



DOES VESTIBULAR MIGRAINE EXIST?

Yes, it does



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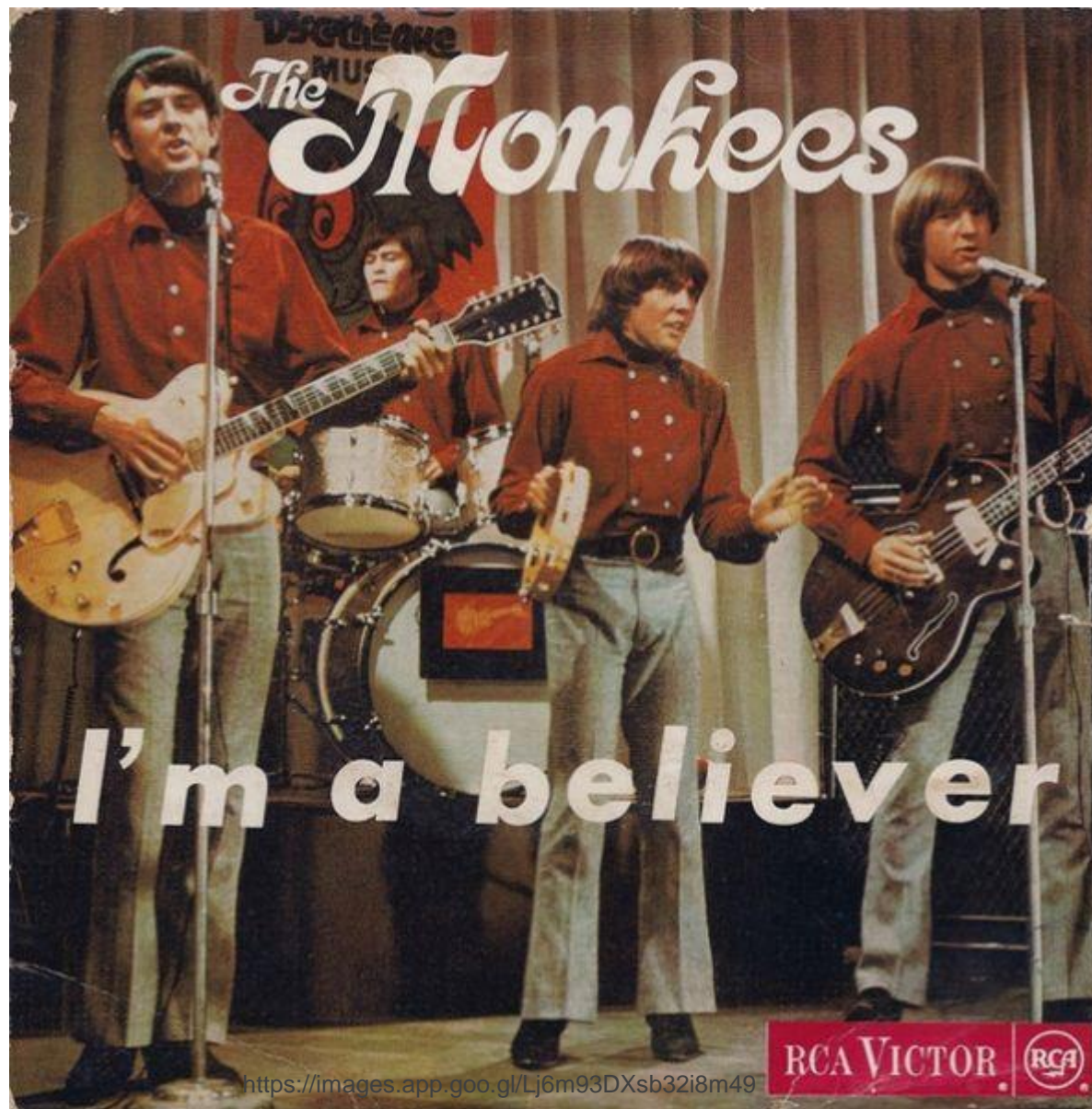




Disclosures

Advisory board:
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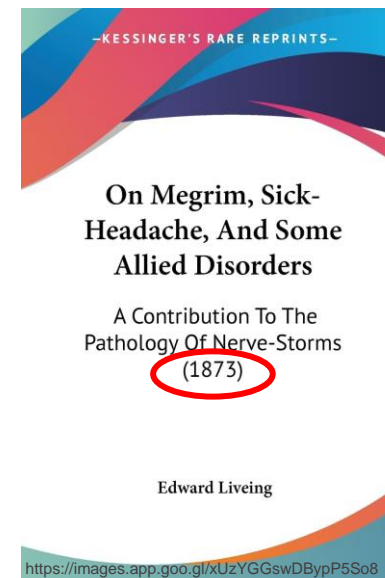
migraine + attacks of vertigo - recognized since the early days of neurology

Previously used terms:

migraine-associated vertigo/dizziness

migraine-related vestibulopathy

migrainous vertigo

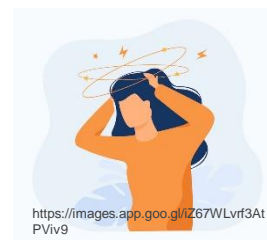


clinical features of vestibular migraine (VM) have been well elucidated in several large case series

Kayan A., Hood J.D.. Brain 1984
Cutrer F.M., Baloh R.W. Headache 1992
Dieterich M., Brandt T.. J Neurol 1999
Nuhauser H. et al. Neurology 2001
Vukovic V et al. Headache. 2007
Teggi R., et. al.. Headache 2018

since 2000 cca 90% of PubMed-listed articles

Not new, but newly recognized!





Spontaneous vertigo

internal: false sensation of self-motion

external: false sensation that the visual surround is spinning or flowing

positional: occurring after a change of head position

visually-induced: triggered by a complex or large moving visual stimulus

head motion-induced: occurring during head motion

Dizziness: sensation of disturbed spatial orientation

Intensity of vestibular symptoms

moderate - interfere with - but do not prohibit daily activities

severe - daily activities cannot be continued

Vertigo pendant lamp





First consensus on diagnostic criteria for VM

2012/2018



Bárány Society

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A1.6 Episodic syndromes that may be associated with migraine

A1.6.6 Vestibular migraine (ICHD 3)

- A. At least 5 episodes with vestibular symptoms of moderate or severe intensity, lasting 5 min to 72 hours
- B. Current or previous history of migraine with or without aura according to the ICHD-3



- D. Not better accounted for by another vestibular or ICHD diagnosis



Associated migraine symptoms may occur
before
during
after the vestibular symptom

1 symptom is sufficient during 1 episode

Different symptoms may occur during
different episodes

ICHD 3: sensitive?

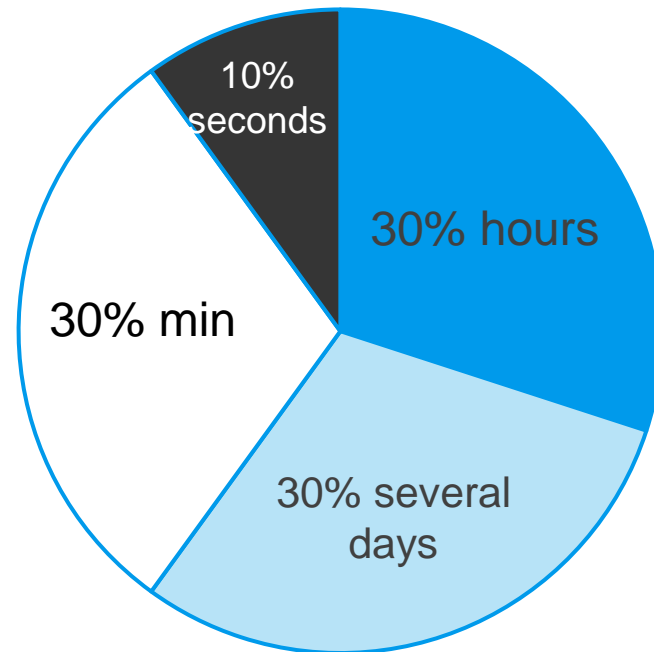
Mild / no headache

Atypical cases

33% isolated vertigo attacks



Duration of episodes: highly variable



- occur repeatedly
- episode duration: total period during which short attacks recur
- rarely > 72 hours

- patients < 4 weeks to fully recover from an episode



Vestibular migraine

Most common cause of spontaneous (non-positional) episodic vertigo

Lifetime prevalence in general adult population: 1 - 3%

- 25% adult migraine pts (EM+CM)
- < 60% CM fulfill VM criteria
- < 73 % CM + aura



DG: average **delay of 8.4 yrs** after the first onset of migraine

Any age:

- *benign paroxysmal vertigo* - one of the precursor sy of migraine
- *postmenopausal women* - migraine attacks can be replaced by isolated vertigo attacks

Multivariate analysis: age < 40
female sex (1.5-5)
anxiety
depression
prior head trauma



Vestibular migraine

Systematic review and meta-analysis (9) in migraine pts

	dizziness (%)	vertigo (%)
Prodromal phase:	9.0	3.3
headache phase:	6.7 - 59.6	6.4 - 44.7
rel. freq. (%) :	35.7 (95% CI = 13.7-61.5%)	33.9% (95% CI = 26.7-41.5%)





Clinical findings-tests

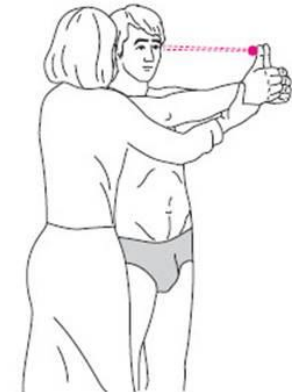
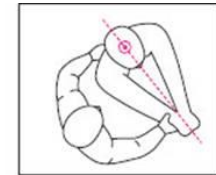
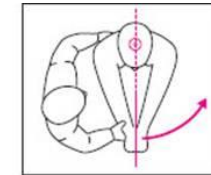
Inter ictal phase:

- 8.6 to 66 % pts - central vestibular ocular motor abnormalities
- gaze-induced /central positional nystagmus, saccadic pursuit, dysmetric or slow saccades

During acute attacks:

14 performed vestibular tests (Romberg's test, test for voluntary fixation suppression of the vestibular ocular reflex, test for static positional ny.....)

- 70% VM pathological ny: spontaneous / positional
- 34% M
- no differences in the distribution of central and peripheral vestibular signs



subclinical vestibular dysfunction is an integral part of migraine pathology in general (?)



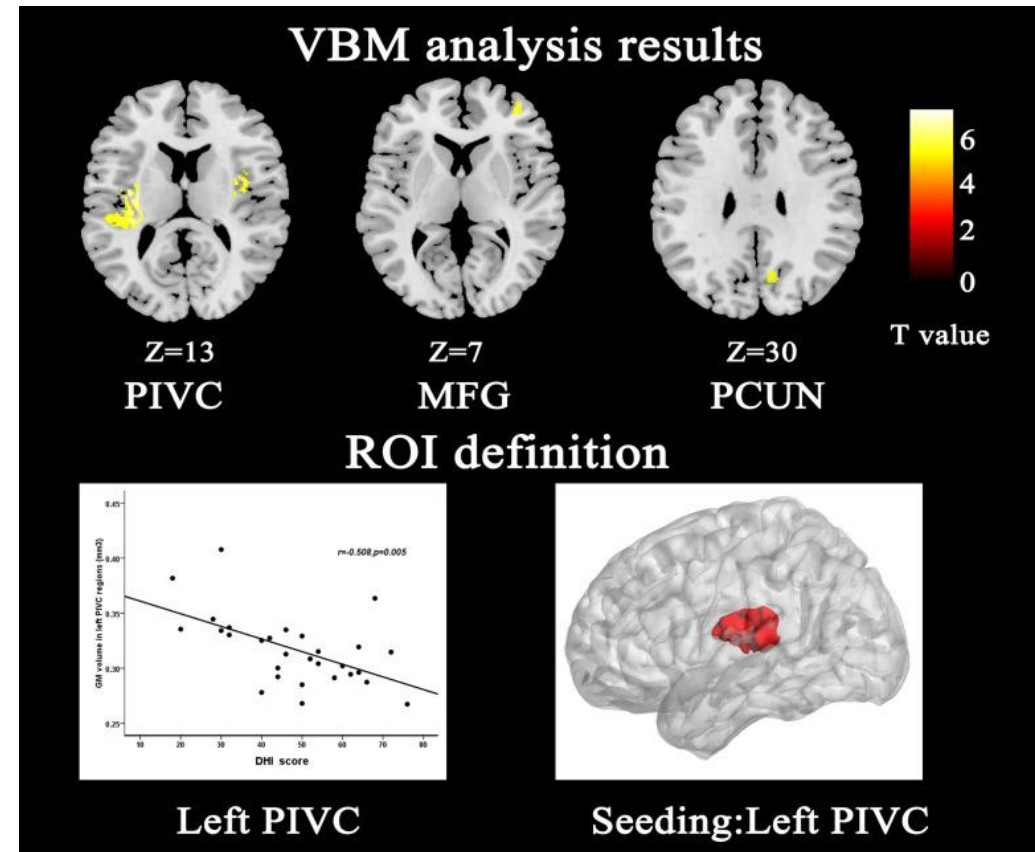
VBM study:

VM 20, Co 20

GMV ↓

prefrontal cortex
posterior insula-operculum regions
inferior parietal gyrus
supramarginal gyrus

f MRI studies: changes in
visual
cognitive
pain perception areas



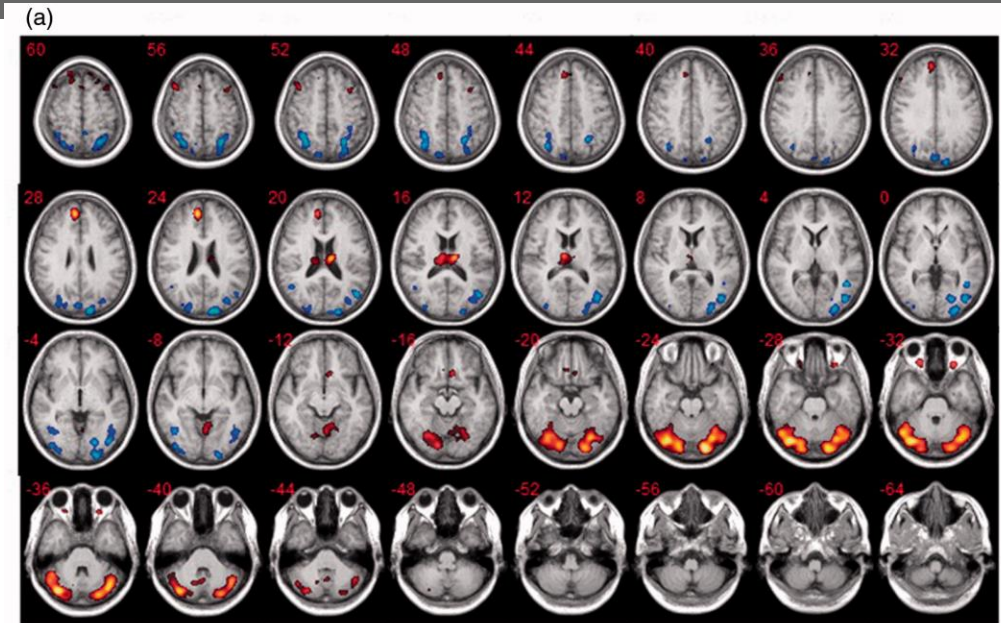
PET during and between attacks of VM

Metabolism during attacks:

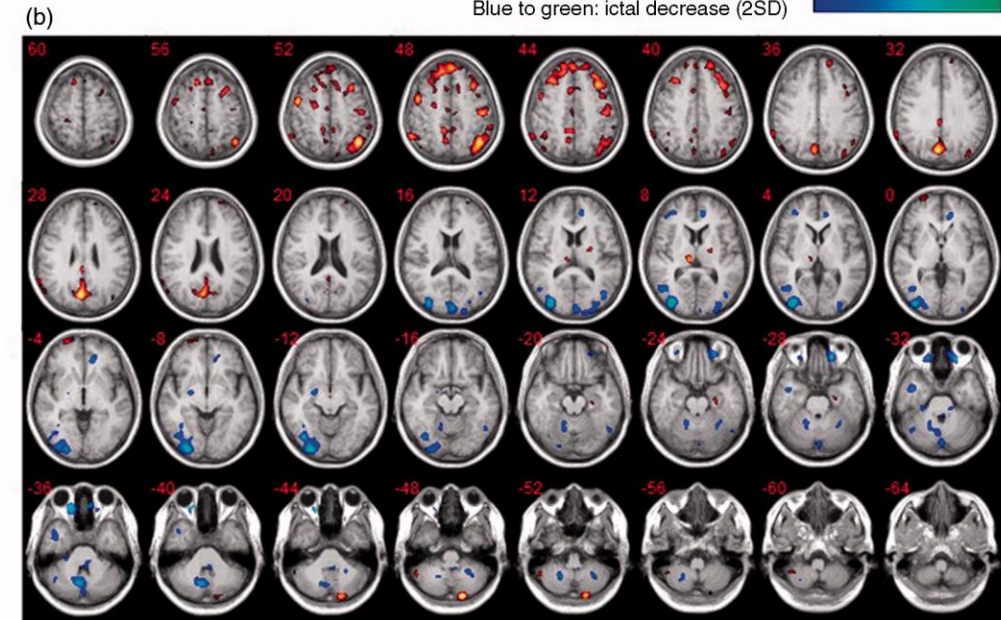
↑ temporo-parieto-insular areas and bilateral thalami:
activation of vestibulo-thalamo-cortical pathway

↓ occipital cortex

May represent reciprocal inhibition between the visual and vestibular systems?



Red to yellow: ictal increase (2SD)
Blue to green: ictal decrease (2SD)



Red to yellow: ictal increase (2SD)
Blue to green: ictal decrease (2SD)



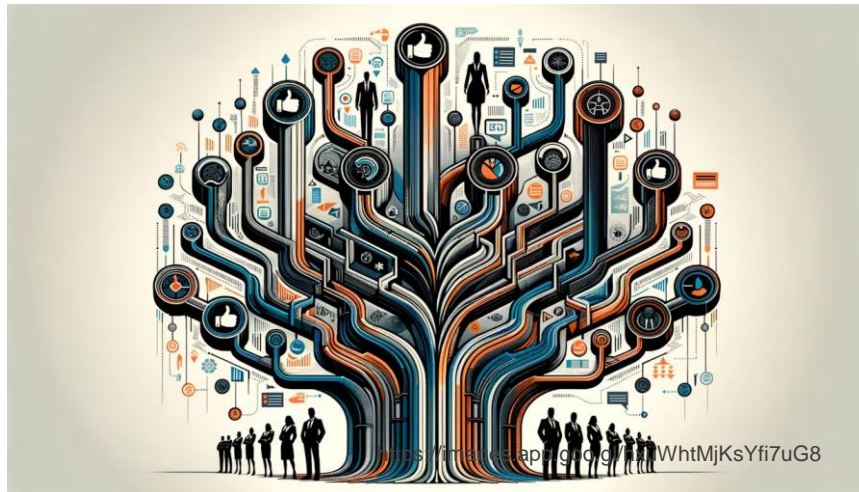
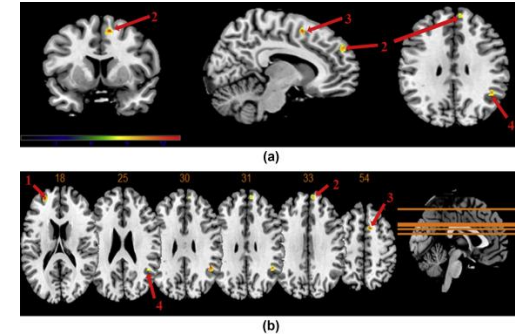
Voxel-based morphometric (VBM) neuroimaging studies of migraine- meta analysis

40 articles, 1616 migraine pts, 1681 Co

MO, MA, EM, CM,

VM: ↑ frontal and occipital regions, left thalamus

- not entirely consistent GM alterations



Migraine patients: GM alterations in brain regions associated with

Sensation

Affection

Cognition

Descending modulation aspects of pain

Many of these brain regions associated with migraine headache frequency and disease duration =
chronification = morphological changes



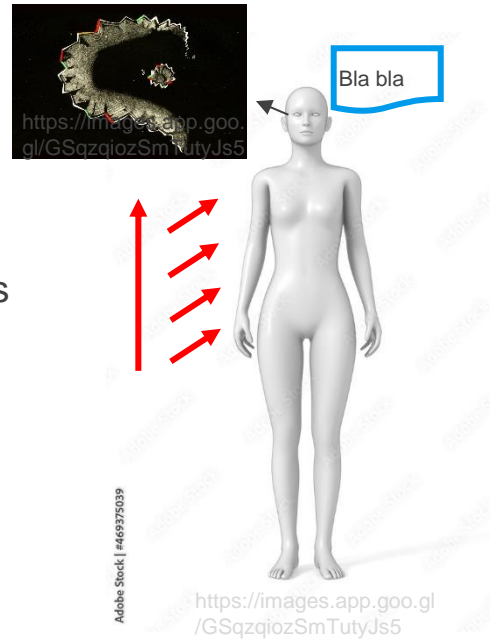


ICHD-3

Migraine aura (1.2)

Aura with both of the following: →

→ no motor, brainstem or retinal symptoms



Migraine with brainstem aura (1.2.2)

At least 2 reversible brainstem sy: - each lasting 5 - 60 min (in addition to visual, sensory or dysphasic aura symptoms)

- vertigo (60%), dysarthria, tinnitus, hypacusis, diplopia, ataxia not attributable to sensory deficit, decreased level of consciousness



Key to diagnosis VM - clinical diagnosis!

1) History of migraine

- attenuated headache: dg relies on migraine symptoms

VM underdiagnosed !

2) Temporal association: vestibular symptoms are present during a migraine attack lasting 5 minutes to 3 days

3) Exclusion of other causes (absence of objectively demonstrated interictal vestibulopathy)



<https://images.app.goo.gl/XtG6tjBAwtiBvW96>



A1.6.6 *Vestibular migraine*

1.2.2 *Migraine with brainstem aura*

ARE NOT SYNONYMOUS

individual pts may meet the dg criteria for both disorders



Differential diagnosis

BPPV

Ménière's disease

Vertebrobasilar TIA

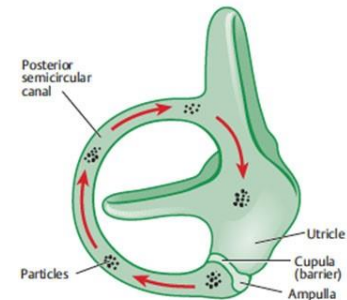
Vascular compression of the eighth nerve

Autoimmune inner ear disease

Schwannoma of the eighth nerve

Anxiety disorder

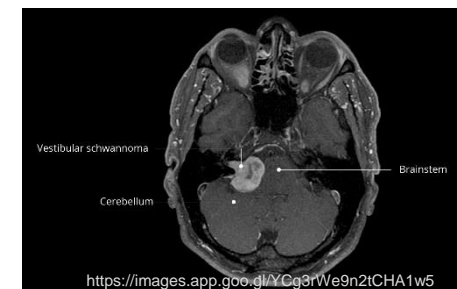
Functional neurological disorder



<https://images.app.goo.gl/uQGRnUdFivVgkwFZA>



<https://images.app.goo.gl/tivB3WcicyjLfs8C78>



<https://images.app.goo.gl/YCg3rWe9n2tCHA1w5>





Dizziness, vertigo are common in migraine: is it normal?

Yes, but **vestibular migraine** represents a **SEPARATE** disorder

- Epidemiological studies
- *Neuroimaging studies*



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Important:

No additional diagnostic tests

Therapy: as for migraine

- 95% benefit (no headache)





Unpleasant but benign



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Thank you for your attention

