**Default Mode Network in TLE patients with and without hippocampal atrophy**

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**Introduction:** Temporal Lobe Epilepsy (TLE) has been traditionally associated with memory impairment, however, it is also notable that TLE patients frequently present more extensive cognitive damages not easily explained by temporal seizures focus (1). The Default Mode Network (DMN) has a controversial recruitment of mesial structures as hippocampus. Regardless of controversies, several evidences indicate impairment of DMN in TLE (2). Our main hypothesis is that DMN will be severely disrupted in patients with atrophy, followed by a more coherent network in non lesional group.

**Materials and Methods:** We included 122 TLE patients (age range 21-70, 78 female, mean age 46) divided into right hippocampal atrophy (HA) (RTLE, 42 subjects) and left HA (LTLE, 49 subjects) temporal lobe epilepsy and MR-Neg (31 patients without HA). Also, 69 healthy controls (age range 23-66, 44 female, mean age 44) were enrolled. All subjects included are literate Brazilian Portuguese native speakers and were submitted to structural and functional brain imaging.

**Results:**

|  |  |  |
| --- | --- | --- |
|  | **Ipsilateral** | **Contralateral** |
| **RTLE>CONT** | Frontal Lobe  | Frontal Lobe + Temporal Lobe + Parietal Lobe + Cerebellum |
| **RTLE<CONT** | Temporal Lobe + Caudate + Hippocampus  | Temporal Lobe + Limbic Lobe  |
| **LTLE>CONT** | Frontal Lobe | Parietal Lobe + Pallidum  |
| **LTLE<CONT** | Temporal Lobe + Caudate + Hippocampus  | Frontal Lobe +Temporal Lobe +Insula  |
|  | **Right hemisphere** | **Left hemisphere** |
| **MR-Neg>CONT** | Frontal Lobe + Basal Ganglia + Cerebellum | Frontal Lobe + Temporal Lobe + Parietal Lobe + Basal Ganglia + Occipital |
| **MR-Neg<CONT** | Temporal lobe + Caudate + Hippocampus | --No activations-- |

Table 1: comparison between patients (RTLE, LTLE and MR-Neg) and controls. Similar patterns were highlighted with same colors (blue and red).

**Discussion:** Relating to patients with HA, the results shown may indicate that the presence or localization of atrophy is little or non-determinant for the ipsilateral hemisphere’s DMN connectivity. Our results indicate some similarities between MR-Neg and RTLE groups connectivity, but the non-lesion group presented more connections in both hemispheres when compared to others groups.

**Conclusion:** Our data suggest that TLE disrupts normal pattern of DMN, as we observed reduction of temporal lobe recruitment in patients, especially in LTLE. The absence of HA (MR-Neg) seems to yield a less prominent disruption in functional connectivity. We can also relate the participation of temporal lobe in DMN.

**References:** (1) Cataldi M et al., Epilepsia. 2013;54(12):2048-59. (2) Raichle ME et al., 2001;98(2):676-82.