Elucidating dissociation during hypnosis without target suggestion. A rs-fMRI study

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Résumé

Background: Theoretically, the nature of hypnosis as an altered state of consciousness or trance state should imply specific patterns of brain activity exclusively attributable to dissociation. Decrease activation in the anterior default mode network (DMN) as well as increased activation in prefrontal attentional systems have been reported. However, it remains uncertain whether those results are exclusively attributable to the hypnotic state per se or to the target suggestions used as control conditions.

Methods: 23 healthy right handed volunteers (28.3 y.o, 12 females) participated in the rs-fMRI study, all were rated as mid to high hypnotic suggestible (rated 9 over 12 items of the Stanford Hypnotic Suggestibility Scale Form C). Two 6 min, resting state fMRI series with with 4x4x4 mm3 resolution and anatomical images, were acquired using a G.E. 3.0 T scanner. The sample was counterbalanced; one of the resting state acquisitions the subjects were in hypnotic state and the other in alert state and vice versa. Functional data were corrected using ART (Artifact detection toolbox) followed by a functional connectivity analysis using Conn. First-level analysis for each subject condition was estimated doing seed-to-voxel analyses. Group results were estimated with seed-to-voxel in a second-level analyses using seeds for the default mode (DMN), executive control (ECN) and the salience (SaN) networks.

Results: Hypnotic state contrasted with alert state in the DMN showed differences in the right lingual gyrus, at the left Brodmann Area 22, at the posterior cingulate gyrus and the superior frontal gyrus. ECN presented differences at the right fusiform gyrus, the cingulate gyrus and the left inferior parietal lobe. And SaN differences were located at the left insula, the right superior temporal gyrus, the anterior cingulum and the middle frontal gyrus.

Conclusions: The DMN resulted positively augmented inferring an overload of its updating self-awareness resting state functions. The ECN showed only negative BOLD signal differences evidencing a clear executive control inhibition. The SaN appeared significantly connected, presumably, to maintain the inhibition of the ECN and the overload on the DMN. Such interpretation illustrates a coherent brain connectivity dynamics of the theoretical functional dissociation which defines the nature of hypnosis per se.

Objectifs

To elucidate dissociation of the hypnotic state per se.

Exploring functional connectivity of the default mode, central executive, and salience networks.

Liste des mots clés :

- Charcot
- conscience
- neurosciences

template: reference