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Patología del Sueño: de la Neurobiología a las manifestaciones sistémicas

Sleep disorders: from Neurobiology to Systemic Consequences

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ABSTRACT

Sueño y memoria

Sleep and memory

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One of the main functions of sleep may be to strengthen and store newly acquired memories in the brain. In an active process of system consolidation, sleep stabilizes and reorganizes new memory representations and integrates them into the network of pre-existing long-term memories. These processes are assumed to rely on covert reactivations of previously acquired memories during sleep, which can also be externally triggered by associated memory cues such as odors. The application of odor cues during slow wave sleep leads to a distinct memory enhancement and an immediate stabilization of new memories, whereas similar odor reactivations during the wake state destabilize memories. Such odor reactivations during a short sleep episode can accelerate sleep-dependent consolidation processes, leading to memory enhancements that are normally seen only after longer sleep periods.

Contrary to spontaneous sleep-dependent reactivation/consolidation, odor reactivation effects seem to be independent of cholinergic tone during slow wave sleep. Apart from a strengthening and stabilization of new memories, sleep also reorganizes and restructures memory representations. Such reorganizations during sleep can facilitate the abstraction of gist knowledge as well as the emergence of explicit knowledge. However, these abstraction and generalization processes can also lead to the generation of memory distortions and false memories. Furthermore, recent research provides evidence that consolidation and reactivation processes during sleep target selectively those memories that are relevant for the future, including prospective memories. Sleep selectively benefits memories that are needed for future behavior, thereby facilitating the successful execution of plans and intentions.

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