ALZHEIMER DISEASE

Heightened emotional contagion in Alzheimer disease

Researchers at the University of California, San Francisco have recently identified specific brain regions that are associated with high levels of emotional contagion—a phenomenon whereby individuals experience anxiety and discomfort when exposed to the negative emotions of others—in patients with Alzheimer disease (AD) or mild cognitive impairment (MCI).

Emotional symptoms, such as depression and anxiety, are found in up to 75% of patients with AD, and are present in the prodromal stage. Progressive hippocampal degeneration and loss of cognitive functions are also well-characterized in AD, and are associated with deterioration of the default mode network that underlies memory processing. “A better understanding of the emotional alterations that occur in AD may help to improve our understanding of the emotional phenotype and clinical course of this disease,” explains Virginia Sturm, who led the new study.

Sturm and colleagues determined levels of emotional contagion by using informant ratings on the Personal Distress subscale of the Interpersonal Reactivity Index. Structural MRI with voxel-based morphometry revealed atrophy of the hippocampus and temporal lobes that was associated with heightened emotional contagion, but not depression, in patients with AD.

The regions identified are important for emotional activity: as Sturm suggests, “although atrophy in these regions may interfere with socioemotional stimulus detection, [leading] to heightened anxiety, patients maintain their social connections by relying on heightened affect-sharing mechanisms such as emotional contagion.” Early degeneration of the hippocampus and temporal lobes in MCI and AD might occur while connectivity in the salience network, which supports detection of emotional stimuli and emotional responses, is preserved.

Emotional contagion is an evolutionarily conserved mechanism, and could be a useful tool with which to investigate behavioural changes in animal models of AD. The authors plan to follow up their research with laboratory-based tests to examine the contexts in which patients become more sensitive to the emotions of others. As Sturm points out, “the emotional states of caregivers and clinicians may powerfully influence the mood and behaviour of patients.”

Ellen Bible

MRI and voxel-based morphometry indicate atrophy in the temporal lobes associated with higher emotional contagion. Image courtesy of V. E. Sturm.

Original article Sturm, V. E. *et al.* Heightened emotional contagion in mild cognitive impairment and Alzheimer's disease is associated with temporal lobe degeneration. *Proc. Natl Acad. Sci. USA* doi:10.1073/pnas.1301119110