Neurobiological Basis of Consciousness

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Abstract:

The cerebral cortex is the most complex region of the brain. It is also the center of the higher neural functions, such as visual discrimination, speech, emotion, the ability of making decision, understanding language etc. Consciousness integrates all those functions. Consciousness is thus the highest integrative function of the brain. Someone who is conscious is awake, capable of responding appropriately to both internal and external stimuli. To state one individual’s consciousness we should include many if not all of the integrative functions of the brain. In this respect the psychological responses and/or the manner with which an individual responds to a given stimulus are not considered. Psychological and/or behavioral evaluations are usually not included in the standard clinical evaluation. A number of psychological disorders, however, are known to resemble disturbed consciousness, e.g. catatonic stupor, conversion reaction, mutism, etc. Sleeping, especially a deep one may confuse or complicate the examination of consciousness. It must be remembered, however, that sleeping is an active physiological phenomenon, that follows a circadian rhythm. The neurobiological basis of sleeping differs to that of disturbed consciousness. A lesion made on the sleep center results in insomnia, whereas stimulation of it results in sleeping. The neurobiological basis of consciousness, including the neuronal circuitry, the metabolism and the disturbances of it that results in disturbance of consciousness will be the scope of this text.

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