Anorexia visible with brain scans

Sophisticated scans have revealed the eating disorder anorexia is linked to specific patterns of brain activity.

Even young women recovering from anorexia who have maintained a healthy weight for over a year had vastly different brain activity patterns. The findings in the American Journal of Psychiatry point to a brain region linked to anxiety and perfectionism.

The University of Pittsburgh authors said the understanding might help with the development of new treatments. The work could also explain why people with anorexia nervosa are able to deny themselves food.

It is estimated that one in 100 women between the ages of 15 and 30 has anorexia. The main symptom is the relentless pursuit of thinness through self-starvation. This may become so extreme that it is life-threatening. Dr Walter Kaye and his team studied 13 women who were recovering from anorexia and 13 healthy women.

The women were asked to play a computer quiz where correct guesses were rewarded financially. At the same time, the researchers observed what was going on inside the mind using a type of brain scan called functional magnetic resonance imaging.

Worriers and perfectionists

During the game, brain regions lit up in different ways for the two groups of women.

While the brain region for emotional responses - the anterior ventral striatum - showed strong differences for winning and losing the game in the healthy women, women with a past history of anorexia showed little difference between winning and losing. Dr Kaye said that, in anorexia, this might impact on food enjoyment. "For anorexics, then, perhaps it is difficult to appreciate immediate pleasure if it does not feel much different from a negative experience," said Dr Kaye.

Another brain area, called the caudate, which is involved in linking actions to outcome and planning, was far more active in the women with a history of anorexia compared to the control group. The anorexia group tended to have exaggerated and obsessive worry about the consequences of their behaviours, looked for rules where there were none and were overly concerned about making mistakes, said Dr Kaye.

He said: "There are some positive aspects to this kind of temperament. Paying attention to detail and making sure things are done as correctly as possible are constructive traits in careers such as medicine or engineering." But carried to extremes, such obsessive thinking can be harmful, he said.

Dr Ian Frampton of Exeter University, who has himself been conducting MRI studies in patients with anorexia, said: "This shows how the brain might be important in eating disorders. "There may be networks in the brain that make someone vulnerable to developing an eating disorder."

Establishing a neurobiological cause might help remove some of the blame and stigma that surrounds conditions like anorexia, he said.

A spokeswoman from the eating disorders association "beat" said: "This demonstrates how complex eating disorders are and underlines that they should be treated as a serious mental illness and not a silly diet gone wrong."

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