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Thalamic connectivity in patients with sleep disordered breathing after stroke

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Background: Thalamus-cortical connections are essential for normal sleep. Stroke can alter this circuit affecting also breathing during sleep.

Aim: To compare the functional connectivity of VPL-TN in stroke patients affected by SDB(S-SDB) as respect to stroke cases not affected (S) and to healthy controls (HC).

Methods: Stroke patients were submitted to clinical, neuroradiological and full nocturnal polysomnography (PSG) monitoring. Conventional and functional MR exams during resting state (rs-fMRI) were performed in a single session (3 Tesla Siemens-Verio) in 12 stroke patients and in 11HCs. Statistical analysis of rs-fMRI connectivity was performed using the FMRIB software package. A seed analysis approach was performed using VPL-TN as region of interest. Significant difference in rs-fMRI connectivity among the groups (S-SDB, S, HC) was set at $p < 0.05$.

Results: Six stroke patients out of 12 had a SDB. No differences were found between S and S-SDB groups as to risk profile and PSG data. rs-fMRI connectivity analysis indicated that precuneus (PreCu) and brainstem (BS) were significantly more connected with VPL-TN in S-SDB as respect to HC. When comparing S-SDB to S patients, a further significantly higher connectivity with anterior cingulate cortex (ACC) was revealed.

Conclusions: A higher connectivity between VPL-TN and regions involved also in modulating chemosensitivity (AC and BS) or alertness (PreCu) was observed during wake in S-SDB as respect to S patients. These preliminary data support the hypothesis that stroke may cause an SDB as the consequence of an altered sleep-wake circuit.

Biography

Sacchetti Maria L has graduated and completed her Specialization in Neurology from Sapienza University of Rome-Italy. She has published in the research field of acute stroke more than 100 original articles, abstracts, congress presentations, books' chapters and book and has been serving as an Editorial Board Member of repute. At present she is involved and she is publishing in studies on the Pathophysiology of sleep apnea at the long-term of stroke.

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