

Sleep apnea and sleep fragmentation contribute to brain aging

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- What is sleep apnea ?

Sleep apnea is a frequent disturbance with prevalence of 3-4% in adult man (Young, 1993, Shepertycky, 2005), and is 2-9 times more prevalent in men than women (Bozkurt 2008).

The most prominent Symptoms of Sleep Apnoea are intermittent breaks of breathing in the night (Apnoea) which causes general hypoxia and daily sleepiness.

- Risk factors and Consequences

Risk factors for Sleep Apnea are vascular Hypertonia, Smoking, Obesitas, Diabetes mellitus and age (Guilleminault 1984).

The Consequences of Sleep apnea are cardiovascular diseases including Heart Infarctation and Brain Apoplexy, as well as Depression and cognitive decline.

- The Diagnosis

The Diagnosis of Sleep Apnea can be made by Polygraphy and/or Polysomnography recording in Sleep labor according to the following criteria: more than 10 Apneas in one hour of sleep , each with duration longer than 10 seconds.

- Review of contemporary research

The reason for cognitive decline in Patients with Sleep Apnea is the intermittent Hypoxia which causes disturbances of memory, attention and learning (Wolkove 2007, Spira 2008, Ancoli-Israel 1991, Cynthia 2002).

-Review of the research with this focus in the world.

According to actual studies, Hypoxia causes cellular damage of left hippocampus area which is one of the key brain areas for the cognition and memory (Torelli 2011, Paul 2002, Mary 2003).

But not only Hypoxia as result of apneas can induce cognitive decline, also the fragmentation of the sleep by frequent awakening caused by intermittent apneas impairs the consolidation of the memory especially in the REM (Rapid eye movement) sleep stage of the sleep.

- Significant factors for brain aging

Sleep apnea and sleep fragmentation can be significant factors for brain aging causing severe disturbances of the cognition through hypoxia of the brain and Hyperarousals (stress).

- Sleep apnea and Sleep fragmentation in elderly correlates with cognitive decline both in the fluid and crystal intelligence. Those Elderly having Sleep apnea and frequent sleep fragmentation are on risk for cognitive decline. Healthy elderly with good sleep have good cognitive reserve and delayed brain aging.

- Early Prevention of Sleep Apnea can probably protect from early brain aging.

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- Thank you !