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MEETING ABSTRACTS

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O1

Retrospective cohort study: efficacy of ultrasound-guided proximal greater occipital nerve block in acute management of episodic cluster headache

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O1

Background
Cluster headache (CH) is one of the most excruciating primary headaches, occurring in bouts. Although oral steroid treatment is commonly used for episodic attacks, it is often associated with significant side effects.
Objective
This retrospective cohort study aimed to evaluate the efficacy of ultrasound (US)-guided proximal greater occipital nerve block (PGONB) compared to oral steroids in the early and short-term management of episodic cluster headaches.
Methods
Patients diagnosed with episodic cluster headache who received either oral steroid treatment or serial US-guided PGONB during their cluster periods were included. The treatments were administered between January 1, 2022, and June 30, 2024, in the Pain Medicine Department. Efficacy was assessed using the Headache Impact Test-6 (HIT-6), Numeric Rating Scale (NRS), and the frequency of triptan usage.
Results
Group 1 consisted of 13 patients treated with 80 mg oral prednisolone tapered over 20 days. Group 2 included 12 of 25 patients who underwent weekly serial US-guided PGONB (2 mg dexamethasone and 7.5 mg bupivacaine) for four weeks. Significant reductions in NRS scores were observed in Group 2 during the first four weeks (p=0.001, p=0.002, p=0.017, p=0.044, respectively). Group 1 exhibited a higher frequency of triptan usage during cluster periods compared to Group 2 (p=0.001). HIT-6 score reductions were similar in both groups at 1, 2, and 3 months. Group 2 reported mild dizziness and vertigo within the first hour post-procedure, while 8 patients in Group 1 experienced gastrointestinal side effects.
Conclusion
Ultrasound-guided PGONB appears to be an effective and potentially safer alternative to oral steroids for the management of episodic cluster headaches.

Keywords
Cluster headache, episodic cluster headache, greater occipital nerve block, ultrasound-guided, acute headache management

O2

Predictive factors for response to greater occipital nerve block in chronic migraine and medication-overuse headache: a clinical study

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Background
Approximately 30% of patients with chronic migraine, especially those who continue medication overuse, exhibit resistance to standard treatments.
Objective
This study aimed to identify predictive factors for the response to greater occipital nerve (GON) block in patients with chronic migraine and medication-overuse headache (MOH) to enhance personalized treatment approaches.

Methods
The study included 72 patients who received GON block treatment at the Neurology Clinic of Gaziantep City Hospital between October 2023 and August 2024. Seventeen patients were excluded as they did not meet the chronic migraine and MOH criteria based on the International Classification of Headache Disorders-3 (ICHD-3). All GON blocks were administered using the same technique with bupivacaine as the anesthetic agent. Demographic and clinical characteristics were assessed, and treatment outcomes were evaluated using the Migraine Treatment Optimization Questionnaire-4 (mTOQ-4).
Results
A good response to GON block treatment was observed in 66% of the patients. The mean age of responders was 38.31 $\pm$ 14.79 years, with 83.3% being female. Patients with a shorter lifetime pain duration (mean 9.59 $\pm$ 7.86 years) responded better to treatment compared to those with a longer pain history (mean 15.39 $\pm$ 10.28 years) ($p=0.032$). No significant differences were found between the two groups in terms of age, gender, number of GON applications, headache frequency, pain localization and severity, attack duration, or pain control duration after the first application. However, patients with both forehead/temple pain (FT/FN) and vomiting exhibited a poorer response to treatment, while those with autonomic symptoms responded more favourably.
Conclusion
This study indicates that GON block is an effective treatment for chronic migraine and MOH, with a 66% success rate. A shorter lifetime pain duration is a positive predictor of a better treatment response.

Keywords
Predictive factors, greater occipital nerve block, chronic migraine, medication-overuse headache, and GON block

O3
Evaluation of the effectiveness of greater occipital nerve blockade in menstrual migraine
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Background
According to the International Classification of Headache Disorders-3 (ICHD-3) criteria, menstrual migraine (MM) is categorized into two subtypes: pure menstrual migraine (PMM) and menstrually related migraine (MRM). Greater occipital nerve (GON) blockade has been explored as a potential prophylactic treatment for MM.
Objective
The objective of this study was to evaluate the short- and long-term effectiveness of GON blockade therapy as a prophylactic treatment in patients with menstrual migraine.
Methods
This prospective study included patients diagnosed with MM who presented to the neurology department's headache outpatient clinic. GON blockade treatment was administered monthly for three months, one week before menstruation. The effectiveness of the treatment was assessed using the Visual Analog Scale (VAS), Migraine Disability Assessment (MIDAS), Headache Impact Test (HIT-6), and Beck Depression Inventory (BDI), with evaluations conducted before treatment and at the 3rd and 6th months of follow-up.
Results
A total of 33 patients were included, 15 with PMM and 18 with MRM. Patients with MRM had a significantly younger age of onset, higher headache frequency, and greater medication overuse compared to those with PMM. After GON treatment, both groups showed statistically significant improvements in VAS, HIT-6, MIDAS, and Beck Depression scores at both the 3rd and 6th months. Additionally, the Beck Depression scores of patients who responded positively to treatment demonstrated significant improvement by the 3rd month.
Conclusion
GON blockade is an effective short-term prophylactic treatment for menstrual migraine, significantly reducing headache severity and frequency while improving patients' quality of life.

Keywords
Menstrual migraine, greater occipital nerve blockade, prophylaxis, migraine treatment, headache management

O4
Case series: post-angiography headaches
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Background
Headaches following cerebral or coronary angiography procedures are observed in a significant number of patients, though they may often be overlooked in clinical practice. Increased awareness of post-angiography headaches can aid in the differential diagnosis process, allowing for more accurate evaluation and management.
Case1
A 55-year-old female with a known history of coronary artery disease, atrial fibrillation (AF), hypertension, and supraventricular tachycardia (SVT) presented to the cardiology clinic with palpitations. An ablation procedure for AF and SVT was performed under general anesthesia, lasting approximately 5 hours. Immediately post-procedure, the patient developed severe bilateral pulsating headaches accompanied by nausea and vomiting. After three weeks of persistent headaches, she was readmitted for evaluation. Neurological examination, including fundoscopy, revealed no abnormalities. Brain CT, MRI, and MR angiography were normal. During her hospitalization, the symptoms improved with intravenous isotonic hydration at 40 ml/hour.
Case2
A 70-year-old male with hypertension presented with exertional dyspnea. Following a positive cardiac stress test, coronary angiography revealed 70% stenosis of the left anterior descending artery. Rotational atherectomy and stent placement were performed in a procedure lasting one hour. Two hours post-procedure, the patient experienced a severe bilateral headache. He had no prior history of migraine and had never experienced a headache of this nature. The headache persisted for four days.
Conclusion
Post-angiography headache is a condition that develops during or within 24 hours of the procedure, once other differential diagnoses have been excluded. A headache that develops a few hours post-procedure, lasts for at least 24 hours, and cannot be attributed to any other cause suggests a headache secondary to the angiographic intervention. While the exact mechanism is not fully understood, possible factors include trigeminal system stimulation by the contrast agent, mechanical effects of the catheter, release of vasoactive substances, or mechanical stretching of vessels in individuals with trigeminovascular sensitivity. There is no specific treatment for post-angiography headaches; management should be symptomatic and based on the pain's characteristics and intensity, as well as the patient's clinical status. The duration of the procedure may also be an important etiological factor.

Keywords
Post-angiography headache, coronary angiography, cerebral angiography, trigeminovascular system, headache management

(Authors confirmed during the electronic submission process that each patient had given explicit consent for their information to be published in an open access journal)

O5

Evaluation of effective treatment options in chronic migraine

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Background

Chronic migraine (CM) is defined as headaches occurring for at least 3 months, with ≥15 headache days per month, of which 8 or more are migraine attacks. Many patients first seek neurological care when their migraine has progressed to the CM stage, often complicated by medication overuse headache (MOH), making management challenging. While topiramate (TPM) and OnabotulinumtoxinA (OBontA) are proven to be effective in CM, TPM's side effects and OBontA's high cost necessitate exploring alternative treatment approaches in some cases.

Objective

This study aimed to investigate effective treatment approaches in the management of chronic migraine, particularly in cases with concomitant MOH.

Methods

A retrospective review was conducted of patients diagnosed with CM who were followed at the Headache Clinic between January 2023 and September 2024. Data collected included patients' migraine history, presence of MOH, treatments administered during follow-up, and whether patients transformed from CM to episodic migraine (EM). Attack frequency was classified as low-frequency EM (LFEM, <7 days/month) or high-frequency EM (HFEM, ≥7 days/month).

Results

The study included 43 patients with CM, with a mean age of 40 years. The majority (93%) were female, and the mean disease duration was 16 years (range: 2–37 years). Concomitant MOH was present in 72% of patients, and 55% had a history of failed prophylactic treatment despite appropriate dosage and duration. After treatment, 58% of patients transformed to LFEM and 37% to HFEM. CM persisted in only 2 patients (4.6%) despite combined treatments, including oral prophylaxis, CGRP monoclonal antibodies (CGRPmAb), and OBontA.

The most effective treatment combinations for transforming CM into LFEM were peroral prophylaxis (PO) plus nerve block (48%), nerve block alone (16%), OBontA + PO + nerve block (12%), OBontA alone (8%), PO alone (8%), OBontA + nerve block (4%), and PO + transcranial direct current stimulation (tDCS) (4%). For transforming CM into HFEM, the most effective treatments were PO + nerve block (56%), nerve block alone (18%), CGRPmAb (6%), CGRPmAb + OBontA (6%), and nerve block + tDCS (6%). There were no significant differences in the presence of MOH (72% vs 68%, p>0.05) or the use of combination therapy between the LFEM and HFEM groups (68% vs 75%, p>0.05). However, the HFEM group had a significantly higher rate of failed prophylaxis compared to the LFEM group (75% vs 40%, p=0.02).

Conclusion

Combination treatment strategies were the most effective in transforming CM to both LFEM and HFEM. Nerve blocks, often added to peroral prophylaxis, provided sufficient efficacy and were preferred due to the high cost of OBontA and CGRPmAb. Although OBontA, CGRPmAb, and tDCS demonstrated good efficacy in combination treatments, nerve blocks should be considered as an earlier, cost-effective intervention before resorting to more expensive options.

Keywords

Chronic migraine, high-frequency episodic migraine, low-frequency episodic migraine, treatment, nerve block, prophylaxis

O6

Visual snow syndrome without headache: a case report

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Background

Visual Snow Syndrome (VSS) is a recently described clinical condition, often considered part of the migraine with aura spectrum, though its precise etiology remains unclear. It is primarily characterized by persistent visual disturbances resembling static or "snow" across the entire visual field.

Objective

This case report aims to highlight a rare presentation of VSS in a patient without a history of migraine.

Case

A 23-year-old female presented with complaints of persistent "static" vision, which had worsened over the past 2–3 months but had been present for the last 7–8 years. She had no prior history of migraine, other medical conditions, or medication use, except for myopia. In addition to the visual symptoms, she reported bilateral tinnitus, palinopsia, photophobia, and entoptic phenomena, all of which began simultaneously with visual disturbance. Neurological and ophthalmological examinations were unremarkable, as were her EEG, visual evoked potential (VEP) studies, and cranial MRI. Based on the clinical presentation, she was diagnosed with VSS.

Conclusion

VSS was first described by Liu et al. in 1995 in four migraine patients during the interictal period and was initially regarded as a form of persistent migraine aura. However, subsequent studies have shown that VSS can occur in patients without a history of migraine. The diagnostic criteria for VSS include the presence of dynamic visual disturbances (snow or static) for more than three months, accompanied by at least two of the following: palinopsia, enhanced entoptic phenomena (increased floaters, blue field entoptic phenomenon, self-light of the eye, spontaneous photopsia), photophobia, and nyctalopia. These symptoms must not correspond to a migraine aura or be attributable to another condition. VSS is a rare clinical entity that should be considered in patients with visual disturbances, even in the absence of migraine. Through this case, we aim to raise awareness of VSS as a distinct phenomenon that can exist independently of migraine.

Keywords

Visual Snow Syndrome, visual disturbances, migraine aura, palinopsia, photophobia, entoptic phenomena

(Authors confirmed during the electronic submission process that the patient had given explicit consent for their information to be published in an open access journal)

O7

Cerebellar and vermian volumes in migraine: a volumetric MRI study

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Background

Emerging evidence from symptomatology, neuroimaging studies, animal models, and clinical observations suggests a role for the cerebellum in the pathophysiology of migraine. Functional neuroimaging

has shown that painful stimulation can activate the vermis. However, no studies have yet examined the detailed parcellation of cerebellar hemispheres and vermis by their lobules in migraine patients.

Objective

This study aimed to compare the volumes of the total cerebellum, total vermis, and specific cerebellar and vermian lobules between female patients with migraine and healthy controls.

Methods

We conducted a volumetric analysis of the cerebellum and vermis using Individual Brain Atlases in Statistical Parametric Mapping and the CERES program on VolBrain. The study included 37 right-handed female migraine patients and 17 right-handed healthy female volunteers. We obtained volumes for the total cerebellum, cerebellar lobules, cerebellar gray and white matter, and segmented vermian lobules.

Results

Migraine patients had significantly smaller volumes of the total vermis, as well as vermian lobules I & II, III, and IX compared to controls ($p<0.05$). Disease duration was negatively correlated with the volumes of several cerebellar lobules, total vermis, anterior and posterior vermis, and vermian lobules III, VI, and IX. Positive correlations were observed between the number of migraine attacks and the volumes of Crus II and cerebellar lobule VIIIA. Additionally, the left cerebellar lobule III was significantly smaller in patients with migraine with aura compared to controls ($p<0.05$).

Conclusion

This study highlights the importance of the cerebellar vermis in the pathophysiology of migraine. The observed volumetric reductions in specific cerebellar and vermian lobules suggest that these regions deserve further attention in understanding the neurological basis of migraine.

Keywords

Voxel-based morphometry, migraine, volumetric MRI, cerebellum, vermis

O8

Factors affecting the efficacy of greater occipital nerve blockade in headache management

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O8

Background

This study aimed to evaluate the effectiveness of greater occipital nerve (GON) blockade in the treatment of migraine and other headache syndromes, as well as to investigate the influence of educational level and body mass index (BMI) on the number of blockades required for effective pain relief.

Method

The study included 82 participants aged 19 to 70 years, classified into two groups based on their headache diagnosis: migraine and other headache syndromes. Demographic data, including age, BMI, and educational level, were collected. Visual analog scale (VAS) scores were recorded before and after each of the seven GON blockade sessions. The primary outcome measured was the change in VAS scores post-blockade. Secondary outcomes included the number of blockades needed for significant pain relief and the impact of educational level and BMI on the number of blockades administered.

Results

The mean age of the participants was 41.67 ± 11.4 years (range: 19–70 years), and the mean BMI was 26.28 ± 4.6. Pain levels, as measured by VAS scores, showed a significant reduction following each blockade session. Educational level had a significant effect on VAS score improvement ($p=0.011$), and BMI also significantly influenced the number of blockades needed for pain relief ($p=0.038$). However, occupation did not have a statistically significant impact on treatment outcomes ($p=0.249$).

Conclusion

This study demonstrates that both educational level and BMI significantly affect the efficacy of GON blockades in managing headache syndromes. These findings underscore the importance of considering individual patient characteristics, such as education and BMI, when developing treatment strategies for headache management.

Keywords

Greater occipital nerve blockade, headache management, migraine, body mass index, educational level, pain relief

O9

Direct cost of headache treatment at the Departmental University Hospital of Northern Benin in 2023

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O9

Background

Headache is a major public health concern in Africa, frequently prompting neurological consultations and imposing a substantial burden on patients. However, data on the economic impact of headache management are limited across the continent.

Objective

This study aimed to assess the direct cost of headache management at the Departmental University Hospital of Northern Benin in 2023.

Methods

A descriptive cross-sectional study was conducted between June 15 and October 15, 2023, in the Neurology Department of the Teaching Hospital of Parakou. Patients aged 18 to 65 years, who presented with a headache in the past 12 months and consented to participate, were included. Data on healthcare consumption were collected through individual interviews, supplemented by a review of medical records, diaries, and headache care receipts. The average cost was compared to the interprofessional minimum wage guaranteed in Benin.

Results

A total of 91 participants were included, of whom 51 were women (56.05%), with a mean age of 38.91 ± 14.52 years. The overall annual direct cost of headache management was $22,444.09, with an average annual cost of $246.64 per patient. The monthly average direct cost was calculated at $20.55, representing 23.22% of the minimum wage in Benin. The annual direct cost of migraine was $5,432.20, while tension-type headache had an annual direct cost of $8,356.18. Anxiety ($p=0.02$), frequency of headache attacks ($p<0.05$), and psychiatric consultations ($p=0.02$) were significantly associated with higher costs of headache management.

Conclusion

The high cost of headache management in northern Benin is driven by the overconsumption of healthcare services and significant self-medication. These findings highlight the need for increased public awareness and the development of a national policy to reduce the economic burden of headache treatment.

Keywords

Direct cost, headache, migraine, tension-type headache, Benin

O10

Lesser and greater occipital nerve block in headache associated with acute mastoiditis: a report of three cases

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O10

Background

Mastoiditis, most seen in the pediatric population, can also occur in adults as a complication of acute otitis media. It typically presents with symptoms such as fever, headache, and ear pain. In some cases,

headaches associated with mastoiditis may be refractory to conventional medical treatment.

Objective

This case report highlights the effectiveness of lesser and greater occipital nerve blocks in the management of headaches refractory to medical treatment in patients with acute mastoiditis, with no prior history of headaches.

Methods

Three patients receiving antibiotic therapy for acute mastoiditis and presenting with headaches unresponsive to medical treatment were referred to the pain management clinic. After obtaining written consent, ultrasound-guided lesser and greater occipital nerve blocks were administered using 1.5 ml of 0.25% bupivacaine per nerve. In the first case, the nerve block was repeated on the 4th and 7th days, while in the second and third cases, the procedure was repeated on the 3rd and 6th days. Pain intensity was assessed using the Numerical Rating Scale (NRS), and the usage of simple analgesics and opioids was monitored.

Results

All three patients experienced significant pain relief after the repeated occipital nerve blocks, with NRS scores decreasing from 8, 9, and 9 to 2, 3, and 2, respectively. None of the patients required opioid analgesics during their hospital stay, and their use of simple analgesics decreased significantly.

Conclusion

Occipital nerve blocks have proven effective in the treatment of primary headache disorders and may also offer therapeutic benefits for secondary headache conditions, such as those associated with acute mastoiditis. These nerve blocks should be considered a viable treatment option in cases where headaches are unresponsive to medical treatment.

Keywords

Mastoiditis, headache, occipital nerve block, pain management

O11

Retrospective evaluation of interventional procedures in patients with refractory trigeminal neuralgia

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O11

Background

Trigeminal neuralgia (TN) is one of the most excruciating neurological conditions. For patients who do not respond to pharmacological treatment or experience intolerable side effects, several invasive therapeutic options are available, including nerve blocks and radiofrequency procedures.

Objective

This study aims to evaluate the effectiveness of various interventional procedures, ranging from peripheral nerve blocks to Gasserian ganglion radiofrequency thermocoagulation (RFT), in patients with trigeminal neuralgia who are resistant to medical treatment. It also seeks to clarify the frequency, order, and potential superiority of these interventions.

Methods

This retrospective study included patients with trigeminal neuralgia who presented to the Pain Clinic between 2021 and 2024. Data regarding gender, age, disease characteristics and duration, medical treatments, interventional procedures, and outcomes were collected from patient records.

Results

A total of 49 patients were included, of whom 31 (63.3%) were women and 18 (36.7%) were men, with a mean age of 62.2 years (range: 23–93). The majority (53.1%, n=26) had experienced symptoms for 1 to 5 years, with the maxillary and mandibular divisions most frequently affected. Eighteen patients (36.7%) had no remission period, and 15 (30.6%) experienced persistent pain with neuralgic attacks. Interventional procedures were recommended for 36 patients in addition to their medical treatment, and repeat procedures were planned for 14 patients who had undergone prior interventions. Among the 17 patients who had previously received interventional procedures, 12 had undergone Gasserian ganglion RFT. Gasserian RFT was recommended for 16 patients, with 12 accepting the procedure. In all cases, the dosages of ongoing medications were reduced, and six patients were able to discontinue their medications completely. Of the 12 patients who underwent Gasserian RFT, four had undergone the procedure previously. Other procedures, including peripheral nerve blocks, sphenopalatine blocks, and radiofrequency treatments, were also performed; however, medication dosages were reduced in only six patients following these procedures.

Conclusion

Interventional procedures, particularly Gasserian ganglion RFT, can be repeated and may lead to a reduction in medication dosages, or even complete discontinuation of medication in some cases. Increased awareness of interventional options for trigeminal neuralgia is essential, and further studies with larger patient populations are needed to better understand their role in managing refractory TN.

Keywords

Trigeminal neuralgia, Gasserian ganglion, nerve block, radiofrequency, interventional procedures

O12

Migraine in healthcare professionals: how well is it understood and what do they need?

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Background

Migraine is a chronic neurological disorder characterized by recurrent, moderate to severe headaches. Common triggers for migraine attacks include sleep deprivation, stress, and fatigue, all of which are prevalent in healthcare work environments.

Objective

This study aimed to assess the impact of migraine attacks on the work performance of healthcare professionals and to evaluate their working conditions and expectations regarding migraine management in the workplace.

Method

A survey was conducted both face-to-face and online, gathering demographic information alongside 8 multiple-choice and 1 open-ended question. The survey addressed the frequency of migraines at work, the effects of migraine attacks on performance, and the attitudes of workplaces and colleagues toward accommodating migraine sufferers.

Results

A total of 103 healthcare professionals participated, including 57 doctors and 25 nurses. Of the participants, 44.7% reported experiencing 1–2 migraine attacks per month, and 87.4% noted a significant decrease in work performance during an attack. Additionally, 85.4% stated that they were unable to find adequate time to rest during these episodes. While the majority received support from colleagues, over half reported a lack of managerial support. A total of 89 participants advocated for the implementation of workplace measures, such as quiet areas, flexible working hours, and workload sharing. However, those who opposed these measures expressed concerns about potential abuse of such accommodations.

Conclusion

The findings indicate that many healthcare professionals feel their workplaces are insufficient in addressing their needs during migraine attacks. Implementing more flexible scheduling, such as rescheduling patient appointments for doctors and adjusting shift hours for other

staff, could offer partial relief and improve work performance during migraine episodes.

Keywords
Migraine, healthcare worker, hospital, rest area, work performance

O13

Hemogram and inflammatory indices in pain-free periods in migraine patients without aura

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O13

Background
Neurogenic inflammation and haemoconcentration play a significant role in the pathophysiology of migraine. Evaluating hemogram parameters and inflammatory indices can provide valuable insights into the underlying mechanisms.
Objective
This study aimed to assess blood cell counts, inflammatory ratios, the systemic inflammation index (SII), systemic inflammation response index (SIRI), and red cell indices in patients with episodic migraine without aura during pain-free periods.
Methods
Hemogram data were retrospectively retrieved from hospital records for 309 patients diagnosed with migraine without aura during pain-free periods and 199 healthy controls. The data analyzed included erythrocyte, leukocyte, lymphocyte, platelet, monocyte, eosinophil counts; hemoglobin, hematocrit, mean corpuscular volume (MCV), red blood cell distribution width (RDW), mean platelet volume (MPV), neutrophil/lymphocyte ratio (NLR), platelet/lymphocyte ratio (PLR), monocyte/lymphocyte ratio (MLR), neutrophil/monocyte ratio (NMR), SII, SIRI, and red cell index values. Intergroup differences in these parameters were evaluated.
Results
The MLR and RDW values were significantly lower, while platelet count, MPV, and hematocrit levels were significantly higher in the migraine patient group compared to the control group. No significant differences were observed between the groups in other hemogram parameters, cell ratios, SII, SIRI, and red cell index values.
Conclusion
The findings of higher hematocrit, platelet count, MPV, and lower MLR in this study suggest that hemoconcentration and chronic inflammation persist even during pain-free periods in patients with episodic migraine without aura. This highlights the ongoing inflammatory process in migraine, independent of acute attacks.

Keywords

Migraine, chronic inflammation, headache, hemoconcentration, hemogram

O14

The relationship between migraine and sleep: is it a vicious circle?

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O14

Background
Migraine is a common and debilitating neurological disorder with a complex and poorly understood relationship with sleep. Patients frequently report poor sleep quality before and during migraine attacks, with sleep deprivation often identified as a trigger. Interestingly, sleep has also been anecdotally reported to have a therapeutic effect in alleviating headaches.
Objective
This study aimed to investigate the relationship between migraine and sleep, contributing to the existing literature on this topic.
Methods
Fifty patients diagnosed with migraine (46 women, 4 men) who visited our headache outpatient clinic between December 2022 and April 2023 were included in the study. Patients were assessed using the Headache Impact Test (HIT-6), Insomnia Severity Index (ISI), Pittsburgh Sleep Quality Index (PSQI), Epworth Sleepiness Scale (ESS), Beck Depression and Anxiety Scale, and the Visual Analog Scale (VAS). These assessments were evaluated alongside demographic data. Statistical significance was defined as $p<0.05$.
Results
The mean age of the patients was 42.5 years, and the mean duration of migraine was 10 years. Patients with chronic migraine (26 patients) had significantly higher HIT-6, ISI, and Beck Depression Scale scores ($p=0.024$). Osmophobia and phonophobia were more common in patients with higher HIT-6 scores, while no significant relationship was found with photophobia ($p=0.08$, 0.026, 0.168, respectively). A significant correlation was found between HIT-6 and both ISI and VAS scores ($p=0.019$).
Conclusion
Insomnia can trigger migraine attacks, and sleep disturbances may also occur during migraine episodes, contributing to the chronicity of the condition. Our findings align with the existing literature and highlight the importance of addressing sleep issues to improve the quality of life for migraine patients and reduce the economic burden of the disease.

Keywords
Migraine, sleep, headache, insomnia, quality of life

O15

Role of wound healing factors in cerebrospinal fluid leakage in post-dural puncture headache: a focus on IL-6, MMPs, TIMP-1, uPAR, and TGF-β

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Background
Unintentional dural puncture (UDP) is a recognized complication of neuraxial techniques, occurring in 0.5–1.5% of cases during labor epidural analgesia. Post-dural puncture headache (PDPH) is a positional headache caused by cerebrospinal fluid (CSF) leakage through a dural puncture. Wound healing involves a complex process, mediated by cytokines and enzymes such as matrix metalloproteinases (MMPs) and their inhibitors. Interleukin-6 (IL-6) is produced by many inflammatory cells and is critical in the healing process.
Objective
This study aimed to investigate the levels of various tissue repair factors in patients with post-dural puncture headache (PDPH) during the postpartum period. We hypothesized that differences in these biological factors might impact wound healing, contributing to the development of PDPH. We examined CSF and serum levels of IL-6, MMP-1,

MMP-2, MMP-8, MMP-9, MMP-13, tissue inhibitors of metalloproteinases (TIMP-1), uPAR, and TGF-β in patients with PDPH and a control group.

Methods

This prospective single-center study was conducted at Gazi University Medical Faculty. Patients scheduled for elective cesarean section were included. Blood (5 ml) and CSF (1 ml) samples were collected before medication administration. The study included 21 patients with PDPH and 23 control group patients without PDPH.

Results

The median serum level of IL-6 in the PDPH group was 0.300 pg/ml, and the median CSF level of TIMP-1 was 2710.13 pg/ml, both significantly higher than in the control group ($p=0.021$ and $p<0.001$, respectively). There were no significant differences in the levels of other molecules between the two groups.

Conclusion

To our knowledge, this is the first study to demonstrate that individual biological differences in wound healing play an important role in the development of PDPH. Elevated TIMP-1 and IL-6 levels appear to be key factors in this process, providing insights into the mechanisms underlying PDPH.

Keywords

Unintentional dural puncture (UDP), post-dural puncture headache (PDPH), tissue inhibitors of metalloproteinases (TIMP-1), interleukin-6 (IL-6), wound healing

O16

The relationship between optic nerve sheath diameter and CSF pressure in patients with idiopathic intracranial hypertension

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Background

Idiopathic Intracranial Hypertension (IIH) is characterized by increased intracranial pressure (ICP), presenting with symptoms such as headache, diplopia, and tinnitus. This condition may lead to the expansion of the optic nerve sheath diameter (ONSD).

Objective

This study aims to assess the relationship between ONSD measurements, cerebrospinal fluid (CSF) pressure, and the amount of CSF drained in IIH patients.

Methods

The study included 24 patients diagnosed with IIH (Group 1) and 24 healthy controls (Group 2). Age and body mass index (BMI) were recorded for both groups. ONSD (transverse and sagittal) measurements were taken ultrasonographically for both eyes, 3 mm posterior to the globe. ONSD values were measured twice: before and after lumbar puncture (LP). Statistical analyses were performed using descriptive statistics, independent sample t-tests, and Pearson correlation analyses.

Results

ONSD values were significantly higher in the IIH group compared to the control group ($p < 0.001$). The IIH group also had significantly higher BMI values ($p < 0.01$). A positive and significant correlation was found between CSF pressure and the right transverse ONSD difference ($r = 0.432$, $p < 0.05$). Additionally, a significant positive correlation was observed between the amount of CSF drained and the left sagittal ONSD difference ($r = 0.410$, $p < 0.05$). No significant correlation was found between other ONSD parameters and CSF pressure or the amount of CSF drained.

Conclusion

IIH predominantly affects obese women of childbearing age and is associated with increased intracranial pressure, leading to severe headaches, papilledema, and visual disturbances. Our study demonstrated that ONSD is significantly larger in IIH patients compared to healthy controls, supporting its use as a reliable biomarker for increased ICP. The positive correlation between CSF pressure and the right transverse ONSD difference suggests that elevated ICP expands the optic nerve sheath. Furthermore, the significant relationship between the amount of CSF drained and the left sagittal ONSD difference indicates that reducing CSF pressure can relieve the optic nerve. These findings suggest that ONSD measurements could be a valuable tool in diagnosing and managing IIH, and that CSF drainage may serve as a therapeutic strategy to prevent optic nerve damage. Future prospective studies exploring pre- and post-treatment changes in CSF pressure and ONSD will enhance our understanding of IIH pathophysiology.

Keywords

Idiopathic intracranial hypertension, optic nerve sheath diameter, cerebrospinal fluid pressure, lumbar puncture, intracranial pressure, cerebrospinal fluid drainage

O17

The role of greater occipital nerve blockade in craniofacial pain

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Background

Greater occipital nerve block (GONB) involves injecting an anesthetic near the greater occipital nerve to alleviate pain and inflammation. While GONB has shown good results in treating several primary headache syndromes, data on its efficacy in managing facial pain syndromes remain limited.

Objective

This study aimed to assess the effectiveness of GONB in various craniofacial pain syndromes.

Method

The study evaluated the efficacy of GONB with lidocaine in 26 patients with craniofacial pain syndromes. The patient cohort included 12 individuals with trigeminal neuralgia, 4 with trigeminal neuropathic pain, 4 with persistent idiopathic facial pain, and 6 with occipital neuralgia. Response to treatment was defined as at least a 50% reduction in pain.

Results

The overall mean response rate was 70%. The greatest efficacy was observed in patients with trigeminal neuralgia (80%) and occipital neuralgia (100%), while lower efficacy was noted in those with trigeminal neuropathic pain (40%) and persistent idiopathic facial pain (30%). The effects of the GONB lasted for an average of 23 days.

Conclusion

Side effects were reported in 11.5% of the patients, all of which were mild and transient. GONB proved to be a highly effective treatment option for craniofacial neuralgias. It should be considered as a minimally invasive treatment method, particularly before pursuing more invasive procedures such as vascular decompression or thermocoagulation in patients resistant to drug therapies.

Keywords

Greater occipital nerve blockade, craniofacial neuralgia, trigeminal neuralgia, occipital neuralgia, facial pain

O18

Investigation of the relationships between ID migraine score and headache impact test scores and psychosocial status in women with positive ID migraine test

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Background
The quality of life and psychosocial status of people with headache are negatively affected.
Objective
This study was conducted to examine the relationship between ID migraine scores and the effects of headache on quality of life and psychosocial status in people with headache.
Methods
The study included 70 female subjects. The ID Migraine Test, the Headache Impact Test (HIT-6), the Hospital Anxiety and Depression Scale (HADS), the Discomfort Intolerance Scale (DIS), and the Body Awareness Questionnaire (BAQ) were administered to assess psychosocial status via the online platform. The pain intensity of the individuals was evaluated with the Numeric Rating Scale (NRS). Spearman correlation analysis was used for statistical analysis.
Results
At the end of the study, no correlation was found between ID migraine scores and psychosocial status parameters ($p>0.05$). A significant relationship was found between HIT-6 and psychosocial status. HIT-6 was found to be correlated with DIS ($r=-0.294$, $p=0.014$), HADS-Anxiety ($r=0.353$, $p=0.003$) and HADS-Depression ($r=0.351$, $p=0.003$) among psychosocial status parameters. ID Migraine ($r=0.394$, $p<0.001$), HIT-6 ($r=0.460$, $p<0.001$) and BAQ ($r=-0.303$ $p=0.011$) were found to be associated with pain intensity.
Conclusion
At the end of the study, it was determined that although ID migraine and pain intensity were related to the quality of life of women with headache, they may not be related to their psychosocial status, but their quality of life may be strongly related to their psychosocial status. Therefore, it was decided that psychosocial status in people with headache should be examined in detail and studies in this field should be focused on.

Keywords
Headache, psychosocial, ID Migraine, teleassessment

O19

Premonitory symptoms in migraine: implications for disease burden and cognitive impairment

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Background
The premonitory symptoms (PS) of migraine include photophobia, phonophobia, dizziness, neck stiffness, yawning and concentration disturbances that precede the migraine headache. PS are varied and common. We believed that, migraineurs with PS have different pain characteristics and disease attributed burden compared to migraineurs without PS.
Objective
This study aims to evaluate the prevalence and impact of PS in migraine sufferers, assessing their influence on disability, cognitive function, and quality of life.
Methods
In a cross-sectional analysis at Mersin University Hospital, 186 migraine patients were interviewed to identify the presence of premonitory symptoms, using a structured questionnaire, including measures of disability (the Migraine Disability Assessment Scale or MIDAS), quality of life (European Health Impact Scale or EUROHIS-8), and cognition(the Migraine-Subjective Cognitive Scale or Mig-SCOG). Statistical analyses included descriptive statistics, t-tests, and Mann-Whitney U tests, with a significance threshold set at $p<0.05$.
Results
Among participants, 74.7% reported one or more PS, with the most common being neck stiffness (64.7%), photophobia (56.8%), fatigue (52.8%), and phonophobia (50.3%). Patients with PS, demonstrated significantly lower quality of life scores (EUROHIS-8, $p<0.001$) and higher cognitive impairment scores (Mig-SCOG, $p<0.001$) compared to those without PS, despite similar levels of migraine disability (MIDAS, $p=0.050$).
Conclusion
The high prevalence of PS in people with migraine and their association with greater cognitive impairment and reduced quality of life, PS may be a driver of cognitive and disease burden or just a marker of it, suggesting a critical area for future research and clinical focus. More optimized and standardized prospective studies are needed to clarify the prevalence of PS.

Keywords
Migraine, Premonitory Symptoms, Cognitive Impairment, Quality of Life, Migraine Disability Assessment (MIDAS)

O20

Comorbid conditions in Egyptian patients with migraine: a population-based study

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Background
Identifying comorbidities in migraine patients may aid in guiding prognosis and treatment options.
Objective
This study aimed to assess the frequency of comorbid conditions among adult migraineurs living in Greater Cairo.
Methods
In this cross-sectional study, adult Egyptian migraineurs (aged $\geq$ 18 years) residing in Greater Cairo were consecutively recruited between April 2019 and April 2021. Migraine diagnosis and type (episodic or chronic, with or without aura, childhood/adolescence or adulthood onset) were determined using the International Classification of Headache Disorders (ICHD-3). Comorbid conditions were assessed by specialist physicians from the research team.
Results
The mean age of the 1,064 respondents was 35 ± 7 years. Irritable bowel disease (45.5%) and vitamin D deficiency (41.8%) were the most common comorbidities. Chronic migraineurs had a significantly higher frequency of epilepsy, stroke, multiple sclerosis, and systemic lupus erythematosus compared to episodic migraineurs ($p=0.034$, 0.001, 0.001, 0.028, respectively). Females with menstrual migraine had significantly higher rates of generalized anxiety disorder, panic attacks, and restless leg syndrome compared to those with non-menstrual migraine ($p=0.006$, 0.002, 0.001, respectively). Patients with migraine with aura had a significantly higher frequency of diabetes compared to those without aura ($p=0.039$). Migraine patients with childhood/adolescence onset had a significantly higher frequency of epilepsy and celiac disease than those with adulthood onset ($p=0.001$, 0.012, respectively).

Conclusion
This study provides valuable insights into the comorbidities of Egyptian migraine patients, paving the way for more individualized treatment strategies for migraineurs.

Keywords
Comorbidities, Chronic migraine, Menstrual migraine, Migraine with aura, Childhood/adolescence onset migraine

O21

Clinical, radiological features, and treatment responses of acute headache associated with head trauma

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O21

Background
Acute headaches can occur following traumatic head injuries caused by external forces, such as an object striking the head or blast effects. These injuries may lead to structural and functional damage. Both pharmacological and non-pharmacological treatments are used to manage headaches associated with head trauma, but scientific evidence regarding the efficacy of these approaches remains limited.
Objective
This study aimed to evaluate the clinical and radiological features of headaches associated with head trauma and assess their responses to various treatment methods.
Methods
Eleven patients diagnosed with post-traumatic headache were included in the study. All patients were assessed for clinical and radiological features, as well as their response to different treatments. The data collected were recorded and analysed.
Results
Of the 11 patients, seven were male and four were female. All patients developed headaches within one week following head trauma. No pathological findings were detected in any patient through imaging. The headaches lasted longer in patients who did not receive treatment compared to those who did. Various treatment methods were employed, and patients who underwent physical therapy combined with nerve blockade experienced complete resolution of symptoms within 10 days.
Conclusion
In patients with acute headaches associated with traumatic head injuries, physical therapy combined with nerve blockade was found to be the most effective treatment approach compared to other methods. This combination resulted in faster symptom resolution, highlighting its potential as a preferred treatment option for post-traumatic headaches.

Keywords
Post-traumatic headache, nerve blockade, physical therapy, head trauma

O22

Diagnostic features and treatment responses of persistent post-traumatic headache

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O22

Background
Headaches that arise after trauma caused by external forces can persist for longer than 3 months, depending on the severity of the trauma and the area affected. This condition is defined as persistent post-traumatic headache. Both pharmacological and physical therapy approaches are used in its treatment, but the effectiveness of these treatments varies, and further scientific evidence is needed.
Objective
This study aimed to evaluate the diagnostic features and treatment responses in patients with persistent post-traumatic headache.
Methods
Thirteen patients diagnosed with persistent post-traumatic headache were included in this study. Each patient was evaluated for diagnostic features and response to various treatments. The data were recorded and analyzed.
Results
Of the 13 patients, eight were male and five were female. All patients developed headaches within 7 days of the head trauma. The duration of pain ranged from a minimum of 5 months to a maximum of 13 months. Pathological findings were detected through imaging in 2 patients. Patients who did not receive treatment experienced longer-lasting headaches compared to those who received treatment. Various treatment protocols were implemented, with the combination of pharmacological treatment, physical therapy, and nerve blockade proving to be the most effective.
Conclusion
Persistent post-traumatic headaches are often resistant to treatment. However, the combination of pharmacological treatment, physical therapy, and nerve blockade was identified as the most effective approach for managing this condition.

Keywords
Post-traumatic headache, nerve blockade, physical therapy, pharmacological treatment

O23

Whiplash headache: from diagnosis to treatment

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O23

Background
Whiplash injury is defined as an injury resulting from sudden and uncontrolled acceleration or deceleration of the head, typically accompanied by neck flexion and extension. The resulting headache usually lasts less than 3 months. In addition to pharmacological treatments, various other therapeutic methods are being explored.
Objective
This study aimed to evaluate the most effective treatment methods for headaches related to whiplash injury based on their diagnostic features.
Methods
Ten patients diagnosed with whiplash injury-related headaches were included in the study. Each patient was assessed for diagnostic features and treatment methods, and the data were recorded and analyzed.
Results
Of the 10 patients, six were female and four were male. All patients experienced headaches starting within 7 days of the whiplash injury. Three male patients developed symptoms following a parachute jump, while the others developed headaches after neck flexion/extension movements following a car accident. Treatment outcomes

showed that combination therapies, particularly those including nerve blockades, were more effective.

Conclusion

In patients with whiplash injury-related headaches, exercise therapies combined with nerve blockades provided rapid and effective pain relief. These findings suggest that combining different treatment modalities may improve outcomes for these patients.

Keywords

Whiplash injury, nerve blockade, physical therapy, headache treatment

O24

Diagnostic features and treatment responses of post-craniotomy headache

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Introduction

Headaches can occur in patients following surgical craniotomy, typically beginning within 7 days post-operation and resolving within 3 months. While these headaches are often localized around the operation site, they can also be more diffuse. Both medical and physical therapy approaches are used in the treatment of post-craniotomy headaches.

Objective

This study aimed to evaluate the diagnostic features and treatment responses of post-craniotomy headaches.

Methods

Thirteen patients diagnosed with post-craniotomy headaches were included in the study. All patients were assessed for diagnostic features and treatment responses, and the data were recorded and analyzed.

Results

Of the 13 patients, six were male and seven were female. All patients developed headaches within 7 days post-operation. Five patients had undergone skull base surgery. Patients who did not receive treatment experienced longer-lasting headaches compared to those who received treatment. The combination of pharmacological treatment and nerve blockade was found to be the most effective treatment approach.

Conclusion

Post-craniotomy headaches are common in patients following craniectomy, with most headaches beginning in the first few days after surgery. Among the various treatment methods, the combination of pharmacological treatment and nerve blockade was identified as the most effective for managing these headaches.

Keywords

Post-craniotomy headache, nerve blockade, pharmacological treatment, skull base surgery

O25

Assessment of cutaneous allodynia and its relation to proinflammatory blood markers in migraine

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O25

Background

Several studies have established a link between inflammatory cytokines and migraine. Cutaneous allodynia (CA) is considered a predictor of migraine severity. While various inflammatory mediators, such as interleukins and tumor necrosis factors, have been associated with migraine, no studies have specifically examined the relationship between cutaneous allodynia and these biomarkers.

Objective

This study aimed to evaluate the role of serum proinflammatory and hematological biomarkers in migraine patients and their association with cutaneous allodynia.

Method

A case-control study was conducted, including 30 migraine patients who were randomly recruited from the Neurology Department and outpatient clinic at Cairo University between June 2021 and January 2022. These patients were compared to 30 age- and sex-matched healthy controls.

Results

Among the patients, 86.7% had episodic migraine, while 13.3% (4 patients) had chronic migraine. The longest headache-free period was 6.03 ± 4.1 months (ranging from 1 to 12 months). Seventy percent of patients experienced cutaneous allodynia. Females with CA had more severe migraine attacks compared to those without CA ($p < 0.05$). Additionally, patients with CA had longer headache durations and higher headache frequency. Risk factors for CA included female sex and higher education level. A negative correlation was found between cutaneous allodynia and low levels of IL-1, neutrophils, platelet-to-lymphocyte ratio (PLR), and neutrophil-to-lymphocyte ratio (NLR).

Conclusion

Low IL-1, neutrophils, PLR, and NLR were associated with higher cutaneous allodynia in migraine patients. These findings highlight the potential role of inflammatory and hematological biomarkers in the pathophysiology of migraine and cutaneous allodynia.

Keywords

Cutaneous allodynia, migraine, cytokines, proinflammatory mediators, hematological biomarkers

O26

Chronic migraine and its under-recognized impact on driving

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O26

Background

Approximately 2% of the world's population suffers from chronic migraine (CM). While much attention has been given to how CM reduces the quality of life, limiting work productivity, social engagement, and even basic daily tasks, surprisingly, little is known about how this condition impacts driving explicitly.

Objective

This study aims to investigate various aspects of CM patients' driving habits, including sensitivity to road conditions, headache triggers during driving, traffic accident rates, and the impact of migraine medications on driving ability.

Methods

A comprehensive systematic survey was conducted between May and July 2024, representing a national, multicenter, and cross-sectional research. We gathered data from both driving and nondriving migraine patients diagnosed according to the International Classification of

Headache Disorders-3 criteria using a structured questionnaire adapted from the "Driving Habit Questionnaire." This study questionnaire covered demographic features, clinical characteristics, motion sickness, driving habits, features of headache attacks during driving, sensitivity through driving conditions, accident ratios, and the headache impact test 6 (HIT-6). The included patients are divided into groups, as CM -/+, headache -/+, and driver/passenger and compared statistically.

Results

Out of the 2548 included patients, 468 were diagnosed with CM. 81.2% of the patients with CM were female, and their mean age was 38.01±11.37 years. 47% of these patients were actively driving. Among them, 3.2% had stopped driving; this rate was more common than in those with episodic migraine (EM) (1.2%) (p=0.002). Patients with CM experienced more frequent headaches while driving (69% in EM versus 78.7% in CM) (p=0.003). All patients with CM who experienced migraine attacks while driving experienced anxiety about having an accident and this was followed by other symptoms like restlessness (91.9%) and nervousness (76.2%). Patients with CM mostly used analgesics (58.6%) to cope with headaches while driving, followed by turning off the music (51.8%). The sensitivity of EM and CM patients to road conditions and the effect of these conditions on migraine attacks are shown in Figures 1 and 2. The HIT-6 score in patients with CM was 64.53±6.85, and headache had a higher severity compared to patients with EM (p<0.001).

Fig. 1 (Abstract O26). Distribution of sensitivity towards the indicated specific road conditions, in relation to presence or absence of headache during driving in patients with episodic versus chronic migraine (* shows the significant difference between patients with episodic and chronic migraine in case of headache)

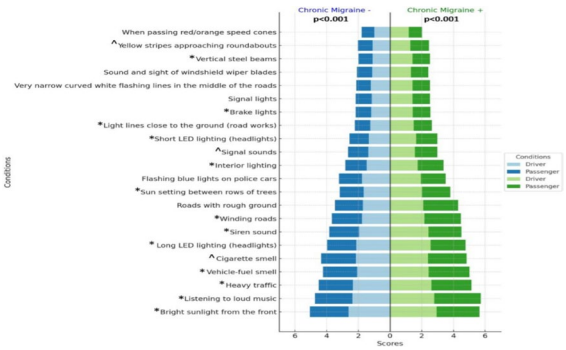
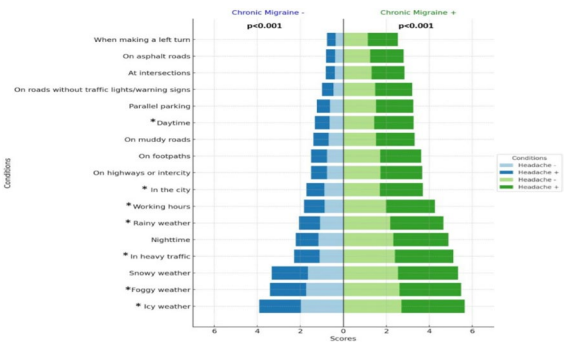


Fig. 2 (Abstract O26). Distribution of environmental headache triggers in traffic between patients with episodic and chronic migraine as drivers or passengers (* shows the significant difference between patients with episodic and chronic migraine in case of both drivers and passengers, ^ shows the significant difference between patients with episodic and chronic migraine as passengers.)



Conclusion

This study highlights the substantial and often overlooked impact of CM on driving ability. As expected, patients with CM experience a higher rate of headaches while driving. Moreover, they demonstrate increased sensitivity to road conditions and are more likely to cease driving altogether compared to individuals with episodic migraine. This study demonstrated that CM imposes a significant functional disability on driving, akin to its disabling effects in other aspects of daily life.

Keywords

Chronic migraine, driving, road condition, headache trigger, HIT-6, driver, passenger

O27

The effect of greater occipital nerve block on sexual function and quality of life

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O27

Background

Chronic headaches have been shown to cause sexual dysfunction in patients; however, studies evaluating the effect of pain treatment on sexual dysfunction are limited. Greater occipital nerve (GON) block is an effective treatment for chronic headaches.

Objective

This study aimed to examine the effect of GON block on quality of life and sexual function in patients with chronic headaches.

Method

The study included 79 patients diagnosed with primary headaches, including chronic migraine, tension-type headache, and cervicogenic headache, who were treated with GON block between March 2023 and September 2024. The Visual Analogue Scale (VAS), Short Form 36 (SF-36), Beck Depression Inventory (BDI), Migraine Disability Rating Scale (MIDAS), and Female Sexual Function Index (FSFI) were administered before and two months after GON block treatment. Additionally, the number of monthly headache attacks and the amount of analgesics consumed per month were recorded.

Results

The mean age of the patients was 41.3 ± 11.2 years. Among the patients, 70.9% had migraines and 11.4% had tension-type headaches. Statistical analysis revealed significant improvements after GON block treatment, with reductions in VAS, MIDAS, BDI scores, headache days, and monthly analgesic use. In addition, improvements were observed in the FSFI domain of sexual desire and the SF-36 sub-parameter scores ($p < 0.001$ for each comparison).

Conclusion

This study demonstrates that GON block treatment positively affects sexual dysfunction and improves the quality of life in patients with chronic headaches. It is the first study conducted on this topic in our country.

Keywords

Headache, Greater occipital nerve block, sexual dysfunction, quality of life

O28

Pattern and adherence to prophylactic treatment in migraine: a multi-center study in Egypt

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O28

Background

Prophylactic treatment plays a crucial role in reducing the frequency, severity, and duration of migraine attacks.

Objective

This cross-sectional study aimed to investigate the patterns of prophylactic treatment utilization and assess adherence levels to prescribed regimens among migraine patients in Egypt, representing the first study addressing this issue in the country.

Methods
A cross-sectional study was conducted on 200 migraine patients. Data collected included migraine type, attack duration, headache frequency per month, and treatment history (prophylactic and abortive treatments). Prophylactic treatments were evaluated in terms of type, dose, and adherence using the Adherence to Refills and Medications Scale (ARMS). Efficacy was assessed by comparing monthly migraine days (MMD), Migraine Disability Assessment Scale (MIDAS), and Visual Analogue Scale (VAS) scores before and after prophylactic treatment.
Results
The study included 200 migraine patients with a median age of 32, and 70.6% were women. Regarding prophylactic treatment, 83.3% of patients received monotherapy, with antiepileptic drugs (AEDs) being the most prescribed regimen (40%). Paracetamol was the most used abortive medication (42%). Polytherapy was associated with a significant reduction in migraine attack duration, MMD, VAS, and MIDAS scores ($p < 0.001$). However, only 30.4% of patients were adherent to their prophylactic regimen. Multivariate regression analysis identified the use of antidepressants as an independent predictor of adherence.
Conclusion
Nonadherence to prophylactic medication is prevalent among migraine patients in Egypt. Patients receiving polytherapy demonstrated lower severity of migraine attacks, while the use of antidepressants was associated with improved treatment adherence.

Keywords
Migraine, prophylactic treatment, adherence to treatment, MIDAS, ARMS

O29

Characteristics of headache attributed to infection: single center findings

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O29

Background
Headache attributed to infection (HAI) is characterized by a temporal relationship between headache and infection, with a noticeable worsening or improvement of the headache paralleling the progression or resolution of the infection. Despite its prevalence, the characteristics of this type of headache have not been clearly defined.
Objective
This study aims to investigate the clinical features of HAI, its potential relationship with primary headaches, and the treatment approach.
Methods
In this prospective cross-sectional study, patients who met the criteria for HAI between March and August 2024 were included. A structured questionnaire was used to assess the infection characteristics, headache features, and any association with primary headaches.
Results
A total of 40 patients were diagnosed with HAI, with a mean age of 43.4 years; 67.5% were female. Of the patients, 27.5% had experienced headaches during previous infections. The most common cause of HAI was viral respiratory tract infection (67.5%), followed by acute rhinosinusitis (12.5%), viral encephalitis (7.5%), aseptic meningitis (2.5%), HIV-related infection (2.5%), and bacterial soft tissue infection (2.5%). Red flag symptoms were noted in 32.5% of patients, primarily reporting changes in headache characteristics and sudden severe headaches. In 55% of cases, headaches started before the onset of the infection.
Headaches were bilaterally localized in 77.5% of cases, with 57.5% described as throbbing and 32.5% as pressing. Most headaches were moderate to severe (80%). The attacks were intermittent in 47.5% of patients, while 27.5% experienced constant headaches with frequent exacerbations. Analgesic response was complete in 42.5% of patients, partial in 27.5%, and absent in 30%. The average headache duration was 9.5 days (range: 1–30 days), and in patients with viral respiratory tract infections, the duration averaged 9.8 days. In 30% of cases, headaches persisted for more than two weeks after the infection resolved. Additionally, 32.5% of patients had a history of migraines, with 66.6% of them reporting that the pain differed from their typical migraine headaches.
Conclusion
HAI in our study were typically characterized as bilateral, throbbing-pressing, severe, and persistent headaches that worsened throughout the day. These headaches generally responded to analgesics and lasted approximately 10 days post-infection. However, recent findings, particularly during the COVID-19 pandemic, have shown that infection-related headaches may present with different characteristics, such as resistance to analgesics and longer durations, particularly in males. This contrasts with earlier classifications of HAI. Additionally, influenza-related headaches have been noted to last shorter and are often accompanied by photophobia and phonophobia. Our study suggests that the characteristics of HAI may vary depending on the type of infection, and further research is needed with larger patient populations to explore these differences.

Keywords
Headache attributed to infection, primary headaches, viral respiratory infection, headache characteristics, cutaneous allodynia, analgesic response, COVID-19

O30

Investigation of the relationship between sensory profile and somatic symptoms, functionality and pain severity in patients with episodic migraine

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Background
Migraine, as a complex neurological disorder, is often associated with abnormal sensory processing that can result in increased sensitivity to environmental stimuli such as light, sound, and touch. Previous studies have shown that patients with migraine exhibit increased sensory sensitivity, avoidance behaviors, and abnormal pain thresholds compared to healthy individuals [1,2]. These changes in sensory processing are believed to play an important role in the frequency, intensity, and functional impact of migraine attacks [3].Furthermore, studies have highlighted the association of migraine with somatic symptom disorders and have shown that patients frequently experience physical symptoms that further impair their quality of life [4–5].
Objective
Based on this literature, the aim of our study was to investigate the relationship between sensory profiles, somatic symptoms, functionality, and pain intensity in patients with episodic migraine. In this study, we aim to contribute to a deeper understanding of migraine pathology by comparing sensory profile characteristics between episodic migraine patients and healthy controls and to examine the extent to which sensory characteristics are related to the clinical features of migraine. We also aim to support the development of specific interventions for sensory and somatic symptom management in migraine care by investigating the relationship between atypical sensory modalities and somatic symptom severity and functionality in migraine patients.
Methods
This residency thesis study is a cross-sectional study conducted at Erenköy Mental and Nervous Diseases Training and Research Hospital, Istanbul, with Ethical Committee approval obtained. The study was carried out in accordance with the principles of the Helsinki Declaration, and

no conflicts of interest emerged during this process. Our research was conducted between April and May 2024, and included 61 patients diagnosed with episodic migraine and 80 healthy volunteers. Participants were assessed using a sociodemographic and clinical data collection form, Adolescent/Adult Sensory Profile Scale, Scale for the Assessment of Illness Behaviour and the Migraine Disability Assessment Questionnare. For statistical analyses chi-square test, student's t-test, Pearson and Spearman correlation analyses, and linear regression analysis were used. The significance level in statistical analyses was set at p<0.05.

Results

In the study, episodic migraine patients were compared with healthy controls in terms of illness behaviors and sensory profile; it was found that migraine patients had lower Illness Behavior Evaluation Scale scores and thus had a higher rate of abnormal illness behavior compared to healthy controls. A statistically significant difference was found between healthy controls and episodic migraine patients in the sensory sensitivity subscale of the Adolescent/Adult Sensory Profile, with episodic migraine patients having higher sensory sensitivity scores. A statistically significant difference was also found between healthy controls and episodic migraine patients in the sensory avoidance subscale of the Adolescent/Adult Sensory Profile, with episodic migraine patients having higher sensory avoidance scores. The relationship between scales in episodic migraine patients was evaluated, revealing a negative correlation between the Migraine Disability Assessment Scale and Scale for the Assessment of Illness Behaviour, and a positive correlation with sensory sensitivity and sensory avoidance.

Conclusion

In this study, episodic migraine patients demonstrated statistically significant differences in sensory profiles compared to healthy controls. Notably, they showed higher sensory sensitivity and sensory avoidance, while no significant difference was observed in sensory seeking and low registration. Furthermore, positive correlations were observed between MIDAS scores and both sensory sensitivity and sensory avoidance. These findings suggest that atypical sensory modalities play a critical role in the functionality and symptom severity in migraine patients. Our results emphasize the importance of considering sensory processing in migraine management and support the potential of personalized treatment strategies aimed at improving patient outcomes.

Keywords

Pain severity, Sensory profile, Episodic migraine, Functionality, Somatic symptoms

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Table 1 (Abstract O30). Comparison of scale for the assessment of illness behaviour and adolescent/adult sensory profile scale total scores between episodic migraine patients and healthy control groups

	Episodic migraine patients (*n*=61)	Control(*n*=80)	
	Mean±Std.D	Mean±Std.D	p score
Scale for the assessment of illness behaviour	30,34±8,23	39,55±9,8	**<0,001**
Low registration	32,29±7,07	30,75±6,87	0,19
Sensory seeking	42,49±8,05	43,7±6,59	0,33
Sensory sensitivity	42,93±8,02	38,07±9,25	**0,001**
Sensory avoidance	41,54±8,31	38,18±7,74	**0,02**

Student's t test

Table 2 (Abstract O30). Evaluation of the relationship between total scores of Migraine Disability Assessment Scale (MIDAS), illness behavior assessment scale, and total scores of adolescent/adult sensory profile subscale in episodic migraine patients

		MIDAS	Scale for the assessment of illness behaviour	Low registration	Sensory seeking	Sensory sensitivity	Sensory avoidance
MIDAS	r	-	−0,30	0,16	−0,24	0,36	0,34
	p		**0,02**	0,22	0,06	**0,004**	**0,007**
Scale for the assessment of illness behaviour	r		-	−0,17	0,09	−0,12	−0,22
	p			0,17	0,47	0,36	0,09

Pearson Correlation test

O31

The presence of bulimic behaviors in migraine patients and their relationship with migraine phases and intensity

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Background
Migraine is a chronic neurovascular disease that is common in the worldwide population [1]. Migraine triggers have been often tried to be defined in the literature due to the severe headaches ending up with a serious disability [2–5]. It has been mentioned that food types and eating behaviours are frequently among the triggers, so the coexistence of migraine and eating disorders has become a matter of curiosity because these behaviours were similar to bulimic behaviours in terms of restriction, purging and binging [6–9]. To our knowledge, there is no study in the literature comparing the frequency of these behaviours in migraine patient groups by dividing them into episodic migraine (EM) and chronic migraine (CM) according to migraine headache frequency.
Objective
The aim of our study is to define bulimic like abnormal eating behaviours seen in migraine patients, to compare them between migraine groups and control in terms of presence; and to compare EM and CM groups in terms of presence of bulimic like abnormal eating behaviours and their relation with anxiety, depression, headache intensity and their migraine phase distribution.
Methods
A total of 114 people, including 38 episodic migraine and 38 chronic migraine patients who are diagnosed with migraine with/without aura by a neurologist and 38 age and gender matched healthy control group; who met the inclusion and exclusion criteria and agreed to participate in the study, participated in our study. Our research is cross-sectional and analytical in nature and is a controlled study. In the study, Sociodemographic and Clinical Data Form about migraine and eating habits prepared by the researcher, Headache Impact Test (HIT-6), Migraine Disability Assessment Scale (MIDAS), Visual Analog Pain Comparison Scale (VAS), Eating Attitude Test-40 (EAT-40), Bulimic Investigatory Test Edinburgh (BITE), Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI) were applied.
Results
In our research, among the bulimic-like abnormal eating behaviours, consuming low-calorie foods and using enemas were found to be statistically significant and high in EM, while large portions, excessive carbohydrate eating, grazing, eating at night time and while not hungry were high in CM. EAT scores were found to be statistically significantly in the same directional relation with MIDAS in EM group and with HIT in CM group. However no statistically significant difference was found between migraine groups and control group in terms of EBAT and EAT scores.
Conclusion
Considering the result data of our study, bulimic-like abnormal eating behaviour in migraine patients is closely related to severity of migraine disability. Referring to the high presence of binging type behaviours and more diverse abnormal eating behaviours seen in CM patients, we think it will be important to follow-up migraine patients closely for chronification and disability levels, to decrease possible occurrence of abnormal eating behaviours in migraine patients.

Keywords
Binging, bulimic behaviors, migraine frequency, migraine phases, migraine severity, eating disorders

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Table 1 (Abstract O31). Comparison of scale scores between episodic migraine, chronic migraine and control groups

	Mean ± Std.D **Median (Min-Max)**			
	Episodic Migraine (*n=38*)	**Chronic Migraine *(n=38)***	**Control Group (*n=38*)**	***P value*** **1vs2 1vs3 2vs3**
VAS Score				**0,03[c]**
	7,4 ± 1,13 8 (5-10)	8,2 ± 1,4 8 (4-10)	-	
HIT Score				0,08[c]
	63,4 ± 6,9 65 (49-78)	66,1 ± 5,6 66,5 (53-78)	-	
MIDAS Score				**<0,001[c]**
	40,6 ± 37,1 25 (0-185)	99,68 ± 73,39 79 (0-385)	-	
EAT Score				0,13[a]
	19,5±9,35 15,5 (9-46)	22,89±11,28 19,5 (10-96)	18,18±10,54 15,0 (4-58)	
BITE Score				0,65[a]
	10,92±5,23 9 (2-26)	10,89±4,94 10 (2-22)	9,47±5,11 8 (3-24)	
BAI Score				**0,003[a]**
	15,97±12,7 11 (0-51)	19,84±14,33 16 (0-52)	9,29±7,53 7,5 (0-35)	0,41[t] 0,08[t] **0,002[t]**
BDI Score				**0,002[a]**
	12,74±8,78 10,5 (1-32)	18,47±11,44 16 (1-49)	10,74±8,93 8,5 (0-37)	**0,03[t]** 0,65[t] **0,002[t]**

One Way ANOVA test[a], Chi-square test[b], Student's T-test[c], Z test[z], Post-hoc Tukey[t]

1:Episodic migraine group 2:Chronic migraine group 3:Control group

VAS Visual Analog Pain Scale, *HIT-6* Headache Impact Test, *MİDAS* Migraine Disability Assessment Test, *EAT* Eating Attitude Test, *BITE* Bulimic Investigatory Test Edinburgh, *BAI* Beck Anxiety Inventory, *BDI* Beck Depression Inventory

Table 2 (Abstract O31). The role of MIDAS and BITE scale scores in predicting EAT scale score in episodic migraine group

	β	Std Error β	Std. Co β	*P value*
MIDAS	0,08	0,32	0,38	**0,01***
BITE	0,81	0,25	0,45	**0,003***

Model: Dependent variable: EAT. Predictor: MIDAS, BITE. Significance of the model (p=0,002)

Table 3 (Abstract O31). The role of HIT, BAI, BDI, BITE scale scores in predicting EAT scale score in chronic migraine group

	β	Std Error β	Std. Co β	*P value*
HIT	0,99	0,337	0,498	**0,005***
BAI	0,09	0,128	0,114	0,49
BDI	−0,02	0,171	0,023	0,89
BITE	0,747	0,303	0,327	**0,02***

Model: Dependent variable: EAT. Predictor: HIT, BAI, BDI, BITE. Significance of the model (p<0,001)

O32

A case of intracranial hypertension secondary to cat scratch disease

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O32

Background
Bartonella henselae is the etiological agent of cat scratch disease (CSD). While CSD typically presents with a papule at the inoculation site, granulomatous lymphadenopathy, fever, and neurological manifestations such as neuroretinitis may also occur. In rare cases, patients may present with increased intracranial pressure and aseptic meningitis.
Objective
This article documents a case of intracranial hypertension secondary to bartonellosis.
Case
A 52-year-old female patient with a history of hypothyroidism presented to the ophthalmology clinic with complaints of headache and blurry vision persisting for six months. Examination revealed unilateral grade-2 papilledema and further testing identified positive serum IgM antibodies for Bartonella henselae. The patient was treated with antibiotics and subsequently with methylprednisolone. Although her blurred vision improved, the headache persisted, leading to a referral to the neurology clinic. Upon evaluation, she was admitted for further assessment. Neurological examination was normal, but brain MRI revealed bilateral optic disc edema. Lumbar puncture showed an opening cerebrospinal fluid (CSF) pressure of 30 cmH2O, and CSF analysis revealed a protein level of 74 mg/dL. The patient was diagnosed with intracranial hypertension secondary to bartonellosis and was discharged with acetazolamide treatment. At follow-up, the patient reported complete recovery from all symptoms.
Conclusion
Bartonellosis can present with neuroretinitis and, more rarely, with intracranial hypertension. While headaches associated with increased intracranial pressure are common in neurological practice, it is essential to thoroughly investigate symptoms and consider all possible etiologies. Managing such uncommon conditions requires a detailed assessment and a multidisciplinary approach to ensure accurate diagnosis and appropriate treatment.

Keywords
Cat scratch disease, intracranial hypertension, bartonellosis, neuroretinitis
(Authors confirmed during the electronic submission process that the patient had given explicit consent for their information to be published in an open access journal)

O33

Cerebral venous thrombosis: a retrospective evaluation with focus on headache characteristics

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O33

Background
Cerebral venous thrombosis (CVT) is a condition characterized by thrombosis of the cerebral veins and sinuses, accounting for 1–2% of all strokes. It predominantly affects young and middle-aged individuals. Headache is the most common presenting symptom in CVT cases.
Objective
This study aimed to evaluate the headache characteristics of patients diagnosed with CVT at Bakırköy Dr. Sadi Konuk Training and Research Hospital and compare the findings with the existing literature.
Methods
A retrospective analysis was conducted on 31 patients (25 women, 6 men) diagnosed with CVT between 2007 and 2013. The onset, intensity, and duration of headaches, as well as accompanying symptoms such as nausea, vomiting, and visual disturbances, were evaluated. Etiological and risk factors potentially related to the headaches were also assessed.
Results
In this study, 87.1% of the patients presented with headaches as their primary symptom. The headaches were typically persistent and progressive. Visual disturbances accompanied headaches in 35.5% of patients, while seizures occurred in 22.6%, and nausea and vomiting were reported in 22.6%. Like the literature, headache was the most common symptom, with some patients presenting with isolated headaches. Most patients described their headaches as unilateral and severe.
Conclusion
Headache is the most prominent and frequent symptom of CVT. As highlighted in the literature, the continuous and progressive nature of the headache is a key feature supporting the diagnosis of CVT. In our study, headache was the most common presenting complaint, particularly when accompanied by visual disturbances. Careful evaluation of headache characteristics is essential for early diagnosis and treatment in CVT cases.

Keywords
Cerebral venous thrombosis, headache, visual disturbances, seizures, progressive headache

O34

Headache associated with antipsychotic medication: a case report

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The Journal of Headache and Pain 2024, **26(Suppl 1):**O34

Background
The benefits of antipsychotic medications are sometimes overshadowed by their side effects, which range from mild issues such as sedation, dry mouth, and headaches to life-threatening complications like myocarditis and agranulocytosis. Each antipsychotic drug has its own specific side effect profile.

Objective
In this report, we present a case of antipsychotic-induced headache in a patient with a history of migraine.
Case
A 30-year-old, university-educated, unmarried woman working as a physician's assistant was admitted to our hospital with complaints of paranoid persecutory delusions, reduced self-care, decreased sociability, and impaired functionality. She had no previous psychiatric diagnosis, so laboratory tests and cranial MRI were performed to rule out organic causes. Both tests were within normal limits. The patient was started on haloperidol (20 mg/day) and biperiden (10 mg/day). Her PANSS score on admission was 134. The treatment was later switched to paliperidone (9 mg/day) and biperiden (4 mg/day) as maintenance therapy.
During clinical follow-up, the patient developed headaches and extrapyramidal system (EPS) side effects. Further evaluation revealed that she had been diagnosed with migraine with aura 10 years earlier but had not experienced an attack for a long time. Neurological examination and imaging showed no abnormalities, and symptomatic treatment was initiated for the headaches, suspected to be a side effect of the medication. The PANSS score at discharge was 71. The patient was advised to keep a headache diary. Two weeks after discharge, she reported two unresolved migraine attacks. As EPS side effects persisted, paliperidone was discontinued, and olanzapine (15 mg/day) was started. At the 1-month follow-up, her PANSS score had improved to 52, and no further migraine attacks were reported.
Conclusion
The effect of antipsychotics on migraines can be explained through neurotransmitter modulation, particularly involving the serotonin and dopamine systems, which play a key role in migraine pathogenesis. Paliperidone, one of the most common antipsychotics associated with headaches in clinical trials, may increase or trigger headaches in individuals with migraines. In contrast, olanzapine has different effects on the serotonergic system and has been shown to be effective in treating migraine attacks. Therefore, when selecting antipsychotic medications for migraine patients, the impact on neurotransmitters should be carefully considered.

Keywords
Headache, paliperidone, olanzapine, migraine, antipsychotic side effects
(Authors confirmed during the electronic submission process that the patient had given explicit consent for their information to be published in an open access journal)

O35
Occipital neuralgia, idiopathic intracranial hypertension or rare cause of secondary headache?: a case report
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The Journal of Headache and Pain 2024, **26(Suppl 1):**O35

Background
Headache etiology can be multifactorial, and the outcome is often dependent on accurate diagnosis. The International Headache Society (IHS) classification divides headaches into primary and secondary types.
Objective
This case report highlights a rare secondary cause of headache, initially presenting as occipital neuralgia and idiopathic intracranial hypertension.
Case
A 64-year-old female presented with a 6-month history of persistent, burning, stinging headache beginning in the neck and radiating to the right side of the head and face. The headache was resistant to analgesics and associated with nausea and vomiting, without photophobia or phonophobia. She had been previously treated for occipital neuralgia without benefit. Further evaluation showed no significant findings in her medical history other than hypertension. Initial imaging (brain CT and MRI) was unremarkable except for flattened globes and a partially empty sella, raising suspicion of increased intracranial pressure. MRI venography revealed hypoplasia of the right transverse and sigmoid sinuses. Neurological examination showed right-sided 5th and 6th cranial nerve palsies. Upon further investigation with thin-slice contrast-enhanced MRI, a mass with perineural invasion extending from the right Rosenmüller's area to the cavernous sinus was detected, indicating a rare secondary headache due to nasopharyngeal carcinoma.
Conclusion
Recurrent headaches resistant to treatment may be indicative of underlying conditions such as nasopharyngeal carcinoma, which can present with increased intracranial pressure and cranial nerve involvement. Early diagnosis using advanced imaging techniques is crucial in such cases.
Persistent and recurrent headaches that do not respond to typical treatments require thorough evaluation to identify potential secondary causes. In this case, a nasopharyngeal carcinoma was identified as the underlying cause of intracranial hypertension and cranial nerve palsies. Early identification and treatment of such rare etiologies are critical for effective management.

Keywords
Occipital neuralgia, intracranial hypertension, secondary headache, nasopharyngeal carcinoma, cranial nerve palsy
(Authors confirmed during the electronic submission process that the patient had given explicit consent for their information to be published in an open access journal)

O36
Readability analysis of internet-based patient information texts on headaches
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The Journal of Headache and Pain 2024, **26(Suppl 1):**O36

Background
It is crucial to communicate scientific information, accurately, and simply to the public. Readability, a widely used method, calculates how easily a text can be understood using a mathematical formula. This is particularly important for patient education materials, including those related to headaches.
Objective
This study aimed to determine the readability levels of patient information texts related to headaches available on the internet.
Method
The study analyzed texts from the first 50 websites retrieved using the keyword "headache" on the Google search engine. After excluding advertisements, videos, duplicate pages, encyclopedic entries, and unselectable texts, a total of 41 texts were included in the analysis. The readability scores of these texts were calculated using the Ateşman and Çetinkaya-Uzun readability formulas by inputting them into a readability calculation program. The websites were categorized based on their source (personal information site, hospital site, association), whether the author was a neurology specialist, and whether the author held an academic title.
Results
The readability levels of the 41 texts were analyzed according to their source ($p = 0.675$; 0.406), whether the author was a neurology specialist ($p = 0.137$; 0.767), and whether the author held an academic title ($p = 0.187$; 0.647), and no statistically significant

differences were found in readability scores or levels across these categories.

Conclusion

The headache-related texts analyzed in this study were found to be written at a high school reading level, which is higher than the average education level in Turkey. Therefore, patient information texts on headaches should be written with the average education level in mind, ensuring they provide clear, accessible, and detailed information for the general public.

Keywords

Headache, internet, readability, health literacy, patient education

O37

Bibliometric analysis of physiotherapy approaches in headache and neurological rehabilitation: a review of studies published in top academic journals

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Background

Bibliometric analysis is a crucial tool for understanding the impact and dissemination of scientific research. It tracks literature trends, identifies top-cited studies, and aids in scientific progress by helping researchers make informed strategic decisions. It also highlights interdisciplinary collaborations. In rapidly growing fields such as physiotherapy and medicine, bibliometric analysis provides valuable insights into research priorities and knowledge, which can guide clinical practices.

Objective

This study aimed to examine the characteristics of studies related to physiotherapy approaches published in the top five academic journals in the fields of physiotherapy, rehabilitation, and neurology.

Method

Academic articles published in *The Journal of Headache and Pain*, *Cephalalgia*, *Current Pain and Headache Reports*, *Annals of Headache Medicine*, *The Journal of Head and Face Pain*, *Physical Therapy*, *Archives of Physical Medicine and Rehabilitation*, *Journal of Physiotherapy*, *Clinical Rehabilitation*, and *Disability and Rehabilitation* were reviewed. Data collected included the year of publication, article type, professional group conducting the study, physiotherapy approaches used, and country of origin.

Results

A total of 250 studies were included, spanning the years 1976 to 2024. Of these, 49.2% (n=123) were research articles, and 54% (n=135) were conducted by neurologists. Additionally, 48.4% of the studies (n=121) involved patients diagnosed with migraines, and 17.6% (n=44) included biofeedback. The highest number of studies originated from the USA (25.6%, n=64), followed by Germany and Italy (11.6%, n=29).

Conclusion

The studies frequently involved biofeedback and non-invasive stimulation techniques. However, physiotherapy approaches were highly varied, suggesting that they could be further diversified and individualized to meet the specific needs of different patient populations.

Keywords

Headache, cervicogenic headache, migraine, tension-type headache, physiotherapy, rehabilitation

O38

Bibliometric analysis of gender differences in headache research

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Background

Headaches are among the most common neurological disorders worldwide, affecting diverse populations. Research indicates that the prevalence and characteristics of headaches can differ significantly between genders, making it an important area of study in neurology.

Objective

This study aims to conduct a comprehensive bibliometric analysis of scholarly articles that explore the relationship between gender and headache disorders. The analysis seeks to deepen our understanding of how gender influences headache disorders, ultimately guiding future research directions.

Method

The Scopus database was used to search for English-language articles published between 2019 and 2024, using the keywords "gender differences" and "headache." The bibliometric analysis was performed using the Python programming language and the artificial intelligence analysis program "Julius.ai."

Results

A total of 83 articles were identified. The top three contributing authors were Guerzoni S, Cevoli S, and Russo A. Researchers from Italy, the Netherlands, and the United States formed the top affiliations. The most active countries in this field were the United States, Italy, and Spain, with Turkey ranked eighth. The most cited researchers were from Italy, Germany, and Canada. The top journals publishing articles related to headaches and gender differences were *Frontiers in Neurology*, *Headache*, and the *Journal of Psychosomatic Research*.

Conclusion

This bibliometric analysis of gender differences in headache research highlights key contributions and influential studies that have shaped our understanding of the impact of gender on headache disorders. By identifying significant research trends, this analysis can inform future investigations and ultimately improve patient care and outcomes in the management of headaches.

Keywords

Bibliometric analysis, headache, migraine, gender differences, research trends

O39

Applicant with posttraumatic headache complaints frontal sinus fungal infection

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Background

Fungal sinusitis is classified as invasive and non invasive depending on histopathological conditions. Mucocele formation can be a complication of a trauma to the paranasal sinus.

Objective

A case diagnosed with frontal sinüs fungal infection after head trauma is presented.

Case

A 27 years old male truck mechanic was admitted to our outpatient clinic due to head trauma and headache after hitting his head while repairing a truck. He had been suffering from headache since the day he hit his head. Though his headache responded to painkillers initially, later the response has decreased. Neurological examination was normal. On cranial MRI mucus retention cysts were observed in maxillary sinüs bilaterally.Soft tissue intensities showing peripheral contrast enhancement after IVCM. Diffusion –restricted components were observed in diffusion-weighted images that were contrasted after IVCM, extending from the right half of the sphenoid sinüs to the left half, with T2A nodular components predominantly in the right half, and containing areas that were hyperintense on T1W slices and hypointense on T2W slices. The appearance was primarily evaluated in favor of fungal infection.

Conclusion
Headache is common in mycotic infections of the paranasal sinus without signs of central nervous system involvement. Pain may occur in different localizations and may be accompanied by different symptoms

Keywords
Posttraumatic headache, fungal sinusitis

Publisher's Note