

2017년 CPX

두통



박광열

중앙대학교 신경과학교실

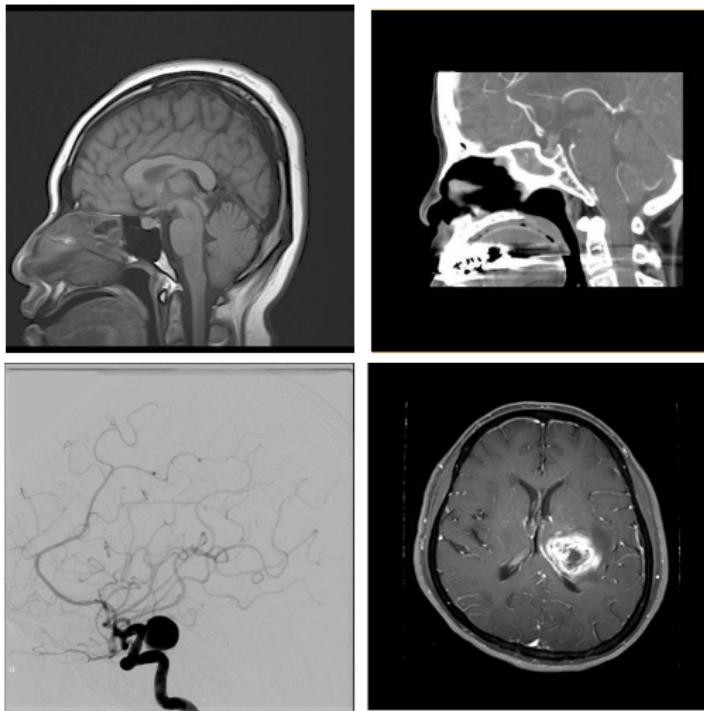
Global burden of Disease in 2010

	Prevalence (both sexes)		Male prevalence		Female prevalence	
	Total (thousands)	Proportion of population (%)	Total (thousands)	Proportion of population (%)	Total (thousands)	Proportion of population (%)
Dental caries of permanent teeth	2 431 636	35.29%	1 194 051	34.37%	1 237 585	36.23%
Tension-type headache	1 431 067	20.77%	655 937	18.88%	775 131	22.69%
Migraine	1 012 944	14.70%	371 072	10.68%	641 873	18.79%
Fungal skin diseases	985 457	14.30%	516 167	14.86%	469 291	13.74%
Other skin and subcutaneous diseases	803 597	11.66%	417 129	12.01%	386 468	11.32%
Chronic periodontitis	743 187	10.79%	378 407	10.89%	364 780	10.68%
Mild hearing loss with perinatal onset due to other hearing loss	724 689	10.52%	386 147	11.11%	338 543	9.91%
Acne vulgaris	646 488	9.38%	311 349	8.96%	335 140	9.81%
Low back pain	632 045	9.17%	334 793	9.64%	297 252	8.70%
Dental caries of baby teeth	621 507	9.02%	352 085	10.13%	269 421	7.89%
Moderate iron-deficiency anaemia	608 915	8.84%	269 596	7.76%	339 319	9.93%
Other musculoskeletal disorders	560 978	8.14%	262 779	7.56%	298 199	8.73%
Near sighted due to other vision loss	459 646	6.67%	235 052	6.77%	224 593	6.58%
Mild iron-deficiency anaemia	375 438	5.45%	152 523	4.39%	222 915	6.53%
Asthma	334 247	4.85%	160 346	4.61%	173 901	5.09%

Vos T, et al. Lancet. 2012

- Headache is a symptom.
- Primary headache: no other causative disorder
- Secondary headache: new headache occurring in close temporal relation to another disorder that is a known cause of headache

Secondary headache



The International Classification of Headache Disorders, 3rd edition (beta version)

Part one: the primary headaches

1. Migraine
2. Tension-type headache
3. Trigeminal autonomic cephalgias
4. Other primary headache disorders

Part two: the secondary headaches

Introduction

5. Headache attributed to trauma or injury to the head and/or neck
6. Headache attributed to cranial or cervical vascular disorder
7. Headache attributed to non-vascular intracranial disorder
8. Headache attributed to a substance or its withdrawal
9. Headache attributed to infection
10. Headache attributed to disorder of homeostasis
11. Headache or facial pain attributed to disorder of the cranium, neck, eyes, ears, nose, sinuses, teeth, mouth or other facial or cervical structure
12. Headache attributed to psychiatric disorder

Part three: painful cranial neuropathies, other facial pains and other headaches

13. Painful cranial neuropathies and other facial pains
14. Other headache disorders

Appendix

Definition of terms

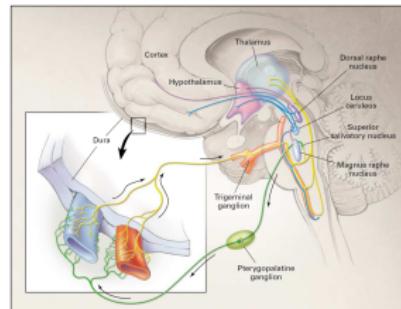
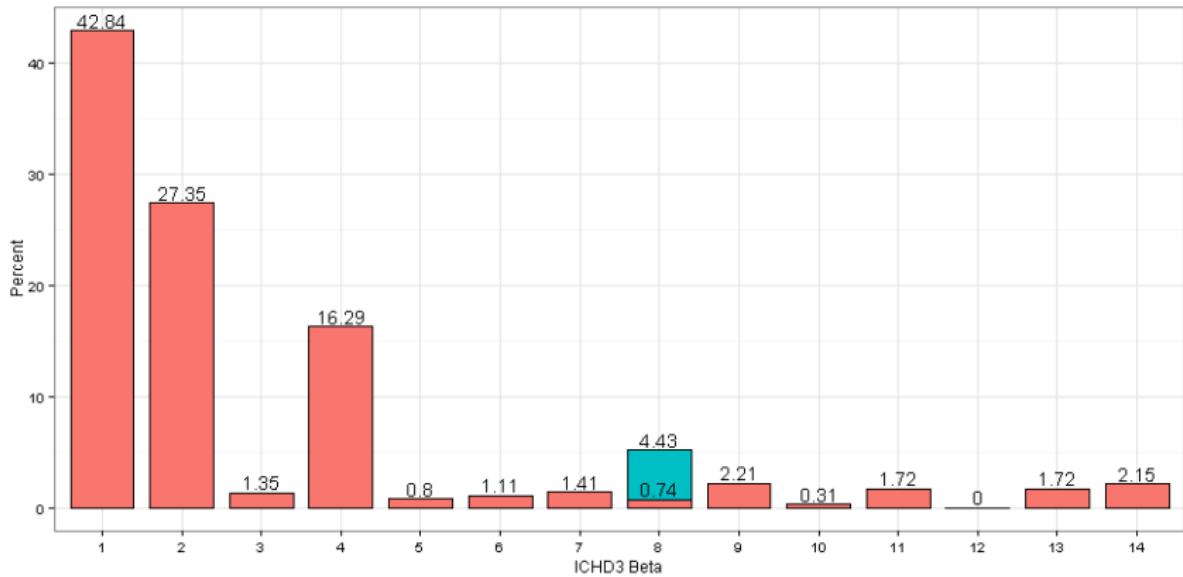


Figure 1. Pathophysiology of Migraine.
Migraine involves dysfunction of brain-stem pathways that normally modulate sensory input. The key pathways for the pain are the trigeminothalamic input from the trigeminal nucleus, which passes through the trigeminal ganglion and synapses on second-order neurons in the trigeminal nucleus caudalis. These fibers then pass through the posterior limb of the internal capsule and descend in the brain stem, form synapses with neurons in the thalamus. There is a reflex connection between neurons in the pons to the trigeminal nucleus caudalis. The descending fibers from the pons then pass through the trigeminal nerve to the trigeminal ganglion, and via afferent fibers from the trigeminal ganglion to the trigeminal nucleus caudalis. This trigeminal-autonomic reflex is present in normal persons⁴ and is expressed most strongly in patients with cluster headache, migraine, and paroxysmal hemicrania. It may be active in migraine. Brain imaging studies suggest that important modulation of the trigeminothalamic input comes from the dorsal raphe nucleus, locus ceruleus, and nucleus raphe magnus.



문화수, 조수진등. *under review*

1.1 Migraine without aura

- A At least five attacks fulfilling criteria B - D
- B Headache attacks lasting 4-72 hours (untreated or unsuccessfully treated)
- C Headache has at least two of the following four characteristics:
 - ① unilateral location
 - ② pulsating quality
 - ③ moderate or severe pain intensity
 - ④ aggravation by or causing avoidance of routine physical activity (e.g. walking or climbing stairs)
- D During headache at least one of the following:
 - ① nausea and/or vomiting
 - ② photophobia and phonophobia
- E Not better accounted for by another ICHD-3 diagnosis

1.2 Migraine with aura

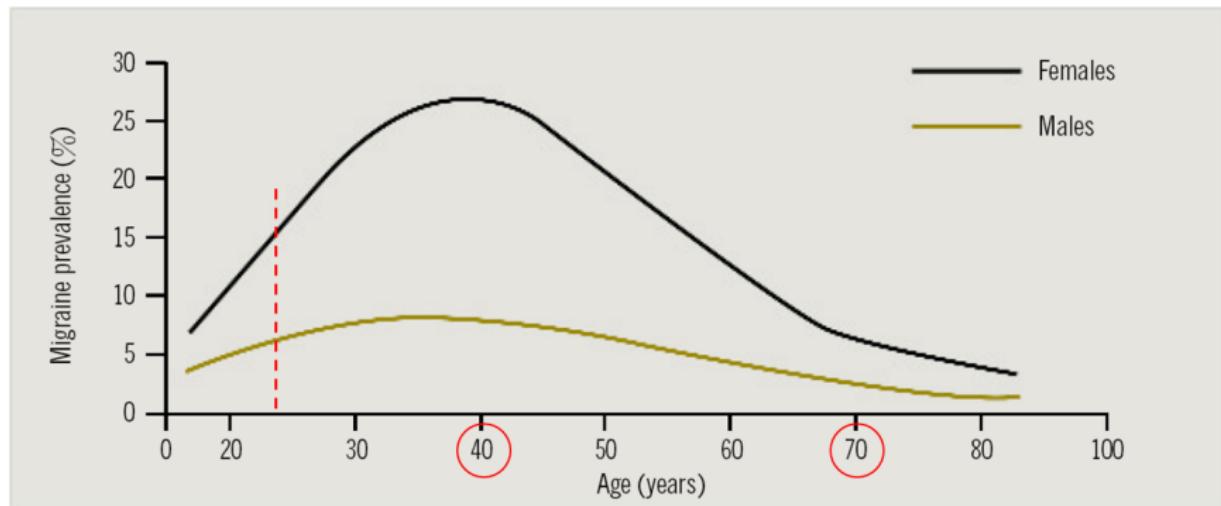
- A At least two attacks fulfilling criteria B - C
- B One or more of the following fully reversible aura symptoms:
 - ① visual
 - ② sensory
 - ③ speech and/or language
 - ④ motor
 - ⑤ brainstem
 - ⑥ retinal
- C At least two of the following four characteristics:
 - ① at least one aura symptom spreads gradually over ≥ 5 minutes, and/or two or more symptoms occur in succession
 - ② each individual aura symptom lasts 5-60 minutes
 - ③ at least one aura symptom is unilateral
 - ④ the aura is accompanied, or followed within 60 minutes, by headache
- D Not better accounted for by another ICHD-3 diagnosis

Migraine aura



- 5분에서 60분간 지속
- 전조후 60분이내에 두통이 발생
- 시각증상
- 감각증상
- 언어장애

Migraine Prevalence



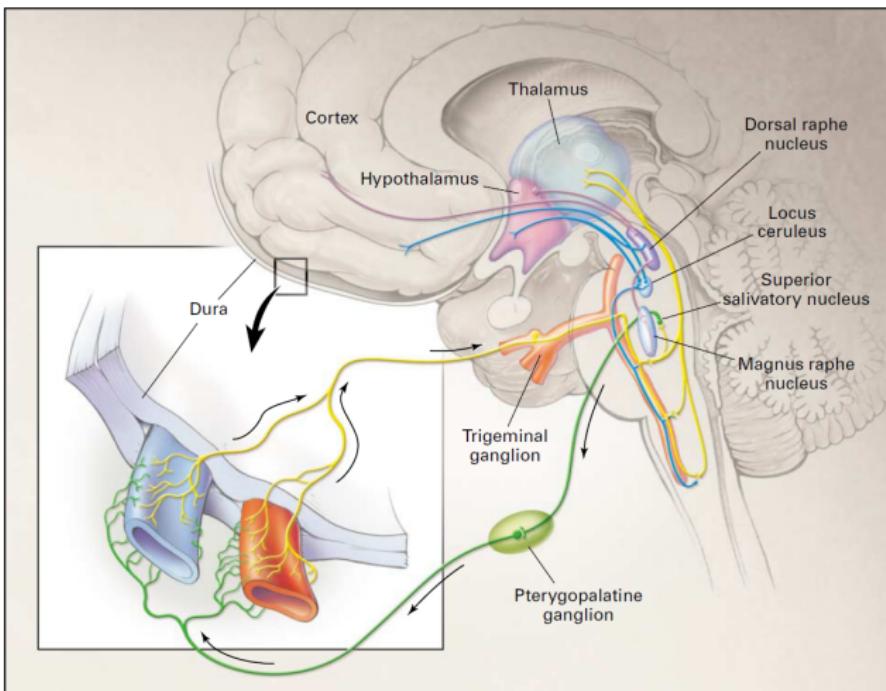
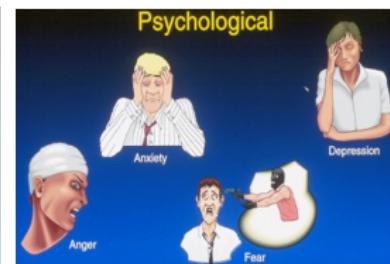
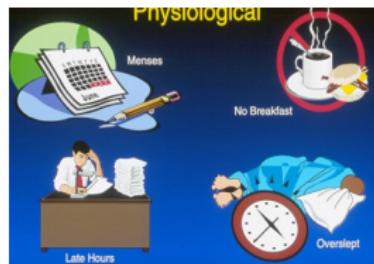


Figure 1. Pathophysiology of Migraine.

Migraine involves dysfunction of brain-stem pathways that normally modulate sensory input. The key pathways for the pain are the trigeminovascular input from the meningeal vessels, which passes through the trigeminal ganglion and synapses on second-order neurons in the trigeminocervical complex. These neurons, in turn, project through the quintothalamic tract, and after decussating in the brain stem, form synapses with neurons in the thalamus. There is a reflex connection between neurons in the pons in the superior salivatory nucleus, which results in a cranial parasympathetic outflow that is mediated through the pterygopalatine, otic, and carotid ganglia. This trigeminal-autonomic reflex is present in normal persons³⁴ and is expressed most strongly in patients with trigeminal-autonomic cephalgias, such as cluster headache and paroxysmal hemicrania; it may be active in migraine. Brain imaging studies suggest that important modulation of the trigeminovascular nociceptive input comes from the dorsal raphe nucleus, locus ceruleus, and nucleus raphe magnus.

유발요인



비교적 확실

- 스트레스
- 생리
- 카페인 중단

가능성 높음

- 금식
- 수면장애
- Nitrate, MSG
- Wine

가능성이 있음

- 흡연
- 냄새
- 초콜릿

Acute Pharmacological Treatment of Migraine

- Non-specific drugs
 - ① Acetyl salicylic acid
 - ② Acetaminophen
 - ③ NSAIDs
 - ④ Opioids

- Migraine-specific drugs
 - ① Triptans
 - ② Ergot alkaloids

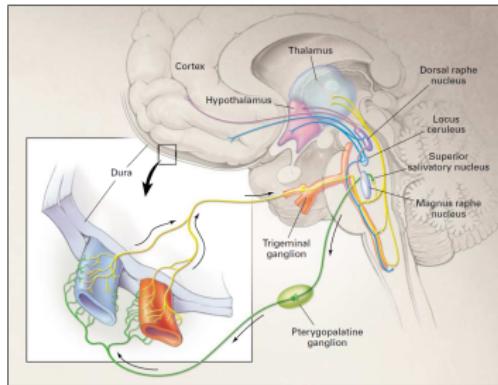


Figure 1. Pathophysiology of Migraine.

Migraine involves dysfunction of brain-stem pathways that normally modulate sensory input. The key pathways for the pain are the trigeminovascular input from the meningeal blood vessels, which passes through the trigeminal ganglion and synapses on second-order neurons in the trigeminal nucleus caudalis. These second-order neurons then project to the thalamus. There is a descending deactivation in the brain stem, from synapses with neurons in the thalamus. There is a reflex connection between neurons in the pons in the superior salivatory nucleus, which results in a cranial parasympathetic outflow that is mediated through the pterygopalatine, oic, and ciliary ganglia. The pterygopalatine ganglion is involved in the trigeminal autonomic cephalgias. It may be active in migraine patients with trigeminal-autonomic cephalgias, such as cluster headache and paroxysmal hemicrania. It may be active in migraine. Brain imaging studies suggest that important modulation of the trigeminovascular nociceptive input comes from the dorsal raphe nucleus, locus caeruleus, and nucleus raphe magnus.

Choice of abortive regimen

Italian guideline 2012 revised version

- The most appropriate drug should be taken at **the lowest useful dosage** as early as possible after the attack begins.

NICE guideline 2012

- Offer **combination therapy** with an oral triptan and an NSAID, or an oral triptan and paracetamol, for the acute treatment of migraine, taking into account the person's preference, comorbidities and risk of adverse events.

Sarchielli, P et al. J Headache Pain 2012; NICE guideline 2012 <http://guidance.nice.org.uk/CG150>

Non-specific analgesics

- mild to moderate intensity
- more appropriate in patients with vascular risk factors
- generally well tolerable
- may be effective even when given late in migraine attack
- GI trouble

Triptans

- moderate to severe intensity
- mild headache unresponsive to non-specific drugs
- risk of vascular complication

Table 2: Acute Migraine Treatment Strategies

1. Mild-moderate attack strategies:
 - a. Acetaminophen strategy
 - b. NSAID strategy
 2. Moderate-severe attack or NSAID failure strategies:
 - a. NSAID with triptan rescue strategy
 - b. Triptan strategy
 3. Refractory migraine strategies:
 - a. Triptan – NSAID combination strategy
 - b. Triptan – NSAID combination with rescue medication strategy
 - c. Dihydroergotamine strategy
 4. Vasoconstrictor unresponsive-contraindicated strategy
 5. Menstrual migraine strategy
 6. Migraine during pregnancy strategy
 7. Migraine during lactation strategy
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Triptans

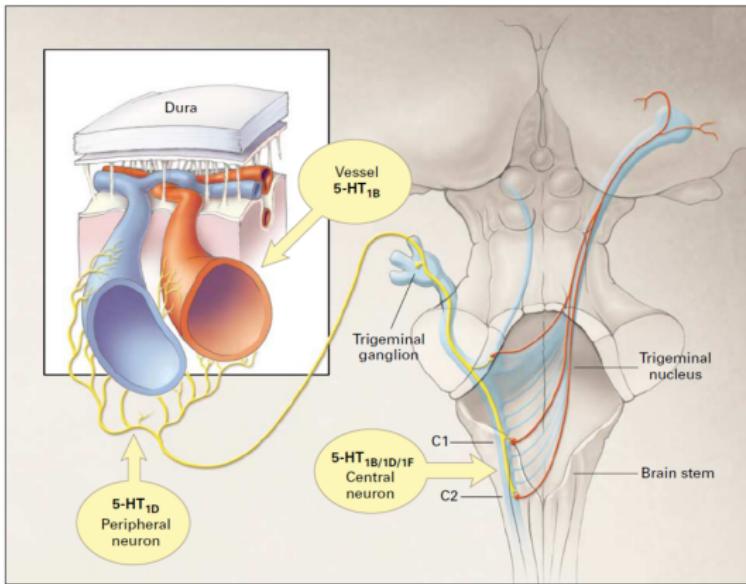


Figure 2. Possible Sites of Action of Triptans in the Trigeminovascular System.

Preventive medication has been underused

	Percent
Attack frequency of three or more per month	31.3%
Severe impairment or the need for bed rest	53.7%
Prevention should be offered	25.7%
Prevention should be considered	25.7 + 13.1%
Current use of daily preventive migraine medication	13.0%

Lipton R.B. et al. Neurology 2007

편두통 예방치료의 목표

Korea

- 발작의 빈도, 강도, 지속시간의 감소
- 급성기 치료에 대한 반응 증진
- 환자의 장애감소 및 활동 능력의 증진
- 편두통과 관련된 전체적인 비용의 감소
- 만성편두통으로의 진행 예방

Japan

- 발작의 빈도, 심한정도, 두통의 지속시간을 줄입니다.
- 급성기 치료의 효과를 좋게 합니다.
- 장애를 감소시켜, 생활기능을 향상시킵니다.

편두통진료지침 제2판. 대한두통학회. 2009; 환자와 가족을 위한 만성두통진료지침. 일본두통학회(편역: 주민경) 2016

- Common medications with FDA-approved indication

Name	Example dosage
Propranolol	80 - 240 mg
Divalproex sodium	250 - 1500 mg
Topiramate	25 - 150 mg

- 편두통진료지침 A 등급

- Sodium valproate, divalproex sodium, topiramate
- Propranolol
- Amitriptyline
- Flunarizine

- Level A in 2012 AAN guideline

- Sodium valproate, divalproex sodium, topiramate
- Propranolol, metoprolol, timolol

ICHD-3 beta: Tension-type headache

- Infrequent episodic tension-type headache (< 1 attack/month)
- Frequent episodic tension-type headache (1-14 attack/month)
- Chronic tension-type headache (≥ 15 attack/month)
- Probable tension-type headache

Appendix

Headache Classification Committee of the International Headache Society (IHS) Cephalgia. 2013

Infrequent episodic tension-type headache: ICHD-3 beta

- A At least 10 episodes of headache occurring on < 1 day per month on average (< 12 days per year) and fulfilling criteria B - D
- B Lasting from 30 minutes to 7 days
- C At least two of the following four characteristics:
 - ① bilateral location
 - ② pressing or tightening (non-pulsating) quality
 - ③ mild or moderate intensity
 - ④ not aggravated by routine physical activity such as walking or climbing stairs
- D Both of the following:
 - ① no nausea or vomiting
 - ② no more than one of photophobia or phonophobia
- E Not better accounted for by another ICHD-3 diagnosis