



# Case 8. “Explosion in My Head is Waking Me Up”

# 8

Zuzana Belisova

## History

An 18-year-old right-handed female presented with complaints of episodes that she described as “explosion like sensation in her head”, occurring usually while falling asleep. She further described it as an extremely loud noise inside her head that wakes her up. It is sudden and only lasts seconds; but it is frightening, and she subsequently has difficulties falling back to sleep. She had no pain with this sensation and it entirely resolves once she is awake. There are no other associated symptoms. It occurs exclusively while asleep; at various frequencies, up to twice per week for the last 3 months. She stated she was under a lot of stress as she was in the last year of high school and applying for colleges. Due to her school demands, she was often sleep deprived. She estimated her total sleep time to be 6–7 h/night. She reported occasional sleep paralysis, but denied any snoring, bruxism, sleepwalking, sleep talking or symptoms suggestive of restless leg syndrome or periodic leg movement disorder. She had no difficulties initiating sleep. Her past medical history was significant for migraine with aura for which she was on amitriptyline 25 mg daily and sumatriptan 100 mg on as needed basis. The patient had no other medical problems.

## Examination

Vital signs were within normal limits. Body mass index (BMI) was 22.46 kg/m<sup>2</sup>. Mallampati score of 1. General physical as well as neurological examination was unremarkable.

---

Z. Belisova (✉)

Neurology, NYU Langone Medical Center, New York, NY, USA

e-mail: [Zuzana.Belisova@va.gov](mailto:Zuzana.Belisova@va.gov)

---

## Investigations

Prior to her sleep consultation, the patient already completed magnetic resonance imaging of the brain, which was normal. A 72-h electroencephalogram was also normal. In-laboratory polysomnography was unremarkable. The patient did not experience the sensation the night of the study.

---

## Diagnosis

Exploding head syndrome (EHS)

---

## Discussion

Exploding head syndrome is a rare sensory parasomnia of unknown etiology, also known as “episodic cranial sensory shocks”, during which patients experience sudden, brief perception of a very loud noise that is often described as a bomb like explosion or gunshot sound originating within the head [1]. Occasionally, simultaneous visual phenomenon described as instant flash of light is also reported. These sensations are typically occurring at sleep onset or during sleep transitions. They lead to abrupt arousal and disappear entirely when awake. Although there is no pain associated with these episodes, they can be quite terrifying. Patients may experience palpitations and, as in our patient, difficulties returning to sleep. Some consider EHS to be a sensory variant of hypnic jerk. On polysomnography EHS episodes usually originate from drowsiness, but it can occur during any sleep stage, including rapid eye movement sleep [2]. It can start at any age. As in our case, it can be triggered by sleep deprivation and stress. Abrupt withdrawal from benzodiazepines and selective serotonin reuptake inhibitors seems to also be a possible trigger. Diagnosis is made by the accurate history and testing is usually not required. Differential diagnosis includes seizures as well as primary and secondary headache disorders, since patient localize their symptoms inside the head. However, in headache disorders, headache persists upon awakening. Our patient suffered from migraine with aura, but the new symptoms she described were very distinct from her typical migraines and not followed by headache. A migraine aura without a headache is also unlikely given the attacks were very brief, lasting only seconds. The management typically consist of reassurance and education about the benign nature of this condition as patient are often concerned about having brain tumor or hemorrhage. Pharmacological treatment is rarely needed. Per anecdotal reports clonazepam, nifedipine, topiramate, and clomipramine were found to be effective. It is unclear if behavioral intervention or relaxation techniques can be helpful to prevent the attacks.

---

## References

1. Green MW. The exploding head syndrome. *Curr Pain Headache Rep.* 2001;5(3):279–80. <https://doi.org/10.1007/s11916-001-0043-9>. PMID: 11309216.
2. Pearce JM. Clinical features of the exploding head syndrome. *J Neurol Neurosurg Psychiatry.* 1989;52(7):907–10. <https://doi.org/10.1136/jnnp.52.7.907>. PMID: 2769286; PMCID: PMC1031943.