

Decreases in blood perfusion of the anterior cingulate gyri in Anorexia Nervosa Restricters assessed by SPECT image analysis

ABSTRACT

The results indicate that some localized functions of the ACC are may be relevant to the psychopathological features of AN-R.

INTRODUCTION

Anorexia Nervosa (AN) is a chronic, aggressive, eating disorder with a high rate of morbidity and mortality. There is a growing interest in the etiology of AN, and the etiology of this disorder is supported by compelling evidence of increased brain volume in AN patients. The neuropathology of AN is characterised by a number of abnormalities, including a decreased volume of the anterior cingulate cortex (ACC), an increase in the size of the posterior cingulate cortex (PCC), and decreased grey matter in the ACC, PCC and temporal cortex. The anterior cingulate cortex (ACC) is the area in the brain that is involved in processing sensory input from the right hemisphere, and the posterior cingulate cortex (PCC) is the area in the brain that is involved in processing sensory input from the left hemisphere. Several studies have revealed significant and reliable variations between AN-R and ANSBP. Patients with restrictive mental health conditions are identified by interrelated psychological features, such as body disfigurement, misperception of internal sensations, and an underlying feeling of ineffectiveness, or having a weight phobia due to the desire to maintain subpubertal body mass and avoid weight gain. Non-invasive techniques have fueled the belief that modern neurobiological approaches can be used to understand complex frontal cortical function. A PET study has described relative regional hypometabolism in frontally and parietal area in patients with anorexia nervosa. Another study using functional MRI studies showed that visual stimuli of high calorie foods increased regional cerebral blood flow (rCBF) in ACC, insula and paralimbic area of patients with anorexia nervosa. The ROI method of SPECT examinations poses difficulties in selecting ROIs and analyzing large areas of the human brain. In contrast, the statistic parametric mapping (SPM) 96 method is more effective for assessing brain functions in large brain areas, and can be as informative as PET or fMRI. The SPM 96 method is an objective and automated approach to studying the changes in regional cerebral blood flow (rCBF) that occur in focal regions. We apply this technique to SPECT image data sets, indicating the regional abnormality in rRBCBF in more detail.

CONCLUSION

The reduction in the area of frontal lobe regions that contain the ACC, which is responsible for regulating various human brain functions such as refinement of signals from organs and cognitive process of selection after somatosensory stimuli, has been demonstrated through SPM analysis. This suggests that disturbed higher brain function may play a crucial role in producing clinical symptoms in patients with restrictive anorexia nervosa.