

GOOD SLEEP IS IMPORTANT FOR OPTIMAL MIGRAINE CARE: ON THE RELATIONSHIP BETWEEN SLEEP AND HEADACHE

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The function of our sun is to prevent us from dying, the function of our blood vessels is to prevent the blood from clotting and so there is sleep to prevent our body and mind to disintegrate. Lack of sleep causes changes in our metabolism and the formation of inflammatory kinines that cause pain and headache. When treating migraine without taking care of sleep is thus like carrying water to the sea.

What are the facts?

Sleep and headache are closely related. There is even a code in the ICHD-II: 4.5 for Hypnic Headache. Also the ICSD-3 describes headache related to sleep.

This confirms a long known relationship between sleep and headache.

The possible relationships between the two can be summarized as follows:

1. Good sleep prevents headache
2. Disturbed or lack of sleep causes headache
3. Headache interferes with sleep
4. Sleep changes headache: either headache reduction, or an increase of headache

Classic Hypnic headache and migraine that occurs in the night in 71% of the sufferers and cluster headache, all do suggest a strong relationship between sleep and headache.

Most migraineurs have their attacks starting in the night or early morning and experience the end of an attack after a good night sleep. We also know that OSAS (obstructive apnea syndrome) and lack of sleep are well known causes of headache.

However a possible pathophysiological mechanism and the mode of action of involved processes occurring during sleep resulting in headache are not yet well established.

Most likely the interference with normal sleep triggers several mechanisms that result in the occurrence of headache.

One possible mechanism is the night-time cleaning of the brain by CSF. During sleep the cerebrospinal fluid diffuses from the ventricles to the outside surface, taking with it all toxic waste to the outside and subsequently through the blood, the liver to the intestine.

On waking this cleaning process abruptly stops. Lack of sleep and multiple awakenings thus result in hampering this cleaning process, leaving toxic substances in the brain tissue. This results in non-refreshed sleep, a change in mood, irritability and lack of concentration. These toxic substances could trigger headache.

Another explanation is the formation of TNF- α and Interleukines IL-4 and IL-6, which are causing inflammatory responses. Inflammatory proteins can also trigger migraine and headache.

Furthermore we know from the observation of OSAS that they suffer from headache in the morning, for which, apart from above mentioned causes also changing oxygen levels could be responsible.

Moreover close observation of muscle tone during different sleep stages, using polysomnographic sleep studies demonstrate in affected patients the role of the arousal system, which during REM sleep interferes with the normal muscle atonia, which muscle tension is known to induce headache.

Last but not least the role of the hypothalamus in sleep and wake and its possible functional relationship with pain is a thought to form a final common pathway resulting in headache after bad sleep.

Most likely the cause of headache and migraine during and after sleep will be an individual mix of abovementioned 5 factors. Headache and migraine will occur even after just one night of bad sleep.

Conclusion: there is abundant evidence for the fact that good sleep is important for an optimal migraine care