

# Improving anxiety treatment through the help of brain imaging: A potential future treatment strategy

8 May 2008

Wouldn't it be nice if our doctors could predict accurately whether we would respond to a particular medication? This question is important because research studies provide information about how groups of patients tend to respond to treatments, but inevitably, differences among groups of patients with the same diagnosis mean that findings about groups of patients may not apply to individuals from those groups.

"Personalized medicine" is the effort to match particular treatments to particular patients on the basis of genetic information or other biological markers. In a new article published in *Biological Psychiatry* on May 1st, researchers report their findings on the potential use of functional magnetic resonance imaging (fMRI) to match treatments for patients with generalized anxiety disorder (GAD).

Whalen and colleagues recruited subjects diagnosed with GAD who underwent brain scans both before and after treatment with venlafaxine, an antidepressant that has been shown to be effective in treating anxiety.

During the fMRI scans, the participants' responses to viewing pictures of fearful facial expressions were measured. Dr. Paul Whalen, corresponding author for this article, explains, "We focused our study on a regulatory circuit in the brain involving the amygdala, an area that serves to detect the presence of threatening information, and the prefrontal cortex, an area that functions to control these threat responses when they are exaggerated or unnecessary."

The researchers found that approximately two thirds of the patients experienced relief from their anxiety symptoms after treatment, and of those who improved, some responded better than others. As hypothesized, the fMRI data predicted who

would do well on the drug and who would not. According to Dr. Whalen, "subjects who showed high prefrontal cortex activation together with low amygdala activation in response to the fearful faces reported a significant decrease in their anxiety symptoms, while those showing the reverse brain activation pattern (i.e., high amygdala, low prefrontal) did not."

John H. Krystal, M.D., Editor of Biological Psychiatry and affiliated with both Yale University School of Medicine and the VA Connecticut Healthcare System, comments on this study, "There is a tremendous need for biomarkers of treatment response. The paper by Whalen et al. joins a small group of preliminary studies suggesting that fMRI research might contribute to the effort to develop treatment biomarkers." He cautions, though, that "while these are exciting data, we have yet to see this type of biomarker receive sufficient rigorous validation to be useful for matching patients to existing treatments or to test new potential treatment mechanisms."

Dr. Whalen acknowledges the preliminary nature of their findings, noting that "future studies will be needed to determine the exact impact that brain imaging might have in helping physicians prescribe anti-anxiety medications," but he concludes that "while a brain scan would be a relatively expensive addition to the prescribing procedure, this cost pales in comparison to the amount of time, money and angst invested by patients who go through multiple medications and dosages looking for relief."

Source: Elsevier

APA citation: Improving anxiety treatment through the help of brain imaging: A potential future treatment strategy (2008, May 8) retrieved 9 December 2021 from <https://medicalxpress.com/news/2008-05-anxiety-treatment-brain-imaging-potential.html>

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