Brain Connectivity in Disorders of Consciousness

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During the last decade, functional neuroimaging of disorders of consciousness (i.e., coma, vegetative state and minimally conscious state) allowed significant advances in the understanding of physiopathology and in the diagnosis of these clinical conditions. While these methods have improved the care of the patients, they also show how difficult it is to distinguish different states of consciousness. Theories of consciousness have evolved and have reframed disorders of consciousness as being likely a disconnection syndrome. Brain connectivity can now be measured with a large range of methods, using for example functional MRI, TMS or electrophysiological techniques. However brain connectivity measures have seldom been used in disorders of consciousness. This talk will examine results of connectivity studies in disorders of consciousness. Results obtained in other unconscious states (i.e., anesthesia and deep sleep) will also be reviewed.