Affective responsiveness network in Anorexia and Bulimia: two sides of the same coin?

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Introduction

Eating Disorders (ED) are characterized by a variety of emotional deficits, also including dysfunctional empathy (Abbate Daga et al., 2013; Hay et al., 2012). Regarding self-reported empathy, findings in patients with anorexia nervosa (AN) are inconsistent and are completely lacking in bulimia nervosa (BN). Moreover, the neurobiological correlates of empathy behavior have not been investigated in ED. The current study applied a well-validated neuroimaging paradigm tapping affective responsiveness as a proxy for emotional empathy in female patients suffering from first-episode AN or BN and matched controls.

Materials and methods

25 patients with Anorexia Nervosa, 19 patients with Bulimia Nervosa and 19 healthy subjects were enrolled from the outpatients service of the ED Pilot Centre of the Department of Neuroscience, AOU Città della Salute e della Sciencia di Torino, Italy. Clinical, psychopathological, personological and eating assessment included EDI-2, TCI, BDI, TAS-20, EQ. Cognitive abilities assessment included: Digit, Corsi, Stoop, Trial Making Test, Rey Auditory Verbal Learning Test, Wisconsin Card Sorting test e WAIS. All the subjects had a FMRI session (Phillips Achieva 1.5 T scanner) with a well-validated neuroimaging paradigm tapping affective responsiveness as a proxy for emotional empathy [Derntl et al., 2008]. Statistical analyses were performed using SPSS 20.0 (SPSS Inc.) and level of significance was p<0.05. Behavioral and scales data were compared using one-way ANOVAs with groups (AN, BN, CN) considered as between-subjects factors. Functional data were preprocessed using SPM8 (http://www.fil.ion.ucl.ac.uk/spm) on MATLAB 7.5 environment.

Results

Patients differed from healthy subjects in psychopathological, personological, alexythemic and eating index (EDI-2, SCL-90, TAS-20 and TCI) [FIG. 1]. While behavioral performance was unimpaired in patients, groups differed in neural activation, including amygdala activation: while AN showed left-lateralized hyperactivation (compared to other groups), BN demonstrated right-lateralized hyperactivation (compared to both groups). Interestingly, no group differences emerged for amygdala volume and functional connectivity of the amygdala only showed subtle differences between AN and controls [FIG. 2-3-4].

Fig 2. Neurofunctional analysis and differences between groups (in red hemispheric disbalance).

Fig 3. Empathy network in patients (AN on the right, BN on the left) and healthy subjects (in the middle).

Fig 1. Psychopathological, personological, eating and alexythemic index of the sample

Conclusion

Our results thus indicate that lateralization might be a specific marker for psychopathology of ED. This might also represent a vulnerability marker as we have only investigated first-episode patients without medication or psychotherapeutic interventions. ED may have a variety of faces that are very different, but also highly connected. The link between them is fully exploited when the different compensation strategies fail in tasks where hemispheric integration is necessary (Hallam et al., 2014).

Bibliografia