

REM SLEEP WITHOUT ATONIA – FROM CATS TO HUMANS

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REM SLEEP WITHOUT ATONIA – REM SLEEP BEHAVIOR DISORDER (RBD)

Animal Models of RBD.

In experiments conducted by Dr. Michel Jouvet in 1965, bilateral lesions of pontine regions adjacent to the locus coeruleus in cats caused absence of the expected atonia associated with REM sleep, allowing the cats to demonstrate prominent motor behaviors during REM sleep (oneiric behaviors) (18). The cat model has recently been extended to the rat (42).

Loss of REM-atonía is alone insufficient to generate RBD. Presumably, there must also be disinhibition of motor pattern generators in the mesencephalic locomotor region to result in over-excitation of phasic motor activity with behavioral release during REM (34). Recent studies in dogs by Lai and Siegel have revealed a colocalization of the atonia and locomotor systems of REM sleep in the pons, providing an anatomic basis for the simultaneous dysregulation of these two systems in RBD (22). Ongoing animal experiments in a number of basic science laboratories studying the state-dependent nature of motor control continue to produce interesting and important data. Interestingly, spontaneous cases have occurred in dogs and cats (16).

Human RBD.

In the 1960s, scattered reports of dream-enacting behaviors by European, Japanese, and American investigators involving humans appeared; the polygraphic and behavioral condition was sometimes referred to as "stage 1-REM with tonic electromyogram". RBD was formally recognized and named in the mid-1980s, and it was incorporated within the International Classification of Sleep Disorders in 1990 (43, 50, 60).

Pathophysiology.

Wakefulness, REM sleep, and NREM sleep are associated with a number of physiologic variables that usually occur in concert to produce a fully declared state. REM sleep contains two types of variables: tonic (occurring throughout the REM period),

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