. When conservative treatment fails, interventional pain management methods are the best treatment options. This includes medial branch of C3, C4 dorsal rami blocks, intraarticular zygapophyseal joint (C2–C3, C3–C4) injections, atlantoaxial (AA) joint injections, greater occipital nerve (GON) and lesser occipital nerve (LON) blocks, radiofrequency ablations (RFAs), occipital nerve stimulation, cervical epidural steroid injections. surgical treatments are considered as the last treatment option due to lack of effectiveness and side effects.

Diagnostic and therapeutic interventions in different types of headaches

Kasra Dehghan MD

anesthesiologist, pain management fellowship (private practice)

Sphenopalatine ganglion blocks and radiofrequency treatments are frequently employed in headache management of refractory cases. Stronger indications for the block include, cluster headache, migraine headache, second division trigeminal neuralgia. Less strong indications include hemicranias continua and post dural puncture headache.

Stellate ganglion is a sympathetic ganglion in the lower neck region. Blockade and radiofrequency treatment of this ganglion is used to treat pain conditions affecting the face, neck and upper extremities. Recently evidence is accumulating in favor of its use in treatment of refractory cases of migraine headache.

Cervical epidural steroid injections have proven effective in management of cervicogenic headaches in particular when there is evidence of disc disease or root irritation in upper cervical roots. The treatment may be effective as long as 6 months. Facet joint injection/radiofrequency treatment at C2-C3 level which targets the third occipital nerve is another means of treatment in patients with cervicogenic headache.

Spinal cord stimulation as a neuromodulation treatment modality has been used in difficult-to-treat cases of cluster headache and chronic migraine. The stimulation is provided either through electrodes that are placed percutaneously into the epidural space or through a surgical paddle lead that is delivered via a laminotomy. Occipital nerve stimulation has been implemented in management of a number of primary headache disorders, including CM, chronic CH, hemicrania continua, short-lasting neuralgiform headache attacks with conjunctival injection and tearing and short-lasting neuralgiform headache attacks with autonomic symptoms.

Key words: sphenopalatine ganglion, stellate ganglion, cervical facet joints, cervical epidural steroid injection, cervical spinal cord stimulation, occipital nerve stimulation, headache management.

The role of cervical facet syndrome in headaches and neck pain

Ali Hosseinipour MD

Assistant professor of Anesthesiology and fellowship in pain management, Noncommunicable Diseases Research Center, Fasa University of Medical Sciences, Fasa, Iran



Neck pain is frequently brought on by the facet joints. Depending on the patient group and screening process, a prevalence of between 25 and 65% has been found. More than 50% of patients who visit a pain clinic do so because of neck pain. Compared to lumbar facet pain, this is noticeably higher. Pain experienced when applying pressure to the facet joints on the dorsal side of the spinal column.

Rarely does this soreness extend past the shoulders. Despite not experiencing any neurological symptoms, patients have limitations in extension and rotation. Due to the technical challenges of inserting a needle into the facet joint and the potential risk of rupturing the joint capsule, cervical medial branch blocks are the gold standard for diagnosing pain coming from the facet joints. They are preferred over intra-articular injections. Percutaneous cervical facet radiofrequency ablation (RFA), which can be carried out via either a posterior or a lateral technique, exhibits promising outcomes on pain reduction in cervical facet syndrome. In order to determine the current level of evidence supporting the use of RFA for treating cervical facet syndrome and cervicogenic headaches, we reviewed the most recent researches on these conditions along with different techniques and possible complications.

Key words: Neck pain, radiofrequency ablation, RFA, cervicogenic headache, cervical facet

Sinus Headache

Mehrdad Jafari MD

Associate Professor of Otolaryngology – Head & Neck Surgery, Imam Khomeini hospital complex, Tehran University of Medical Sciences



Many migraine or tension headache reside as undiagnosed or misdiagnosed or termed as a rhinogenic headache. Delay or misdiagnosis associated with treatment can negatively impact patient quality of life.

The latest version of the EPOS, as well as the ICHD-3, states that chronic rhinosinusitis rarely causes any type of pain, except when there is obstruction of the sinus ostium, in which case it resembles acute rhinosinusitis. Key features of a headache related to paranasal sinuses, according to EPOS, are classified by the level of pain exacerbation during upper respiratory tract infections, associated nasal symptoms, and improvement of pain with associated antibiotic therapy.

Once a primary headache has been ruled out and a rhinogenic headache is suspected, in the absence of a typical history of rhinosinusitis, the workup should continue with some specific sinonasal abnormalities in mind. Negative results during previous examinations do not rule out sinus etiology. Some lesions imperceptible to physical examination can be identified through nasal endoscopy; but, the best diagnostic outcomes are achieved with a combination of nasal endoscopy and computed tomography of the paranasal sinuses.

Recent evidence suggests that triptans may be the best choice for pain relief in patients with suspected rhinogenic headaches, but no CT evidence of paranasal soft-tissue content or obstruction of sinus drainage ostia is able to rule out specific therapy. Surgery for resolution of mucosal contact points can be an excellent therapeutic alternative for carefully selected patients, even in cases of migraine or tension headaches.

Keywords: Sinus headache, Rhinogenic headache

Headache Because of Problems with Teeth, Mouth, Jaws or Dentures

Amir Jalal Abbasi

Associate Professor of Oral and Maxillofacial Surgery, Fellowship in Facial Aesthetic and Reconstructive Surgery, Sina Hospital, Tehran University of Medical Sciences



It's estimated that more than 95% of orofacial pain cases have an odontogenic origin. In some cases, pain from tooth damage can cause a more severe type of migraine. The most common cause of non-odontogenic orofacial pain is temporomandibular joint dysfunction (TMD). Parafunctions such as bruxism or clenching may aggravate TMD. Pain classification in the temporomandibular joint (TMJ) region as primary or secondary headache is challenging. Therefore, theoretically, and often in practice, a secondary headache may have the characteristics of a primary headache, but a disorder is diagnosed as the cause. In general, disorders or factors that cause orofacial pain can be considered as triggers of primary headache. On the contrary, a primary headache can cause pain in the orofacial area. Of course, distinguishing these types of pain and dividing them may not be easy and make diagnosis and treatment difficult.

Ocular Causes for Headache

Dr. Fedra Hajizadeh

Noor ophthalmology research center, Noor Eye Hospital



Pain around the eye can be caused by local ophthalmic disorders or by disease of other structures sharing trigeminal nerve sensory innervation. In general, most ocular causes for pain also cause the eye to be red, thus alerting the examiner to the focality of the problem. However, conditions like eye-strain, intermittent angleclosure glaucoma or neovascular glaucoma, and low-grade intraocular inflammation can be

painful and not be associated with obvious redness. Ocular signs and symptoms also occur with numerous other causes of headache. Double vision in association with periorbital pain can result from orbital lesions, isolated cranial neuropathies, and cavernous sinus lesions. Pupillary abnormalities like Horner's syndrome may result from a variety of painful conditions, including cluster headache, parasellar neoplasms or aneurysms, internal carotid dissection or occlusion, and Tolosa-Hunt syndrome. Pain with a dilated and unreactive pupil may reflect a benign condition like Adie's syndrome or ophthalmoplegic migraine, or it may herald the presence of a life-threatening posterior communicating artery aneurysm. Headache and transient visual loss can be manifestations of classic migraine, or be symptoms of ocular hypoperfusion from ipsilateral internal carotid occlusion or increased intracranial pressure from pseudotumor cerebri. In a young patient, head pain with a fixed visual deficit may result from optic neuritis, in an older adult, temporal arteritis may be the culprit. Ophthalmologic aspects of headache thus encompass problems that range from simple and benign to complex and formidable.

Post-Traumatic headache

Mansoureh Togha

Professor of Neurology, Tehran University of Medical Sciences, President of Iranian Headache Association



Headache is among the most common consequence of different types of traumatic brain injuries. Post-traumatic headache (PTH) is very important as it could be long lasting and interfere with daily activity especially in the chronic form. As the number of traumatic accidents is growing in different parts of the world specific attention to their sequels including headaches is needed. According

to the studies about one third of the patients with traumatic brain injury would have post-traumatic headache, regardless of the type and the severity of the trauma.

The lifelong prevalence of PTH in men and females reported up to 4,7% and 2,4%, respectively. Post traumatic headaches usually follow a benign course and is self-limited as most of them recovers in a year after injury. Though the one-year prevalence of chronic PTH could be as high as 0.2% in the population.

A comprehensive and approved systematic guide for the management, and prevention of this disorder is not available yet. Therefore, we are going to summarize the available data about the diagnosis and management of PTH.

Probable risk and associating factors, phenotypes and pathogenesis also will be discussed. The apparent gaps in research, diagnosis, and management of PTH as well as a useful guide for future research on this topic are going to be addressed in the lecture. One of the gaps in this field is the definition of post traumatic headache by ICHD3 criteria, which is limited to the occurrence of headache within 7 days post trauma or after being conscious. This criterion could be under debates as many post-traumatic headaches start after this period.

Psychological factors associated with headache syndromes

Farnaz Etesam

Associate Professor of Psychosomatic Medicine, Tehran University of Medical Sciences



The impact of psychological factors on Headache syndromes, particularly tension-type headache (TTH), has long been a focus of attention and research. Also, there are a lot of evidences regarding comorbidity between migraine and tension-type headache and psychiatric disorders.

Episodic tension-type headache can be an improper mode of communicating that is formed by disrupted relationships between personality profiles, psychiatric symptoms and life

events of the sufferers. Based on the researches, psychological factors such as stress, mental tension and emotional disturbances have been demonstrating as risk factors for tension-type headache. Higher scores on measures of automatic thoughts and alexithymia, and lower scores on assertiveness are reported in patients with tension-type headache compared with healthy controls.

Longitudinal studies show neuroticism, perfectionism, and rigidity as other common psychological characteristics in patients with headaches particularly chronic daily headache. History of substance abuse, sedentary lifestyle, certain personality characteristics like borderline personality disorder also increase the risk of chronification of headache syndromes and triggering transition to medication overuse headache.

Headache is a chronic disease that occurs with varying frequency and chronicity resulting different levels of disability. So far, the research has emphasized, the role of biological factors in headache, and psychological factors are typically considered relevant, only in difficult patients with obvious psychopathology. However, even if we look at headache from the perspective of biology, many of the regions associated with pain processing are also involved with other psychological phenomena such as attention, concentration, stress and reward system, therefore, modulation of pain occurs through these shared processes.

Addressing psychological factors is a low priority for certain headache sufferers

including headaches once a month or less, experiencing acute medications as fully efficacious at treating headache, and lack of headache-related disability. But patients with continuous or near-continuous headaches, high levels of medication overuse, and those with severe mood symptoms need proper attention.

There are various therapeutic interventions for addressing psychological issues in headache. Some strategies, likely enhance the efficacy of ongoing pharmacologic intervention. Stress-management methods are efficacious and easily administered interventions for patients with headache syndromes.

Psychoeducation strategies (lifestyle modification, recognizing and managing triggers, enhancement of compliance) can also improve patient outcomes. Other recommended types of psychotherapy include cognitive behavioral therapy, meditation, and yoga. Finally, in patients who are diagnosed with psychiatric disorder, psychotropic medications can be helpful.

Diagnosis and medical treatment of idiopathic intracranial hypertension (IIH)

Dr Somayyeh Baghi Zadeh

Neurologist, Master of headache disorders.



Idiopathic intracranial hypertension (IIH) is a disorder of elevated intracranial pressure without any identifiable cause. Although its under-diagnosis is catastrophic, but over-diagnosis is common and harmful. To avoid any over- and under-diagnosis, a clear and step-by-step approach is required. To meet it, we will discuss briefly the following topics:

- 1- When to suspect to IIH according to clinical picture?
- 2- What important points to consider in general, neurologic and ophthalmologic examinations?
- 3- How to properly perform lumbar puncture? And how to interpret the findings?
- 4- How to investigate papilledema?
- 5- What are the currently available criteria for IIH? And what are their limitations?

Then we will move to management strategies and will discuss the following sections:

- 1- The modifiable risk factors and treatment of underlying disease
- 2- Vision protection
- 3- Headache management
- 4- The team work in IIH management

The third section is assigned to IIH in pregnancy. And we will close the discussion with follow up and patients monitoring strategies.

Keywords: Idiopathic intracranial hypertension, headache, papilledema

Diagnosis and management of SIH

Hossein Ansari, MD

Neurologist, Master of headache disorders.



Background: Spontaneous intracranial hypotension (SIH) defines a clinical condition characterized by debilitating postural/orthostatic headaches secondary to spontaneous spinal cerebrospinal fluid (CSF) leak and/or CSF hypotension.

Introduction: International Classification of Headache Disorders (ICHD-3), SIH is diagnosed when headache has developed spontaneously and in temporal relation to a CSF leak (evident on imaging) and/or CSF hypotension (lumbar puncture with measuring opening pressure).

Headache is the main and most common symptom of SIH. Pain usually progresses rapidly over a few hours. The typical headache is bilateral (but headache can be unilateral) generally occipital–nuchal, orthostatic, and identical to the headache of post lumbar puncture syndrome. Thunderclap headache can also occur and confuse the picture. Orthostatic headache might worsen after a few seconds/minutes or several hours of the patient being upright, and might improve or disappear after a few seconds/minutes/hours of rest in supine position. The orthostatic nature might become less obvious over time. Headache could be associated with nausea/vomiting, neck stiffness, and cochlear–vestibular signs including tinnitus, ear fullness, echoing, or distortion of sounds, hypoacusia, dizziness, or even rotational vertigo.

SIH is an underdiagnosed disorder, mainly because absence of orthostatic headache, normal imaging findings, or normal lumbar puncture opening pressures can occur in SIH; therefore, this diagnosis cannot be excluded in patients who do not present with all the typical features of this disorder.

Diagnostic imaging: MRI with gadolinium contrast of the brain and spine considered initial imaging modality. Diffuse pachymeningeal enhancement is most common MRI feature but there is other finding with different specificity and sensitivity. MRI of the spine without gadolinium is typically performed along with brain MRI

to identify features suggestive of CSF leak.

Other diagnostic imaging such as MR myelography, CT myelogram or radioisotope cisternography might be indicated if:

1. Initial brain and spine MRI are abnormal but non-diagnostic
 2. Clinical suspicion for the diagnosis is high despite normal initial imaging.
- CT myelography is the most reliable test to show the exact site of the leak.

Lumbar Puncture: LP can document low CSF pressure in suspected cases of SIH. However, CSF pressure may be normal even in the presence of an active leak.

Treatment: Management of SIH relies on observational data and expert opinion and all patients need initial symptomatic management. Overhydration, corticosteroids, Caffeine and theophylline used with various efficacy. Epidural Blood Patch (EBP) is the gold standard initial treatment. It is usually performed under fluoroscopic guidance with an autologous blood volume ranging from about 30–50 mL mixed with 5 mL of iodinated contrast agent. When the first EBP does not result in clinical benefit, it is possible to perform one or two additional patches at least 7 days apart from each other.

Complication: Early complications of SIH should be suspected in any patients reporting changes in headache, such as the pain becoming non-postural, which may suggest intracranial hypertension. Subdural hematomas are not an infrequent complication of SIH, and they are commonly chronic, with or without an acute hemorrhagic component. A frequent but under-reported complication of CSF leak closure is rebound intracranial hypertension.

Discussion: The original conception of SIH was as a condition caused by low CSF pressure. Early reports of the condition considered low pressure to be the defining pathophysiological disturbance; Subsequent work, however, has clearly shown this conception to be incomplete. Currently, there is no single diagnostic test that excludes SIH with a high level of sensitivity.

Conclusion: In clinical practice SIH is generally underdiagnosed; patients may have headaches for decades before the diagnosis is considered. Although the most common presenting symptom is orthostatic headache, SIH should be suspected in patients with headaches that are daily from onset (NDPH) and refractory to every medical treatment.

Imaging findings of spontaneous intracranial hypotension

Aidin Taghiloo

Neuradiologist – Arad hospital, Tehran, Iran



Spontaneous intracranial hypotension is an uncommon form of headache often presents in middle age with predilection for women and typically presents with orthostatic headache, vertigo and sometimes with atypical presentation such as tinnitus, memory loss or dementia.

Intracranial hypotension can be divided to primary usually refers as SIH and secondary type due to surgery or lumbar

puncture.

SIH usually results from CSF spinal leakage and imaging features are related to this event and can be seen in brain and spinal column.

Major brain imaging findings are brain sagging, prepontine cistern effacement, dural engorgement and subdural hematoma and spinal findings include, extradural fluid collection, Dura matter displacement, C1-C2 sign.

Imaging particularly MRI is crucial for confirming the diagnosis and identifying the location of the CSF leak.

Surgical interventions in CSF dysregulation

Ahmad Pour-Rashidi, M.D

Assistant Professor of Neurosurgery, Sina Hospital, Tehran University of Medical Sciences, Tehran, Iran



Background: Cerebrospinal fluid (CSF) is a clear fluid circulating around all the brain structures which plays a homeostatic role in the brain. Also, it helps the brain via taking solutes out of the brain. This normal circulation may interrupt by some pathologies making the patients symptomatic neurologically. Here I aim to discuss some of these situations from surgical point of view.

Methods: In this presentation, I evaluated literature including google scholar, PubMed, Ovid, and Embase databases to determinate all aspects of the CSF dynamic abnormalities.

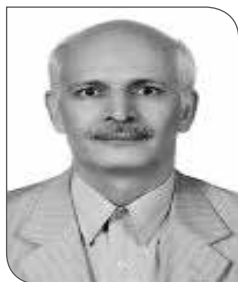
Results: There are several pathologies resulted from abnormal CSF content or circulation. The most important ones are intracranial CSF overload and underload which may need to surgical intervention to address them. CSF shunting whether temporary or permanent one is the straightforward approach to improve the CSF flow in the cranium. On the other hand, some situations will present as intracranial hypotension that may need to correct it.

Conclusion: According to the existing literature, the CSF shunting via ventriculo-peritoneal or lumboperitoneal shunting is most available and reliable method for resolving the CSF overload. Also, some cases with intracranial hypotension will treat by a kind of operation including, implementation of the epidural patch or hematoma evacuation in case of subdural hematoma secondary to negative pressure in the cranium.

The Survey of the diagnostic challenges of spontaneous intracranial hypotension

Mohammad Reza Najafi

Professor of Neurology, Isfahan Neuroscience Research Center, Isfahan University of Medical Sciences



Introduction: The diagnostic criteria consist of A, orthostatic headache; B, the presence of at least one of the following: low opening pressure (≤ 60 mm H₂O), sustained improvement of symptoms after epidural blood patching, demonstration of an active spinal cerebrospinal fluid leak, cranial magnetic resonance imaging changes of intracranial hypotension (eg, brain sagging or pachymeningeal enhancement); C, no recent history of dural puncture; and D, not attributable to another disorder. In this review, we point out the most important diagnostic challenges and misconceptions of spontaneous intracranial hypotension.

Methods: Researchers reviewed 482 studies related to SIH and presented their findings in a narrative review article. They reduced their value and importance 10 challenges and misconceptions that We briefly mention five of them.

Results: SIH is defined by low CSF pressure. Although low CSF pressure is common in patients with SIH, normal pressure may be found in patients with SIH and therefore should not rule out the diagnosis.

SIH is always characterized by orthostatic headache.

A negative brain MRI excludes SIH. Although MRI imaging is important in the diagnosis of SIH, a negative brain MRI should not rule out the diagnosis of SIH, and further tests with spinal imaging should be performed.

Patients with dural enhancement should be monitored for meningitis.

Imaging of the spine rarely shows a SIH leak.

Conclusion: Although SIH diagnosis criteria have been proposed, we should always consider the above diagnostic challenges.

Keywords: spontaneous intracranial hypotension, criteria, diagnostic challenges challenges,

Approach to Headache in Children

Zahra Rezaei

Assistant Professor of Pediatric Neurology, Department of Pediatric Neurology, Children's Medical Center, Tehran University of Medical Sciences, Tehran, Iran



Headache is a common presentation in children in both in-patient and ambulatory neurologic clinics. Headaches could be classified as acute, acute recurrent, chronic non-progressive and chronic progressive types, although migraine, tension type and medication overuse headaches are the most common types respectively. A part from the majority of children suffer from acute recurrent and chronic

non-progressive form, the two other types of headache (acute and chronic progressive) might be a manifestation of a significant underlying etiology that need emergent evaluation and treatment. Given that secondary underlying etiology should be diagnosed and treated promptly, neuroimaging as well as other ancillary evaluations should be applied in the correct scenario. There are some "Red Flags" as meaningful tools to make a comprehensive evaluation leads to finding a secondary etiology. On account of "children are not just small adults", there are some differences in etiology as well as management of headache in children that should be considered carefully.

Keywords: Children, Headache, Migraine, Red flags, Secondary headaches.

Clinical Manifestations of Headache in Children

Ali Nikkhah, MD

Assistant Professor of Pediatric Neurology, Mofid Children Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran



Headache is the most common manifestation of pain in childhood and is the most frequent reason for referral to a pediatric neurologist. It is important to recognize, diagnose, and treat the headaches which can often first present in childhood. Dealing with children with headaches, paying attention to the age of the child and the severity of the headache is very important. Irritability is a common manifestation of headache in infants. Exclusion of secondary headaches is mandatory in children and adults. Primary headaches are common in children and tension-type headache is the most common primary headache but migraines and its variant are common and familiar in pediatric age groups. For example; moderate to severe pulsating unilateral headache is characteristic for migraine. In this lecture, we explain characteristic clinical manifestations of common headache syndromes such as tension-type headache and migraine in children and adolescents.

Conclusion: Headache syndromes are the most common neurologic disorders in children. We need to be familiar with the clinical symptoms of headaches in different age groups of children for appropriate diagnostic and therapeutic approach.

Keywords: Headache, Children

Prophylactic treatment of childhood migraine headaches

Mahmoud Reza Ashrafi

Professor of Pediatric Neurology, Tehran University of Medical Sciences



Migraine headaches are among the most common neurological disorders in patients referred to pediatric neurology clinics. Approximately 10% of children and 28% of adolescents experience these headaches. The mean age of onset for migraine headaches is in the elementary school age and has a severe impact on the quality of life and school performance, therefore development of an effective and

safe agent for the prophylaxis of migraine headaches in children is essential for improving the short-term condition and long-term educational success. In spite of the widespread use of pharmacologic agents, at this time there is no FDA-approved treatment for the prophylaxis of headaches in children with migraine. Few prophylactic agents have been suggested, including anti-seizure medications (ASMs) Tricyclic antidepressants, Beta blockers, Antihistamines, Calcium channel blockers, and Nonsteroidal antiepileptic drugs (NSAIDS). Calcium channel blockers have been demonstrated to be effective in migraine prophylaxis. Flunarizine is the only FDA approved prophylactic agents for migraine prophylaxis in children. Cinnarizine is an L-type calcium channel blocker with a number of different proposed pharmacologic effects that may underlie the mechanism of action of its preventive effects on migraine. Our experiences showed that cinnarizine administered at bedtime as a single dose of 1.5 mg/kg/day or 50 mg/day in children weighing less than or more than 30 kg, respectively, is effective and safe in the prophylaxis of migraine headaches in children.

Keywords: Migraine, Children, Prophylaxis, Calcium Channel blockers

Emergency treatment of pediatric headache

Sareh Hosseinpour

Assistant Professor of Pediatric Neurology, Tehran University of Medical Sciences, Tehran, Iran.



Headache is the most common pain condition in children and adolescents visiting a pediatrician and, the third cause of visits to pediatric emergency departments (ED). Most headache disorders seen in emergency departments are of a benign etiology, with migraine being responsible for 60% of all headache presentations. Attacks that lead patients to come to the emergency room are often more severe, refractory to home rescue medication, and have been going

on for longer. All of these features make these attacks more challenging to treat. The core principles of effective treatment are reassurance (This is migraine and can be controlled), ensuring adequate hydration, and control of headache and associated features (nausea, photophobia, and phonophobia). The main drugs including triptans, antidopaminergic agents, Nonsteroidal Anti-Inflammatory Drugs, dihydroergotamine, sodium valproate and, corticosteroids. Nonsteroidal anti-inflammatory drugs have been shown to be successful for outpatient therapy of pediatric migraines. Ibuprofen is the most thoroughly investigated agent. Triptans have demonstrated efficacy in treating migraines in children and have been approved for use in children and adolescents.

Primary Headache syndromes are the majority of headaches that admitted to ED. Sinister HA are rare, but must be strongly considered in the ED. A written plan for rescue treatments of HA and its preventive therapy may help for sooner pain control and better quality of life of the patients.

Keywords: Headache, Pediatric, Emergency treatment

Cerebral Venous Sinus Stenting for Resistant Idiopathic Intracranial Hypertension (IIH), an Experience on 15 Patients

Mohammad Karimi

1Interventional Neurology fellowship, Milad Hospital, Tehran, Iran

Objectives: Transverse sinus stenosis is common in patients with Idiopathic intracranial hypertension (IIH). While the role of transverse sinus stenosis (TSS) in the pathogenesis of IIH remains controversial, some studies have shown that placement of a stent in a narrow transverse sinus can reduce intravenous pressure and improve symptoms. In this study, we aim to further clarify the hypothesis that the signs and symptoms of IIH can be relieved or improved by placing a stent in the TSS.

Methods: Fifteen patients with IIH (all female) who had not responded to conventional treatments were selected. Cerebral venous sinus stenting, which involves accessing the stenotic area by applying the sheath and guidewire and placing the stent was performed.

Our investigation focused on the important and determining factors in the diagnosis and pathogenesis of this disease including: intracranial and intravenous sinus pressure, Optic disc edema, visual field defects and headaches both before and after the placement of the stent in the transverse sinus of the patients. Patients were followed up for approximately 21 months post-procedure.

Results: Four (26.7%) patients showed continued headache. Visual disturbance was completely resolved in 13(86.7%) patients as well as complete resolution of papilledema in 13(86.7%), and partially in two (13.3%) patients. The intracranial pressure decreased in all patients and 2 (13.3%) patients continued to have auditory bruit, but no new tinnitus was reported.

Conclusion: Our findings support the effectiveness of stent placement in the transverse sinus of selected patients with IIH and can be used in certain situations. Our results can prove the safety of this method.

Keywords: Idiopathic intracranial hypertension, pseudotumor cerebri, transverse sinus stenting, venoplasty, venous sinus stenosis

Multiple Sclerosis and Headache

Dr. Behnaz Sedighi

Neurology Research center Kerman University of Medical Sciences

For decades, the headache was not considered a typical symptom of multiple sclerosis (MS) and was construed as a “red flag” for important differential diagnoses such as cerebral vasculitis meanwhile, several studies have demonstrated an increased prevalence of headaches in MS compared to the general population.

The first study about the association between MS and headache was published in 1969. There are studies investigating the frequency of primary headache types in MS patients, and these studies reported that migraine and TTH were found in 24.6–70% and 24–48.2% of the patients respectively.

Secondary headaches frequently occur, especially in the course of MS relapses. These are often migraine-like headaches caused by inflammation, which can improve as a result of MS-specific therapy. Headaches are particularly common in the early stages of chronic inflammatory CNS disease, where inflammatory activity is the greatest. In addition, headaches can also occur as a side effect of disease-modifying drugs (DMDs). Several studies have demonstrated the occurrence of headaches during interferon-beta therapy. Headache is significantly less common with glatiramer acetate than with interferon-beta therapy.

Long-term safety data show no evidence for an increased incidence of headache with monoclonal antibodies. For fingolimod, evidence of an association with the occurrence of TTH was found in a large study of 782 MS patients. Several large studies did not find a frequent occurrence of headaches with teriflunomide therapy. Taking dimethyl fumarate also did not show an accumulation of headaches in large placebo-controlled studies. Headache with cladribine is reported as a common side effect by the FDA but is not listed in the EMA product information). In summary, the high headache prevalence in MS cannot be explained solely as a consequence of DMD. Primary headache seems to be more common in MS patients than in the general population. Migraine is the most common type of headache in MS. Compared to the one-year prevalence of migraine in the

general population of 10% to 15% significantly higher migraine prevalence up to 46% were found in MS. The frequency of headache in MS patients was found to be greater than the general population and we found a higher incidence of migraine-type headache in these patients

Tension type of headache is more frequent in MS patients with higher ages, longer disease duration, more plaque numbers, and high EDSS scores. There are now several case reports showing that MS relapses can be manifested exclusively by headaches. Most often these are migraine attacks that remit completely after GCS therapy. In a study of 52 MS patients, a frequent occurrence of primary stabbing headache was found in the setting of MS attacks.

EEG in Childhood headache

Mahmoud Mohammadi

Professor of Child Neurology, Tehran University of Medical Sciences



Background: Headache could be seen in different contexts in childhood period. It could be seen as a sign in epilepsy which could be seen preictally, ictally, and postictally. As a preictal phenomenon, it could be a prodromal symptom or even it could be presented as a pure sensory seizure per se. in the latter condition, of course it is really uncommon. The most type of headache in childhood seizures is as a postictal

finding. Whatever the type of headache seen in seizures there are different types of EEG manifestations. In the most common type of headache in childhood (i.e., Migraineous headache), there is also a specific visual hypersensitivity most commonly seen as H-response.

Methods: I will demonstrate the above mentioned EEG manifestations of the different types of headache in childhood. These cases are from the teaching archives of department of pediatric clinical neurophysiology, from children's medical center hospital.

Conclusion: Different types of headache in childhood period have different but distinct patterns in clinical EEG.

Miscellaneous headaches in children

Dr. Nahideh Khosroshahi

Associate professor of Pediatric Neurology. Tehran University of Medical Sciences, Bahrami Hospital



The international Classification of Headache Disorders (ICHD-3b) divided headaches into three major categories: primary headaches, those that are diseases by themselves; secondary headaches, those caused or exacerbated by a secondary factor, and the cranial neuropathies; and other facial pains and headaches.

According to different references, Miscellaneous headaches in children consist of: Temporomandibular Joint dysfunction, occipital neuralgia, Trigeminal neuralgia. Glossopharyngeal neuralgia, Ice Cream headache, Ice Pick headache, cough headache, Altitude headache, Cluster headache, Indomethacin responsive headaches, Exertional headaches and MELAS.

Temporomandibular joint dysfunction is unilateral pain of a dull aching nature just below the ear in preauricular area. The pain is frequently aggravated by chewing and patients describe clicking and locking of their jaw.

Ice Cream headache is the name applied to headache pain that is cold induced. It develops during the ingestion of cold food or drink, lasts for less than 5 minutes, it is felt in the middle of the forehead, is prevented by avoiding rapid swallowing of cold drink, and is not associated with organic disease. This type of headache occurs more frequently in patients who have migraine. It is suggested that the pain is referred from the palate or teeth via the trigeminal nerve.

Proper identification of these disorders often leads to specific treatment, resulting in dramatic relief of discomfort and pain.

Child neurologists stand in a pivotal position in accurate diagnosis, treatment and prevention of headaches in children

Headache as a first manifestation of CO₂ narcosis in a myopathic child

Simin Khayatzadeh Kakhki

Assistant professor of pediatric neurology, division of pediatrics, Bahrami children's Hospital, Tehran University of Medical Sciences, Tehran, Iran.



Hypercapnia, a state of elevated serum carbon dioxide (CO₂), can manifest as a broad spectrum of disease, the most severe of which is CO₂ narcosis. The delineating feature of CO₂ narcosis is a depressed level of consciousness. It is essential to recognize impending or current CO₂ narcosis; if left untreated, it can result in coma or death. Chronic respiratory failure is a major factor contributing to mortality

in progressive neuromuscular disorders. Among the muscular dystrophies, respiratory failure most commonly occurs with Duchenne dystrophy, while in Becker, limb-girdle, and facioscapulohumeral dystrophies, respiratory failure is infrequent and generally occurs in the more severe cases that have progressed to a no ambulatory, advanced functional stage.

Here is a report of a 6-year-old girl, has been referred to pulmonary clinic for taking consult permission for adenoid surgery. In her medical history, she has been suffered from wake-up headache for about one year, then accompanied with progressive daily drowsiness and exertional dyspnea. During physical examination we figured out myopathic feature and proximal muscle weakness, which could have been the etiology of these complications. Echocardiography demonstrated pulmonary hypertension. While inappropriate oxygen delivery caused CO₂ narcosis, but hypercapnia resolved with night time application of noninvasive intermittent positive pressure ventilation (NIPPV) with a bilevel positive airway pressure device (Bi-PAP). The etiology of hypercarbia and clinical symptoms in this patient was congenital myopathy that was misdiagnosed and managed as adenoid hypertrophy.

Keywords: headache, congenital myopathy, pediatrics

Cervicogenic Headache

Dr. Sharif Najafi

Clinical Biomechanics and Ergonomics Research Center, Department of Physical Medicine and Rehabilitation, Aja University of Medical Sciences, Tehran, Iran



Cervicogenic headaches (CGHs) pose a challenge for many therapists because the head pain results from somewhere other than the head: the cervical spine. Cervicogenic headaches (CGHs) pose a challenge for many therapists because the head pain results from somewhere other than the head: the cervical spine.

Interestingly, CGHs are one of the most common types of headache in weight-lifting athletes. Patients who have sustained whiplash or concussion injuries with resulting neck pain sometimes develop CGH.

In fact, headaches developing 3 months or more after concussion are generally not caused by brain or head injury, suggesting a possible cervical spine etiology. The diagnostic criteria for CGH include headache associated with neck pain and stiffness. Cervicogenic headaches are unilateral, starting from one side of the posterior head and neck, migrating to the front, and sometimes are associated with ipsilateral arm discomfort.

Three forms of cervical headaches can be distinguished, each with its own semiology: 1. Occipit 2. Occipitotemporomaxillary 3. Supraorbital

The successful treatment of cervicogenic headache usually requires a multifaceted approach using pharmacological, non-pharmacological, manipulative, anesthetic, and occasionally, surgical interventions.

In this article, we will review the various aspects of Cervicogenic headache, including clinical symptoms, diagnosis and treatments, and we will review the latest research findings.

Examination of the cervical and thoracic spine in cervicogenic headache, considering forward head posture

Seyed Ahmad Raeissadat¹, Mohsen Cheraghi²

1. Associate Professor of Physical Medicine and Rehabilitation, Shahid Beheshti University of Medical Sciences 2. Physical Medicine and Rehabilitation specialist, Shahid Beheshti University of Medical Sciences



Introduction Cervicogenic headache as a syndrome and not a single disease has a wide range of etiologies. Different structures of the cervical spine including spinal nerves, DRG, uncovertebral joints, intervertebral discs, facets, ligaments and even muscles may ultimately lead to the symptoms known as cervicogenic headache. The prevalence of cervicogenic headache in the general population is reported to be between

0.4% and 2.5%. In headache patients, the prevalence of cervicogenic headache has been reported even up to 20%. Of course, due to the great overlap between the symptoms of migraine, tension headache and cervicogenic headache, it is not possible to provide accurate prevalence in this regard. Detailed physical examination is one of the most important elements in the accurate diagnosis and treatment of this disease. Increasing pain with neck movements and unusual postures or pain with pressure on the upper neck and occipital areas are among the most important and accepted diagnostic criteria of cervicogenic headaches. Other musculoskeletal and neurological examinations, including palpation, range of motion, provocative maneuvers and tendon reflexes rule out important causes of headache and help confirm headaches of cervical origin. In this article, we review the important clinical points regarding musculoskeletal examinations in headache sufferers. In the meantime, we will give a detailed description of segmental examinations as well as posture, muscle shortness, flexibility and strength of muscles.

Examinations Cervical vertebrae are divided into upper (atlantoaxial joint or C1-2) and lower (C3-C7) segments. C1 and C2 vertebrae are different from the lower segments in terms of function. The C1-2 joint is responsible for 58% of the total neck rotation. The atlantooccipital joint is responsible for 10 degrees of neck flexion and 25 degrees of neck extension. The C2-3 segment represents an important anatomical region in which flexion, extension and lateral bending are progressively

increased and it is the most common region for facet pathology in cervicogenic headaches. Cervical facet syndrome can often mimic radicular pain to the head and upper limbs. The facet joints are usually located at a distance of 1.3 to 2.5 cm from the spinous processes. It is not possible to accurately diagnose facet pain, although paraspinal tenderness is more commonly associated with facet pain than any other physical examination. In addition to point tenderness, increased pain with neck extension and rotation and decreased neck movement are possible signs of the patient suffering from facet joint disease. Tenderness on the spinous processes and bilateral tenderness, although it does not rule out facet pain, can suggest pain caused by the disc or other structures. Provocative maneuvers of the second and third cervical nerve roots, such as axial pressure on the neck along with flexion or extension, may also lead to headache and diagnosis of pain origin. Among the nerve roots of the neck, the C2 root is more associated with neck headaches than other roots. Segmental examinations also play an important role in finding dysfunction in the cervical structures of the spine. There are four special maneuvers in segmental examination, which are: pressure on the spinous process, transverse pressure against the spinous process, longitudinal friction on the facet joints, pressure on the interspinous ligaments. Although these examinations do not have a high sensitivity to find the etiology of pain, in some patients it is a guide to find minor dysfunction in the upper segments of the spine, which may give a good response to manual treatments in patients with cervicogenic headaches. The forward posture of the neck increases the stress on the upper segments of the neck such as the facet, ligaments and disc. This posture can cause cervicogenic headaches to develop and worsen. In such a way that the correction of this condition has been associated with the reduction of headache. Increasing cervical lordosis and improper head posture is one of the causes of muscle dysfunction, especially cervical flexors in the upper parts of the neck and related to these types of headaches.

Role of cervical and thoracic manipulation in treatment of Cervicogenic headache

Dr. Zahra Rezasoltani

professor of physical medicine and rehabilitation, clinical biomechanics and ergonomics research center, department of physical medicine and rehabilitation, Aja university of medical sciences, Tehran, Iran



Several studies of varied research designs have shown that cervical joints mobilization and manipulation can be effective for cervicogenic headache (because CGH is related to cervical joint dysfunction). Manipulation is used to decrease cervical joint dysfunction and pain. Simple soft tissue techniques are designed to relax tight muscles and fascia. Forces applied too fast or too heavy cause the muscles to fight back.

Various types of manual therapy consist of direct techniques (soft tissue technique, articular treatment, mobilization with impulse, muscle energy, direct myofascial release) and indirect techniques (strain-counter strain, indirect balancing, indirect myofascial release, craniosacral).

There are important precautions and contraindications for high velocity low amplitude (thrust) manipulation of cervical spine, some of them are: unstable fracture, severe osteoporosis, primary or secondary bone tumors, central cervical disc herniation, spinal cord tumors, cauda equina compression, ...

For getting optimal results from manipulation, you should do meticulous physical and spinal examination and confirm the presence of cervical facet dysfunction as the source of CGH and then rule out contraindication for manipulation.

Systematic reviews of RCTs using manual therapy in CGH patients suggest better outcomes compared to no treatment, although there is a need for more high-quality clinical studies. Both mobilization and manipulation are effective for treatment of patients with CGH, although manipulation appears superior to mobilization in short-term. In addition, patients with neck pain with or without headache have more short-term relief when manual therapy is combined with exercise as compared to exercise alone.

Pattern of trigger point producing headache in various muscles

Kamran Azma

professor of physical medicine and rehabilitation, Clinical Biomechanics and Ergonomics Research Center, Department of Physical Medicine at University of Medical Sciences, Tehran, Iran



Lifelong prevalence of headache is 96%, with a female predominance. More than 90% of patients who present to their primary care provider for evaluation of headaches have a primary headache disorder. Primary headache comes from the inflammation of pain-sensitive parts of the body in and around the neck and head, including: Nerves, Blood vessels, and Muscles (of head and neck). Trigger point is described

as a primary headache. A hyperirritable spot in skeletal muscle that is associated with a hypersensitive palpable nodule in a taut band. MTrPs have come to play a central role in the diagnosis and treatment of myofascial pain syndrome. An active trigger point is painful at rest. A latent trigger point, does not produce spontaneous pain, but it may limit a person's range of motion in that area or cause muscle weakness. The most common sites for trigger points causing common tension headaches are: The upper trapezius, The suboccipital muscles, Upper trapezius, Suboccipital M, Temporalis M, SCM, Splenius capitis M, levator scapulae M. Trigger points of trapezius muscle produce temple and eyebrow pain, headache deep behind the eye, jaw pain at the masseter muscle, temporomandibular joint (TMJ) disorders, pain up the side of the neck, behind the ear, headache at the back of the head, restricts rotation and lateral flexion of the head to the opposite side. In this lecture, describe pattern of headache in trigger point of above muscle and some therapeutic strategy.

Inter-scapular pain: common causes and introduction a case

Mohaddeseh Azadvari

Associate professor of physical medicine and rehabilitation, Sina Hospital, Tehran medical university



Background: Inter scapular pain is a pain that referred between two shoulders, and most of times, it refers in one side. Different causes can have induced interscapular pain such as cardiovascular problem, pulmonary disease, musculoskeletal problem such as myofascial pain. The good history taking & physical examination can create a good opportunity for accurate diagnosis. One of the most common causes of interscapular pain is muscular

pain due to muscle strain, trauma, or posture strain. This can result in interscapular pain and result in combined neck and shoulder pain as well. Myofascial pain syndrome may be misdiagnosed as intrascapular pain. If the patient does not respond enough to treatment, we must evaluate more for another causes.

Methods: So we introduced a 30-year-old female presented with a one-year history of progressive right-sided upper back with no history of fever, night sweating, trauma and radicular pains. Moreover, the magnetic resonance imaging scan of her thoracic spine performed one year before was reported as normal. She was identified as a candidate for surgery using the whole body bone scan and a multiple detector computed tomography (MDCT) scan. A large 25-mm osteoid osteoma of the lamina of the third thoracic vertebra (T3) was also diagnosed through histopathology.

Conclusion: For interscapular pain management, at first we must be taking good history and physical examination. After that if the patient does not have enough response to treatment, we must reevaluate them for other causes.

Keywords: Inter-Scapular Pain, Myofacial pain, Osteoid osteoma

Best Headache Devices Available in the USA 2022

Alan M. Rapoport, M.D

Professor of Neurology, UCLA School of Medicine, Los Angeles, California, USA



Background: Non-interventional medical devices cleared by the FDA in the USA now allow physicians to offer relief to patients who do not want medication or cannot tolerate them. Devices can also be used along with medication. They work either on various types of electrical neuromodulation to nerves outside the brain or magnetic stimulation to the back of the brain itself to reach pain-associated path-

ways. A 2019 report on pain management from the US Department of Health and Human Services noted that some RCTs and other studies “have demonstrated that non-invasive vagal nerve stimulation can be effective in ameliorating pain in various types of cluster headaches and migraines.”

At least three devices, one designed to stimulate both the occipital and trigeminal nerves (eCOT-NS, Relivion, Neurolief Ltd), one that stimulates the vagus nerve, (nVNS, gammaCORE, electroCore) and one that stimulates peripheral nerves in the upper arm REN, Nerivio, Theranica Bio-Electronics LTD are FDA-cleared to treat episodic and chronic migraine; nVNS is also cleared to treat migraine, episodic cluster headache acutely and chronic cluster acutely in conjunction with medication.

The devices

NERIVIO

Theranica Bio-Electronics LTD, makes a remote electrical neuromodulation device (REN) called Nerivio, which is FDA-cleared to treat migraine acutely in adults and adolescents. Recent studies have shown effectiveness in migraine prevention and treating menstrual migraine. The patient wears the device on her upper arm where sensory fibers, once stimulated in the arm, travel up to the brainstem to affect the serotonin-modulated descending inhibitory pathway to disrupt incoming pain messaging. Theranica has applied to the FDA for clearance to treat patients with chronic migraine and soon prevention of migraine.

RELIVION

Neurolief Ltd created the external combined occipital and trigeminal nerve stimulation (eCOT-NS, Relivion), which stimulates both the occipital and trigeminal nerves simultaneously. It has multiple output electrodes, which are placed on the forehead, stimulating the trigeminal supraorbital and supratrochlear nerve branches bilaterally, and over the occipital nerves in the back of the head. It is worn like a crown around the head and it must be in good contact with the forehead and the back of the head simultaneously.

gammaCORE

The nVNS (gammaCORE, electroCore) is a noninvasive vagal nerve stimulation device that is FDA-cleared for acute and preventive treatment of migraine in adolescents and adults, and acute and preventive treatment of episodic cluster headache in adults. It is also cleared to treat chronic cluster headache acutely along with medication. The patient applies some gel to the device's two electrical contacts and then locates the vagus nerve on the side of the neck to be treated. Patients can adjust the stimulation's intensity so that they can barely feel the stimulation, but it has not been reported to be painful. nVNS is also cleared treatment of paroxysmal hemicrania and hemicrania continua.

SAVI Dual

s-TMS, (The SAVI Dual™ (formerly the Spring TMS™ and the sTMS mini™)) made by eNeura, is a single pulse, transcranial magnetic stimulation applied to the back of the head to stimulate the occipital lobes in the back of the brain. It is FDA-cleared for acute and preventive care of migraine in adults. The patient holds a handheld magnetic device against her occiput; when the tool is discharged, a brief magnetic pulse interrupts the pattern of neuronal firing (probably cortical spreading depression), that can trigger migraine and the visual aura associated with a third of migraine patients.

Cefaly

e-TNS (Cefaly, Cefaly-Technology) works by external trigeminal nerve stimulation of the supraorbital and trochlear nerves bilaterally in the forehead. It gradually increases in intensity and can be controlled by the patient. It is FDA cleared for acute and preventive treatment of migraine; unlike the other devices, it is sold over the counter without prescription. According to the company website, there are three

devices, one for acute and one for preventive treatment, and one device has two settings, for acute and preventive treatment.

Methods: Data on each will be presented.

Results: All five of these devices have data showing superiority over sham treated patients

Conclusion: Electrical and magnetic stimulating devices are here to stay. They have been used for several years to treat headache patients. New devices are being FDA cleared whenever they are found safe and effective.

Peripheral Interventional Treatment in Headaches

Derya Uluduz

Istanbul University Cerrahpasa Medical Faculty, Istanbul, Turkey



Background: The management of refractory headaches with the existing therapeutic options might be challenging since it is difficult to achieve the pain control. Peripheral interventional treatments may be an alternative because of minimally invasive nature.

it should be considered in the refractory patients with a poor response to pharmacological management. Patients with a late response to attack treatment, complicated migraine, hemiplegic migraine, who develop intolerable side effects from pharmacological treatments, who have comorbidities such as hepatic and renal failure can be candidate as well.

Methods: We use interventional treatments in many headache types but there is no current consensus on the technical aspects. These treatments become relatively popular for cluster headache and chronic migraine. A recent survey showed that 69% practitioners used interventional methods in their refractory patients.

Results: We will show video demonstrations of refractory patients with mainly peripheral nerve blocks including greater occipital nerve, supra orbital and supratrochlear nerve, sphenopalatine ganglion.

Conclusion: Interventional treatments can be used for acute attack management, bridge therapy or preventive treatment in various headache types including headache disorders.

The procedures are easy to apply in headache outpatient room by trained physicians and are low cost.

They are mainly safe in pregnancy, children and elderly patients.

Interventional methods deserve further attention so that we can acquire more evident based research and clinical practice data.

Chronic headache disorders – a systematic approach

Prof. Stefan Evers, MD PhD

Faculty of Medicine, University of Münster, Germany



Background: Chronic headache disorders are defined as a headache that lasts at least 4 hours a day for at least 3 months on at least 50% of the days. Primary and secondary chronic headache disorders are differentiated. In the case of medication overuse, there is an overlap between primary and secondary chronic headache.

Results: The most important chronic headache disorder is chronic migraine. This can occur with and without medication overuse headache. The diagnosis chronic tension-type headache is separated from chronic migraine, both diagnoses cannot occur together. In addition, there are three more primary headache disorders fulfilling the criteria for chronic headache. These are hemicrania continua, nummular headache and new daily persistent headache. Diagnostic procedures such as magnetic resonance imaging or laboratory testings are only used to exclude secondary chronic headache disorders. In this presentation, the clinical features, the classification criteria and the treatment options will be presented.

Conclusion: Chronic headache is not an entity but comprises several types of primary and secondary headache disorders. The knowledge about the features and about the treatment procedures is mandatory for treating refractory chronic headache patients.

Sensorial Dysfunctions in Migraine: Translational Aspect

Hayrunnisa Bolay

Gazi University, Department of Neurology & Algology, NÖROM , Neuropsychiatry Center



Migraine is the most prevalent brain disorder and the first cause of disability under age of 50. Accompanying sensorial symptoms suggesting hyperresponsivity in the somatosensory, visual, auditory, and olfactory systems are distinguishing features of migraine attacks and multisensory stimuli may worsen the headache severity and disability. Our understanding regarding the neurobiology

of multisensory disturbances in migraine is inadequate.

Ability of discriminating the exact entry of consecutive somatosensory stimuli is crucial and impaired somatosensory temporal discrimination for the suggested central sensory processing dysfunction during migraine without aura attacks. Recent study using short afferent inhibition (SAI) paradigm and transcranial magnetic stimulation revealed sensorimotor integration problem within migraine attack. SAI results demonstrated an impaired sensorimotor integrity and reduced cortico-cortical inhibition between somatosensory and motor cortices in migraine without aura attacks. Also, visual temporal discrimination thresholds are prolonged both ictally and interictally in patients suffering from migraine without aura attacks. Integration of somatosensory and visual stimuli was also shown in migraine patients.

Manifestation of sensory symptoms related to distant cortical areas such as visual, and sensorimotor cortices may suggest a dysfunction of cortico-cortical connections or an interconnection through a thalamic hub. Sensorial disruptions in more than one domain accompanying migraine headache can be attributed to multisensory integration dysfunction of the higher order thalamocortical network. Involvement of TRN would contribute sensory hypersensitivity in multiple sensory modalities, lateral inhibition and sensory discrimination problems associated with migraine headache. Also, Sensory augmentation can be induced by stimulating

CGRP expressing neurons in the thalamus or cerebellum. In conclusion sensory symptoms are conventionally justified by dysfunctions confined to the cerebral cortex, but a perspective through the complex interplay of thalamocortical network, involvement of cerebellum and CGRP would provide a better picture, more pertinent to the central sensory processing associated with a migraine attack.

Key words: Migraine, sensory augmentation, somatosensory temporal discrimination, Thalamic reticular nucleus, higher order sensory nuclei.

Refractory Headache Management in Children and Adolescents

Professor Aynur Özge

Department of Neurology, Algology, and Clinical Neurophysiology, Mersin University School of Medicine, Mersin, Turkey



Background: Headache is among the most common symptom in children and adolescents with a wide range of gender and life style. Chronic and refractory headache disorders are hot topics for headache specialist and physicians have to manage children. As a most common type of CM is the most common reason of refractory primary headache disorders in children and adolescents. Especially after puberty, relating to

changed life styles of the teens in the last decades the frequency is increases gradually. There are several associates of the way going to the “refractory” and the physician have to focused to the associates as well as headache symptom.

Methods: First given a real case story with a refractory migraine with medication overuse and then the presentation will instruct on the case. Behind the minimal theoretical update presentation will aimed to give practical approaches with the current literature.

Results: Compared with other chronic disorders, headache in children have much more negative effect on school performance, as well as emotional status. As for schoolchildren, it is reported that these children could not go to school on a regular basis, they perform lesser than their capabilities and their careers are negatively affected in the long-term. Accompanying symptoms such as depression, somatization, anxiety also impair the quality of life. Early identification and treatment of headache will not only improve a health condition, but also will provide advancement in academic and social area as well as psychological development for children with headache.

Conclusion: Migraine is not just a headache. This is a syndrome including headache but have lots of the associates bringing the case a refractory syndrome. Physicians have to evaluate other symptoms and comorbidities together with headache symptoms and planned a comprehensive holistic approach with a team.

Trigeminal Neuralgia

Dr. Muhammad Nasrullah

Associate Professor of Neurology, Wapda Teaching Hospital, Lahore, Pakistan, Vice President, Pakistan Society of Neurology



Trigeminal neuralgia is a disorder of severe, brief and electric shock like recurrent episodes of facial pain. It is characterized by pain in the sensory distribution of trigeminal nerve. Its incidence is 4 per 100000 population per year.

Trigeminal neuralgia can be divided into classical and symptomatic forms. Classic form is considered idiopathic. It is actually caused by close contact of trigeminal nerve and superior cerebellar artery. Symptomatic form is caused by arteriovenous malformation, aneurysm and pontine infarct. Compression by tumors at cerebello-pontine angle, pontine glioma, glioblastoma, metastasis and lymphoma can also lead to trigeminal neuralgia. Other causes of symptomatic form include multiple sclerosis, sarcoidosis and trauma. Trigeminal neuralgia presents with pain in the distribution of any branch of trigeminal nerve. Pain is typically paroxysmal, severe and lancinating in character. It lasts for a few seconds to two minutes. Pain episodes can occur once in a day to hundreds per day. Pain is precipitated by sensory stimuli in the distribution of trigeminal nerve like chewing, talking, smiling, drinking cold or hot fluids, touching, shaving, brushing teeth and blowing the nose. Exposure of face to cold air can also precipitate pain.

Diagnosis of trigeminal neuralgia can be made easily by history alone. Physical examination in classic form is normal. Strict criteria for trigeminal neuralgia as defined by the International Headache Society are as follows:

1. Paroxysmal attacks of pain lasting from a fraction of a second to 2 minutes, affecting 1 or more divisions of the trigeminal nerve and fulfilling criteria B and C
2. Pain has at least 1 of the following characteristics: (1) intense, sharp, superficial or stabbing; or (2) precipitated from trigger areas or by trigger factors

3. Attacks stereotyped in the individual patient
4. No clinically evident neurologic deficit
5. Not attributed to another disorder

Treatment of trigeminal neuralgia is pharmacological as well as surgical.

Carbamazepine is the drug of choice. Other drugs include oxcarbazepine, lamotrigine, phenytoin, gabapentin, baclofen, clonazepam and valproic acid.

Surgical options include microvascular decompression and percutaneous procedures like radiofrequency trigeminal gangliolysis, retrogasserian glycerol rhizotomy, and balloon microcompression.

Gamma knife surgery is actually targeted radiation of trigeminal nerve roots. It is comparatively less invasive and has good results.

Key words: Trigeminal nerve, trigeminal neuralgia, Facial pain, Microvascular decompression, Rhizotomy, Gamma knife surgery

Updates in the management of cluster headache

Farhad Assar zadegan, MD

Associate Professor of Neurology, Shahid Beheshti University of Medical Sciences (SBUMS)



Cluster headache, a primary headache disorder, consists of short (15-180 minutes), frequent (up to eight a day), unilateral attacks of facial pain with associated ipsilateral autonomic features and restlessness. The attacks are suspected to be one of the most painful human experiences, and the disorder is associated with a high rate of suicidal ideation. Proper diagnosis is key, as some of the most effective treatments, such as high flow oxygen gas, are rarely used in other headache disorders.

Yet diagnostic delay is typically years for this disorder, as it is often confused with migraine and trigeminal neuralgia, and secondary causes may be overlooked. This review covers the clinical, pathophysiologic, and therapeutic features of cluster headache. Recent updates in diagnosis include the redefinition of chronic cluster headache (remission periods lasting less than three months instead of the previous one month), and recent advances in management include new treatments for episodic cluster headache (galcanezumab and non-invasive vagus nerve stimulation).

KEY WORDS: headache, cluster, autonomic features,

Updates of management of other TACs

Elham Jafari

Neurologist, Tehran University of Medical Sciences.



Introduction: TACs are a group of primary headaches characterized by attacks of unilateral short-lasting severe head pain associated with ipsilateral autonomic manifestations in the facial distribution of the trigeminal nerve. They are important to recognize because of their different response to treatments.

Methods: Other TACs included in this lecture are episodic and chronic paroxysmal hemicrania (PH), short-lasting uni-

lateral neuralgiform headache attacks (SUNHA) and hemicrania continua.

Results: Lamotrigine for SUNHA and indomethacin for PH and HC are the preventative treatments of choice. Complete response to indomethacin is required for a diagnosis of PH, although tolerability can be difficult. Second-line choices include verapamil for PH; topiramate, gabapentin, and carbamazepine for SUNHA; and cyclooxygenase-2 inhibitors and gabapentin for HC. Parenteral lidocaine is highly effective as a transitional treatment for SUNHA. Novel therapeutic strategies such as non-invasive neurostimulation, targeted nerve and ganglion blockades, and invasive neurostimulation, including implanted occipital nerve stimulators and deep brain stimulation, appears to be promising options.

Conclusion: SUNHA, PH, and HC are rare, but highly disabling headache syndromes that can be difficult to diagnose and manage correctly. Improvements in our understanding of their pathophysiology should allow better treatments to emerge.

Key words: paroxysmal hemicrania, short-lasting unilateral neuralgiform headache attacks, hemicrania continua.

Headache and sleep disorders

Hamed Amirifard

Neurologist, assistant professor of neurology. Tehran University of medical science. Imam Khomeini hospital.



Headache is one of the commonest reasons to seek medical attention. Worldwide, it is estimated that 3 billion people will experience a primary headache disorder, such as migraine, annually. the World Health Organization lists headache as one of the 20 most significant causes of disability worldwide. Although the potential relationships between sleep, biologic rhythms, and headache have long been postulated, they remain largely speculative and underused therapeutically.

These interactions are thought to feature prominently in several headache disorders, namely, hypnic headache, cluster headache, and migraine, in which attacks can arise from, be modulated by, and are associated with sleep, as well as being probabilistically more likely to occur at certain times during the 24-hour period. A more focused and detailed understanding of these relationships is likely to be helpful for headache sufferers.

Accurate clinical phenotyping of sleep-related headache, with particular reference to the differences in the diagnostic criteria of hypnic headache (HH), cluster headache, and migraine, is very important, as the management of each disorder differs. Imaging and blood pressure measurement during an attack is mandatory in Hypnic Headache. Identification and treatment of comorbid insomnia, RLS, and snoring in migraine may prove valuable in terms of reducing the risk of conversion from the episodic form of the disorder to chronic migraine. Sleep apnea headache appears to occur independently of the severity of OSA and is not pathophysiologically associated with oxygen desaturation.

Keyword : Sleep –headache –sleep disorders breathing

Migraine and dietary supplements

Soodeh Razeghi Jahromi

Department of Clinical Nutrition and Dietetics, Faculty of Nutrition and Food Technology, National Nutrition and Food Technology Research Institute, Shahid Beheshti University of Medical Sciences, Tehran, Iran.



The lifetime prevalence of headache is 96%. Globally approximately 11% of adults have migraine headache. So far, many mechanisms, including vascular, neurogenic, and trigemino-vascular system activation have been proposed. Recent evidences hypnotized that a changes in mitochondrial function and consequent energy deficit is involved in migraine pathophysiology as an upstream disorder. Simultaneous existence of sensory-stimuli overload and energy-reserve limitation

stimulate the trigeminovascular system.

Magnesium, Thiamin, Riboflavin, and Coenzyme Q10 are famous for their role in ATP synthesis and mitochondrial energy metabolism. On the other hand, evidences demonstrated their helpful role in controlling migraine headache symptoms. As an example studies reported that consumption of 400 milligram riboflavin/day for three months reduced the frequency of migraine headache attacks by more than 50% in more than half of the patients. More ever, some micro and macro nutrients are well-known natural immuno-modulator substances including Omega-3 and vitamin D. Recent studies supported their effect in migraine prophylaxis and treatment. For instance, every 22% decrease in migraine headache occurrence was observed by every 5 ng/ml increase in serum vitamin D level. The natural components possess minimal side effects, unless prescribed in non-therapeutic doses. Dietary intervention can decrease the burden of migraine disease with less cost.

Gut-brain axis in migraine pathogenesis: with a special focus on the effects of dietary modulation

Zeinab Ghorbani

Cardiovascular Diseases Research Center, Department of Cardiology, Heshmat Hospital, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran.

Department of Clinical Nutrition, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran.



Background: Considering the high health burden of migraine, several underlying mechanisms are suggested to be involved in its pathogenesis, though the exact mechanism remained uncertain. Gut-brain axis roles have been recently taken into consideration. The present review aims at discussing recent evidence on migraine and gastrointestinal (GI) disorders, and the role of the gut-brain with a special

focus on the effects of dietary modulations.

Methods: A comprehensive literature review was performed from the inception to September 8, 2022.

Results: Current knowledge showed migraine in patients with *Helicobacter Pylori* might be improved following the bacteria eradication. The concurrent celiac disease should be particularly searched in migraineurs with occipital and parietooccipital calcification at brain neuroimaging. Migraineurs with long headache history and high headache frequency are diagnosed more often with irritable bowel syndrome. The roles of serotonin pathway and neuropeptides including glutamate, neuropeptide-Y and cholecystokinin in migraine in addition to gut microbiota composition and dysbiosis could explain these associations. Two mechanisms may be involved, indirect signaling, including microbiota-derived neurotransmitters, inflammatory molecules, and hormones, and direct connection with stimulating end terminals of the vagus nerve. Hence, taking into account the need for some interventions that modify dysbiosis, regular intake of fiber, supplementation with probiotics, vitamin D, and omega 3, adhering to low-glycemic-index-diets, institution of gluten-free diets, and weight loss could lead to improvements in migraine associated features.

Conclusion: Considering the close link between migraine and GI disorders, possibly through gut-brain associated factors, it was proposed that dietary interventions modulating gut microbiota may have promising effects in migraine prophylaxis.

Headache secondary to autoimmune disorder

Hossein Ansari, MD



Background: Headaches are divided into primary (without an underlying cause) and secondary, those caused by other pathological conditions including inflammatory and autoimmune disorders.

Introduction - Headache has been suggested to be a neurological manifestation of many immunological/autoimmune disorders, both those primarily involving the central

nervous system(CNS), such as multiple sclerosis, and those systemic, such as systemic lupus erythematosus.

Over the last decades, researchers have focused their attention on better understanding possible links between headache and autoimmune disorders. Both at epidemiological and pathophysiological levels, headache and in particular migraine, and autoimmune disorders seem to share common features:

- Epidemiologically, most autoimmune disorders are more frequent in females; likewise, almost all primary headache forms are more commonly diagnosed in females too.
- The onset of both headache and immunological/autoimmune disorders are generally at young ages.
- In terms of pathophysiology, in primary headaches, and mainly in the migraine context, the role of both neuroinflammation and immune system derangement has been increasingly acknowledged in the last decades, further supporting the view of a link of these conditions with immunological disorders.

Discussion: Neuroinflammation and Headache:

Contribution of neuroinflammation in the pathophysiology of several painful conditions, including migraine, is widely accepted. Also neuroinflammatory mechanisms have also been described in the context of several disorders causing secondary headache, such as post-traumatic stress disorder, chronic stress and traumatic brain injury.

Trigemino-vascular system (TVS) and headache

Role of TVS in primary headache has been well described .TVS activation, typ-

ically induces a local neurogenic inflammation involving dural and pial vessels which causes :

1. A plasma protein extravasation due to an increased meningeal vascular permeability
2. The activation of immune cells (mast cells and perhaps macrophages, localized near the dural afferents). Activated mast cells in turn produce several mediators including serotonin, histamine, arachidonic acid products, pro-inflammatory cytokines and chemokines.
 - The upregulation of pro-inflammatory cytokines—specifically IL-1 β —in activated microglia has also been shown in the Trigeminal Nucleus Caudalis (TNC) .
 - Neuroinflammatory events involving activated microglia and astrocytes also occur in the course of cortical spreading depression (CSD), which is considered the pathophysiological substrate of migraine with aura.

Pathophysiological links between primary headache and autoimmune disorders

A significant increase in the peripheral levels of pro-inflammatory cytokines such TNF- α , IL-1 β , IL-6 have been found in migraine patients, both in interictal and ictal periods. Like in several autoimmune diseases, an impairment in natural killer (NK) cells, as well as a significant increase in the CD4+ lymphocyte and a decrease in the CD8+ lymphocyte subsets, was observed in migraine patients. Even for cluster headache (CH), some evidence supports a role for immunological dysfunctions in the pathogenesis of this disorder. Little is known in the role of a derangement of the immune system in tension-type headache.

Headache in different autoimmune disorders

A. Vasculitides: wide group of complex immunological diseases characterized by a relevant inflammation of blood vessel walls. An association between headache and vasculitides has not been definitely established, with some relevant exceptions (e.g. GCA). Systemic vasculitides can also cause secondary headache, and Behçet's syndrome seems to be one of the most strongly associated with headache. Other types of vasculitides, including polyarteritis nodosa and Takayasu's arteritis, can also involve CNS and cause headache.

B. Connective tissue disorders

1. Systemic lupus erythematosus (SLE) is a chronic systemic autoimmune disease, affecting the joints and multiple organs including nervous system. Neuropsychiatric symptoms affect about half of the patients with SLE which can also

be among the earliest manifestations of SLE. Specifically, headache has been reported as the most frequent symptom of neuropsychiatric SLE. The role of headache in SLE has been recognized by the inclusion in the SLE Disease Activity Index (SLEDAI) of 'lupus headache' as a descriptor, defined as a severe, persistent headache which is often of migraine type and unresponsive to analgesia. Concerning tension type headache in patients with SLE, some investigations have revealed a higher prevalence of TTH compared to migraine.

2. Sjögren's syndrome (SS): Several epidemiological studies, as well as pathophysiological and histopathological research, have emphasized the involvement of the Peripheral Nervous System in SS, whereas the CNS involvement has not been fully defined. neurological onset may sometimes precede both the clinical appearance of systemic symptoms and the immunological diagnosis by many years. Thus, a SS should always be considered in patients with relatively non-specific neurological symptoms, such as headaches, associated with sicca syndrome. Among CNS manifestations of primary SS, headache seems to be one of the most common; the most frequent type of headache observed in a cohort of SS patients fulfilled the criteria for migraine without aura. Some researchers have also reported the higher incidence of dry eye in migraine patients. Therefore the relation between SS and migraine might be bi-directional. In summary, headache in pSS has been suggested to be related to an 'autoimmune endotheliitis' which directly alters biochemical and humoral markers, in turn inducing perivascular inflammation that fosters vasomotor dysfunction.

3. Raynaud's disease: a possible endothelial dysfunction of the cerebral microcirculation or a potential inflammation-mediated shift of the neurovascular coupling which possibly accounts for both headache (especially migraine) and Raynaud phenomenon.

4. Scleroderma: Nervous system involvement in scleroderma has been increasingly recognized and an association between migraine and systemic scleroderma (SSc) has been suggested. In largest study of Neurologic involvement in scleroderma (182 cases), most frequent symptom was headache.

5. Rheumatoid arthritis (RA): In a questionnaire survey of migraine patients in Denmark, the prevalence of RA was significantly higher in migraineurs compared to patients without migraine. Indeed, serotonergic dysfunction has been implicated in the pathogenesis of both RA and migraine.

6. Antiphospholipid syndrome (APS): can be accompanied by additional clini-

cal features, including valvular lesions, migraine, Raynaud's phenomenon, livedo reticularis, arterial hypertension and autonomic disturbances, such as postural tachycardia syndrome, neurocardiogenic syncope and orthostatic hypotension. Among neurological complications, recurrent headaches are quite prevalent in APS patients. Migraine is the most common type of headache and the most frequent neurological manifestation of APS. In fact, one study reported that migraine was the most common clinical, not only neurological, manifestation of APS.

Conclusion: Over the last three decades, evidence has been moving towards a possible confirmation of the comorbidity of headache with almost all autoimmune disorders. Most of the headache in autoimmune disorders fulfill the ICHD-3 criteria for migraine, which might be a consequence of general inflammatory mechanisms involving meningeal vessels and activating trigeminal terminals. Autoimmune disorders and headache tend to worsen each other. Several autoimmune disorders during active phases can exacerbate headache, in particular migraine, will make the treatment of headache very difficult, unless the underlying autoimmune disorder is properly managed first.



Poster presentations

**7th Iranian International Headache &
2nd joint Headache-Pain Congress**

20-22 Oct 2022

Moyamoya disease: A rare cause of Headach in juvenile patients

Dr Shadi Zamanian, Dr Ebrahim Pourakbar

Social security organization, Mashhad, Iran

Introduction: Moyamoya disease is a chronic, progressive occlusion of the circle of Willis arteries that leads to the development of characteristic collateral vessels seen on imaging, particularly cerebral angiography. The disease may develop in children and adults, As a result, moyamoya disease has been under-recognized as a cause of ischemic and hemorrhagic strokes . At this time, there is no known cure, and existing treatment options are controversial.

Methods and Materials: The authors describe the case of a 30-year-old Iranian man with a history of hypertension and stroke who was diagnosed as having moyamoya disease.

This case presented to the Out Patient Office with headache which was on and off for last 4–6 months. The headache presented was of piercing type with moderate intensity. It was associated with weakness on right hand side for last few days, which evolved into dizziness and speech difficulty and he experienced first tonic clonic seizure. There was no associated fever, night sweats, loss of consciousness. Her family history was significant for hypertension, diabetes. A magnetic resonance image (MRI) of the brain with and without gadolinium contrast revealed a moderate amount of increased signal in the periventricular white matter regions bilaterally. A magnetic resonance angiogram (MRA) of the brain later exposed the absence of the middle and anterior cerebral arteries bilaterally. Marked hypertrophy of the lenticulostriate arteries bilaterally was also visible. These arteries were very large in caliber distally, concurrently revealing collateralization of the posterior cerebral arteries to the anterior cerebral artery distribution over the convexity . In addition, a lateral view displayed the occlusion of the middle cerebellar arteries and anterior cerebellar arteries proximally. Surgery can be beneficial, particularly if the diagnosis of moyamoya disease is

made early. However, further prospective studies are necessary. Optimization of surgical techniques, perioperative care, and anesthesia will likely improve the benefit of surgical revascularization for future patients

Results: Careful, long-term neurologic and radiologic follow-up is essential in adult patients with moyamoya disease to prevent additional stroke events and improve outcomes.

The role of diagnosis and treatment of Temporomandibular disorders on primary headaches

Somayeh Dastanpour

Department of Oral Medicine, Dentistry Faculty, Tehran University of Medical Sciences

The relationship between headache and temporomandibular disorders (TMD) has been under investigation since many years ago. Studies show that primary headaches (Migraine and TTH) are more common in patients with TMD symptoms. Comorbidity of TMD and headache is a chronic and disabling neuromuscular and neurologic condition that may cause misdiagnosis or overtreatment of both headache and TMD. There is a synergistic reciprocal effect in headache and TMD, so that headache can aggravate TMD and TMD can intensify headache. Patients with TMD and headache comorbidity report much more pain and disability levels compared to patients with TMD alone. On the other hand, comorbidity of TMD and headache makes the treatment of each condition more difficult. A systematic review study showed that both intensity and frequency of headache in patients with TMD and headache comorbidity, were significantly decreased after conservative treatment of TMD (occlusal splint). According to these evidences, all the doctors and dentists who treat patients with headache or TMD symptoms have to be familiar with sign and symptoms of TMD and headache. In case of TMD and headache comorbidity, patient referral to a proper specialist can lead better treatment. The aim of this lecture is to review of the symptoms of TMD which may overlap with headache symptoms and to briefly describe of TMD treatment methods.

Keywords: temporomandibular disorders, headache

The influence of anxiety and depression on headache in adolescent migraineurs: A case-control study

Hajar Kazemizadeh¹, Elham Jafari¹, Mansoureh Togha MD¹, Zhale Salami¹

1. Headache Department, Iranian Center of Neurological Research, Neuroscience Institute, Tehran University of Medical Sciences, Tehran, Iran

Introduction: Migraine is commonly linked to a range of psychiatric comorbidities, primarily anxiety and depression. The present study compared the frequency of anxiety and depression disorders in migraine and non-migraine adolescents and evaluated the relation of depression and anxiety to migraine characteristics.

Methods: In this case-control study, 234 adolescents (112 migraineurs and 122 non-migraine adolescents) aged 13-18 years were evaluated. A headache questionnaire as well as the Beck Anxiety Inventory and Children's Depression Inventory were completed to investigate the prevalence of headache, anxiety, and depression.

Results: The average age of participants was 15.77 ± 2 years in the case group and 15.39 ± 1.79 years in the control group. We found significantly higher levels of mild, moderate, and severe anxiety (38.4%, 23.2% and 23.2%, respectively) in the migraine group compared to the control group (24.2%, 5.8% and 10.0%, respectively). Significantly more children in the control group (29.6%) than in the case group (10.1%) had a non-depressive CDI score. There was a significant difference between patients with moderate and severe anxiety in terms of attack frequency and duration. Depressed migraineurs recorded higher attack severities and frequencies than migraineurs without depression.

Conclusion: Anxiety and depression are common in adolescents with migraine and can be associated with more burdensome attacks.

Keywords: Headache, Migraine, Depression, Anxiety, Adolescents

Hypertensive posterior reversible leukoencephalopathy presenting as migraine like headache

Dr Shadi Zamanian, Dr Ebrahim Pourakbar

Social security organization, Mashhad, Iran

Introduction: Posterior reversible encephalopathy syndrome with spinal cord involvement (PRES-SCI) is a rare entity with only about 15 cases being reported. The Aim is to present a case of 7-year-old girl who presented with complaints of migraine like headache and was later found to be hypertensive with features of PRES-SCI.

Methods and Materials: A 7-year-old girl presented with recurrent episodic, bilateral frontotemporal throbbing headache since 3 months. Headaches occurred every 3-4 days, lasting for 2-3 hours with nausea, vomiting, vertiginous sensations and phonophobia and used to subside after a bout of vomiting or sleep. There was no significant past history. Her initial evaluation by a GP revealed no abnormality including fundus examination. However, no record of her BP measurement was available.

She was referred to our centre as her headaches became continuous for the last 7 days. On examination, Patient was conscious but jittery. She was well oriented but her sustained attention was impaired. Her pulse was 106/min and BP 240/130 mm. Eye examination showed bilateral grade-4 hypertensive retinopathy with bilateral exudative retinal detachment. Neurological examination revealed bilateral hyper-reflexia, dysdiadochokinesia and impaired tandem gait. Planters were flexors. There was no neck rigidity. A diagnosis of malignant hypertension with hypertensive encephalopathy was entertained which was treated immediately with tablet Amlodipine followed by addition of Clonidine.

Her routine biochemistry including KFT was normal. She had albuminuria without any pyuria or casts. Both her spot urinary protein and 24-hour urinary protein were raised. ANA, rheumatoid factor were negative. MRI brain showed patchy areas of signal alteration (hyper-intense in T-2/FLAIR and iso-intense to hypo-intense signals in T-1 images) involving cortical, sub-cortical white matter

of bilateral frontal, temporal, parietal and occipital lobes, bilateral basal ganglia, cerebellum, pons, medulla and upper cervical spinal cord. There were focal intramedullary patchy areas of similar signal alteration with swelling of cervical, dorsal, lumbar cord and conus without any significant post-contrast enhancement. Her ECG and ECHO revealed concentric LVH thereby suggesting chronic hypertension. USG showed bilateral loss of renal cortical medullary differentiation suggestive of medical renal disease. Subsequent PTA renal scan was also normal without any evidence of reflux uropathy. CSF examination showed clear fluid, normal pressure with 3 cells (all mono-nuclear)/field, glucose was 91 mg/dl, protein was 137 mg/dl.

CSF stains and culture for bacteria, AFB, and fungus were negative. Pan-neurotropic virus panel for different viral nucleic acids (by PCR) was negative. Thus based on above investigations a diagnosis of medical renal disease with malignant hypertension, hypertensive encephalopathy with exudative retinal detachment was made.

Results: Over next 6 weeks, her BP normalized on treatment and repeat MRI brain and spine became absolutely normal thereby confirming the diagnosis of PRES-SCI. Her headaches improved dramatically. Her retinal detachment also improved on conservative management by 8 weeks.

Conclusion: BP measurement should be an integral part of headache evaluation even in young children. PRES-SCI although rare can present with migraine like headaches.

The most important medicinal plants effective on migraine: A review of ethnobotanical studies in Iran

Zahra forouzandeh shahrakei, nahid jivad*

Shahrekord University of medical science- shahrekord-Iran

Introduction: Headache is considered a main health problem due to high prevalence and associated disabilities .Of different types of headaches, migraine, with 6% and 18% prevalence in men and women respectively, is considered the thirdleading disorder and the seventh leading cause of disability Migraine headache occurs as periodical attacksand may be manifested by nausea, vomiting, photophobia, and phonophobia. Migraine is a main reason forabsence from work and therefore imposes heavy burden on individuals and communities because of disablingworkforce .Clinical heterogeneity of migraine arises from different genetic and environmental factors and lifestyle . Therefore, many treatments have been adopted, including chemical drugs, psychotherapy, antiepileptics, antidepressants, acupuncture, and traditional medicine. However, some of these could not be used for all patientsand have not been approved by specialists certainpharmacotherapies .Therefore, health-care community is seeking to identify nature-based drugs with no side effects and with higherefficiency. Medicinal plants are valuable resources which have been used to treat different diseases since many yearsago. Further, therapeutic effects of these plants have been reported for neurological and fungal.

Methods and Materials: Type it in or copy and paste your Methods and Materials from your Word document or other source. As many of the plants reported in this study are analgesic and anti-inflammatory and contain effective analgesic, anti-inflammatory compounds, their effects in treating migraine may be due to their analgesic, anti-inflammatoryproperty Most of these plants were from Apiaceae, Asteraceae, Hypericaceae, Lamiaceae and Rosaceae families which contain phenolic compounds and can exert great anti-inflammatory effects.

Results: In this review article, the key words including ethnobotany, ethnopharmacology, ethnomedicine, phytopharmacology, phytomedicine, traditional medicine,

and Iran combined with migraine and headache were researched for in Web of Science, PubMed, Scopus, International Science Citation Center, and Magiran. Duplicate articles and the articles with no accessible full text were excluded from analysis. The present study indicated that Iran's people from different cultures and regions such as Lorestan, Saravan of Sistan and Baluchistan province, Alamut of Ghazvin Province, Turkmen Sahra of Golestan province, Kohgiluyeh va Boyer-Ahmad province, Chaharmahal va Bakhtiari province, Hormozgan province, Arjan of Fars Province, Mashhad Sardasht of West Azarbaijan province, and Kerman province use 22 medicinal plants from 16 families according to traditional medicine to treat migraine specifically. Most of these plants were from Apiaceae, Asteraceae, Hypericaceae, Lamiaceae and Rosaceae families. Table 1 gives further data on the medicinal plants effective on migraine.

A Prospective, Randomized, Double-blind, Phase III Clinical Trial to Evaluate the Non-inferiority of Dyston® to Dysport® for Chronic Migraine Treatment in Adults

Delara Hazegh Fetratjoo¹, Elham Jafari², Mansoureh Togha^{*2}

1. PharmD TUMS, 2. MD TUMS

Introduction: It has been estimated that about 2% of the world population suffer from chronic migraine, a condition with a huge disabling burden that impacts the patients' quality of life (1). Patients with migraine are also prone to higher risk of developing psychiatric comorbidities such as depression and anxiety disorders (2). Onabotulinum toxin has demonstrated promising efficacy in the management of chronic migraine in well-designed clinical trials (3,4), although abobotulinum toxin has shown inconclusive results compared to placebo when administered at 210, 120, or 240 units (5,6). In general a systematic review and meta-analysis has concluded a favorable safety profile for botulinum toxin in prevention of chronic migraine while reducing the headache days by two days per month (7).

In this study we aimed to compare the efficacy and safety of 500 units of Dyston® in comparison with 500 units of Dysport® in the treatment of chronic migraine in adults.

Methods and materials: The trial protocol was developed according to the guidelines of the international headache society (HIS) for controlled trials of preventive treatment of chronic migraine in adults to be conducted in the headache clinic of Sina hospital in Tehran, Iran (8). After assessing the eligibility criteria, the patients will be randomly assigned to one of the study groups to receive either Dyston® or Dysport® with the Fixed-site Fixed-dose (FSFD) method of injection (figure 1). The study will consist of 5 visits with intervals of four weeks [baseline observation visit (-1, week -4), randomization visit (0), visit number 1 (week 4), visit number 2 (week 8), and visit number 3 (week 12)].

The patients will be instructed to complete a headache diary. Headache characteristics including pain quality, intensity, location, relationship with routine physical activity, and use of acute headache medication will be assessed with the headache diary.

Primary outcome is the 30% responder rate; meaning the proportion of patients

with a $\geq 30\%$ decrease from baseline in the frequency of headache days. Secondary outcomes are reduction of acute migraine medication consumption, 50% responder rate, reduction of duration of the migraine attacks, reduction of the intensity of the migraine attacks, reduction of the Patient Health Questionnaire (PHQ)-9 depression score, improvement of the patient's quality of life according to Headache Impact Test (HIT)-6, reduction of the patient's disability scores according to Migraine Disability Assessment (MIDAS). Safety outcome is the incidence of any adverse events. IRCT registration number: IRCT20201104049265N3

Eligibility criteria:

Inclusion Criteria

- Men and women of 18 to 65 years
- Diagnosis of CM according to ICHD-3 (≥ 15 headache days a month for > 6 months) Headaches must have at least two of the following characteristics: unilateral location, pulsating quality, moderate-severe pain intensity and/or aggravation by or causing avoidance of routine physical activity (e.g. Walking or climbing stairs), nausea and/or vomiting, photophobia and phonophobia
- Provided informed and written consent

Exclusion Criteria

- Previous treatment with botulinum toxinA for CM and/ or cosmetic purposes with an interval of less than 3 months
- Diagnosis of myasthenia gravis, Eaton-Lambert syndrome, ALS or any other significant disease that might interfere with neuromuscular function
- Subjects not willing to comply with the study visits
- Subject is currently participating or has participated in the last 3 months in another clinical study in which the subject has, is, or will be exposed to an investigational or non-investigational drug or device
- Confirmed allergy to botulinum toxinA or any of the product components
- Patients diagnosed with major depression
- Patients diagnosed with any serious systemic diseases such as renal or hepatic failure, any other neurologic diseases like MS, epilepsy, and any other diseases that in the opinion of the investigator would put the patient at risk
- Females of childbearing age with confirmed or suspected pregnancy, those planning on conceiving during the trial duration and women who are breastfeeding

Assessment of SRCIN1, NTRK2, and P2RX4 mRNAs expression in Peripheral blood mononuclear cells from patients with chronic migraine treated with AbobotulinumtoxinA

Zhale Salami^{1,2}, Mansoureh Togha^{2,3*}, Saeed Irian¹

1. Department of Cell and Molecular Biology, Faculty of Biological Sciences, Kharazmi University, Tehran, Iran

2. Headache Department, Iranian Center of Neurological Research, Neuroscience Institute, Tehran University of Medical Sciences, Tehran, Iran

3. Headache Department, Neurology Ward, School of Medicine, Sina University Hospital, Tehran University of Medical Sciences, Tehran, Iran

Introduction: AbobotulinumtoxinA (aboBoNT-A) is considered a safe and effective therapy to manage Chronic Migraine (CM), as was shown in the PREEMPT clinical trial. Gene expression profile analysis on human cell lines and animal models after exposure to BoNT-A has been investigated in several studies in recent years. However, the effects of the treatment of BoNT-A on the human cellular model and its potential mechanism remain to be defined. We aimed to analyse gene expression that related to a possible action mechanism of aboBoNT-A and to determine their value as prognostic markers of efficacy, in a population of CM patients treated with aboBoNT-A. The SRCIN1, NTRK2, and P2RX4 may play a significant role in the mechanism of aboBoNT-A action and therefore might bear potential value as prognostic markers of efficacy of aboBoNT-A in CM patients in our population.

Methods: This case-control study is developed for chronic migraine patients treated with AbobotulinumtoxinA at the headache clinic of Sina hospital in Tehran, Iran. Demographic data and medical history are obtained from all patients. AboBoNT-A accordingly to PREEMPT paradigm was offered to patients that had not responded to other preventative treatments. Headache characteristics are recorded at baseline visits (before injection) and ensuing 3 months after. Patients with a reduction of at least 50% in the number of migraine days after aboBoNT-A procedures were considered as responders.

Peripheral blood mononuclear cells (PBMCs) are collected from all patients before injection and at the time of the peak effect of the drug. The relative expression of SRCIN1, NTRK2 and P2RX4 is evaluated through real-time PCR from PBMCs in all patients.

Conclusion: The study is still ongoing and the results will be announced soon.

The prevalence of chronic headache and its related factors in Shahrekord cohort study population

Zahra forouzandeh shahrakei, Nahid Jivad*

Shahrekord University of Medical Science-Shahrekord-Iran

Introduction: Headache is one of the most common complaints in patients, considering the importance of this disease. Headache is one of the most common complaints in medical knowledge; Because more than 90% of people experience headaches during their lifetime, the first and most important step for headache treatment is its correct diagnosis.

However, until 1988, it was not possible to conduct comparative studies due to the lack of an accurate and accepted definition of headache types, the present study was conducted with the aim of investigating and determining the prevalence of chronic headache and its related factors in Shahrekord cohort study.

Method and materials: First, based on the census, all patients with chronic headache were included in the study and the prevalence of chronic headache was calculated. In this study, a group of people who were suffering from chronic headache based on the definition criteria of chronic headache and neurologist's diagnosis and had medical records in the Shahrekord cohort study, were considered as the case group, and the control group or controls were people who had chronic headache. and the number equal to the number of people in the case group was selected by regular random method in order to evaluate the relationship of risk factors. Then, previous exposure history such as family history of chronic headache, smoking, occupation and other desired variables were collected, were collected using a check list. The data was analyzed by Stata statistical software and the significance level was 0.05.

Results: The results of the study showed that the prevalence of chronic headache was 5.9%, which was 2.6% in men and 8.8% in women ($P < 0.001$). The prevalence of headache in city residents was 6.4% and more than in rural areas with 4.7% and in illiterate people it was 7.3% and had the highest prevalence ($P = 0.061$). It

was 0.1% in patients with diabetes, 7.7% in patients with hypertension, 8.1% in patients with ischemic heart disease, and 15% in patients with depression

Conclusion: In the current study, the prevalence of headache was higher in women, city residents, unemployed people, smokers, and people who consumed drugs and alcohol. The prevalence of chronic non-communicable diseases such as diabetes, hypertension, ischemic heart disease and depression was higher in patients with headache. These findings reflect the importance of the effects of headache and the need to provide strategies for the treatment and prevention of headache.

Vestibular Rehabilitation in Patients with Vestibular Migraine

Fatemeh Jafarlou

Department of Audiology, School of Rehabilitation Sciences, Tabriz University of Medical Sciences, Tabriz, Iran

Introduction: Vestibular migraine (VM) is now considered a distinct diagnostic entity by both the Barany Society and the International Headache Society. VM is the second most common cause of vertigo after benign positional vertigo. In table 1 diagnostic criteria of VM have been shown. The quality of the data on VM management is still relatively poor, despite its enormous importance in daily practice. This review focuses on the more evidence on the effects of vestibular rehabilitation (VR) in the management of vestibular symptoms in individuals with a VM.

Methods and Materials: We performed a literature review with the following keywords: migraine, vestibular migraine, vertigo, dizziness, vestibular rehabilitation. Four different databases (PubMed, Scopus, and Web of science and Google Scholar) were independently screened. Publications in English were reviewed from 2000 to 2022.

Results: We reviewed a total of 15 articles. Results showed that approximately 30–50% of patients with migraine report vertigo, dizziness or balance disturbances with at least one migraine attack. VM often appears in a temporal delay to the first onset of migraine headache. The results validated the use of VR in the treatment of vestibular symptoms for individuals with a VM to include improved headache and migraine-related disability in patients with a VM.

Conclusions: Given the biological relationship between vestibular symptoms and headache; headache in patients with VM could be improved by vestibular rehabilitation that leads to the improvement of dizziness. Therefore, referral to vestibular rehabilitation should be considered for all patients, particularly if secondary complications such as deconditioning, loss of confidence in balance or visual dependence have developed.

Keywords: migraine, vestibular migraine, vertigo, dizziness, vestibular rehabilitation

Embolization of Middle meningeal artery as an effective treatment for chronic subdural hematoma associated headache. (Case report)

Mohammad karimi

Interventional Neurology fellowship, Milad Hospital, Tehran, Iran

Background: Chronic subdural hematoma(cSDH) is one of the most common causes of chronic headache and other neurological symptoms. It could be essentially due to middle meningeal artery (MMA) disruption and it can be treated with endovascular procedures. In this case study we aimed to improve patients headache with MMA embolization.

Case presentation: A 42 years old man presented to our clinic complaining persistence headache for the past two months, nonresponsive to NSAIDs, opioids and other analgesics and cSDH was diagnosed by brain MRI.

Technique: Cerebral angiography was done and MMA was recognized as supplying artery. In this case, we decided to perform embolization therapy. For this purpose, a small catheter is inserted through the femoral artery in the groin area and moves towards the abdominal aorta and through the common carotid artery (CCA) reaches the SDH main supplying artery, which was MMA. Then embolization was performed using Polyvinyl Alcohol (PVA) particles. ***Results*** : Patient shows complete resolution of headache one day post operation and patient's life quality is significantly improved and no technical or clinical complication was encountered. Control MRI shows absorption of blood collection.

Conclusion: Our finding support the effectiveness of MMA embolization in cSDH absorption and associated headach relief. MMA mobilization is a relatively new concept for treating cSDH.

Keywords: MMA, cSDH , headach embolization

Cognitive behavioral therapy in the management of chronic pain in MS patients

Zahra Hasani

MSc OT, Tehran university of medical science

MS is one of the main causes of disability. About two-thirds of people with MS report pain as a symptom of their disease. The most common types of pain in these people include headache, back pain, and limb pain. There are various therapeutic interventions in this field; one of them is cognitive behavioral therapy.

In this study, a systematic review of the databases google scholar, PubMed, science direct, Elsevier between the years 2007 and 2022 with the keywords Cognitive behavioral therapy, MS Patients, chronic pain Search is done. In this process, studies based on cbt intervention were included.

The goal of cognitive behavioral therapy for chronic pain is to help patients change their thinking about how to manage pain. Interventions may include relaxation training, pleasant activity planning, cognitive restructuring, and guided exercises, all within the framework of developing a strong empathic relationship with the therapist. These interventions have the ability to reduce pain intensity, improve quality of life, and improve physical and emotional performance. Therefore, Cognitive behavioral therapy for chronic pain is a useful and empirically effective method of treating pain disorders that can reduce dependence on overuse of narcotic pain relievers.

Keywords: Cognitive behavioral therapy, Ms Patients, chronic pain

Differential Diagnosis of Vestibular Migraine from Meniere's disease, Is It Possible?

Fatemeh Jafarlou

Department of Audiology, School of Rehabilitation Sciences, Tabriz University of Medical Sciences, Tabriz, Iran

Introduction: Vestibular Migraine (VM) is defined by the occurrence of episodic vestibular symptoms and a history of migraine in at least 50% of the attacks. Meniere's disease (MD) is a syndrome characterized by attacks of recurrent vertigo associated with cochlear symptoms, such as fluctuating sensorineural hearing loss, tinnitus or aural pressure. In table 1, the differential diagnosis of VM from MD have been shown. Both conditions may show symptom overlap and there is no biological marker to distinguish them. Here, we review the features of MD and VM as a means to distinguish these patients.

Methods and Materials: We performed a literature review with the following **keywords:** Vestibular Migraine, Meniere's disease and differential diagnosis. Four different databases (PubMed, Scopus, and Web of science and Google Scholar) were independently screened. Publications in English were considered and reviewed from 2000 to 2022.

Results: We reviewed a total of 17 articles. Results showed that the major difference in the diagnosis criteria for these diseases are the auditory symptoms, which are necessary for the diagnosis of MD, however it has been reported that VM patients may have tinnitus during vertigo attacks, or 25% of migraine patients suffer from hearing loss. Also studies described that 8.4% of MD patients may have headache compatible with migraine, during vertigo attacks.

Conclusions: In conclusion, the present study shows that current diagnostic criteria may not differentiate between MD and VM patients. Future studies may address the question whether VM and MD just overlap with regard to clinical phenomenology or if they represent variant phenotypes of a broad clinical spectrum disorder.

Keywords: Vestibular Migraine, Meniere's disease, Differential Diagnosis

Note.....

.....

.....

.....

.....

.....

.....

.....

.....

Note