Brain responses to others' expressions of pain in chronic pain patients

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Abstract

It is well-known that facial expression is one of the most relevant components of pain and that viewing others' emotional faces may influence our own affective mood. Nevertheless, little is known about physiological responses to pain and other emotional faces in chronic pain patients. Event-related potentials (ERPs) and brain oscillations, corrugator activity, and heart rate were recorded in 20 patients with fibromyalgia and 20 pain-free controls, while they were passively viewing pain, anger, happy and neutral faces. In addition, ratings of valence and arousal elicited by the faces were obtained. Pain and anger faces elicited greater unpleasantness, arousal and corrugator activity than happy and neutral faces in all participants. Results also indicated that brain and heart rate responses to pain, anger and happy faces were different in fibromyalgia patients and pain-free controls. Thus, fibromyalgia patients displayed more enhanced ERP amplitudes, larger theta power and more reduced alpha power to pain and anger faces, as well as more prominent cardiac deceleration to anger faces than to either happy or neutral faces. Pain-free controls showed larger ERP amplitudes to happy faces than to negative faces. These findings indicate that information processing in fibromyalgia patients was characterized by enhanced defensive reactions and increased mobilization of attention resources to pain and anger faces, as well as by reduced allocation of attention to happy faces. Furthermore, our results suggest that pain symptoms in fibromyalgia would be worsened by a greater vulnerability to negative mood and an inappropriate response to positive emotions.

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