

PSYCHOLOGICAL STRESS AND VASCULAR DISTURBANCES IN ROSACEA

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I declare that this thesis is my own account of my research and contains as its main content, work which has not previously been submitted to a degree at any tertiary education institution.

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ABSTRACT

Rosacea is a chronic skin disorder, characterized by redness and flushing of the cheeks, nose, chin or forehead. It has been proposed that rosacea is a result of frequent blushing (Miller, 1921; Klaber & Whittkower, 1939). However, the relationship between rosacea and blushing is uncertain. The aim of the present research was to investigate the relationship between psychological stress and vascular disturbances in rosacea. Five studies were conducted. The first study explored the relationship between rosacea and mental health while the next two investigated vascular responses in rosacea sufferers and controls to acetylcholine (which induces endothelial vasodilatation and axon reflexes) and psychological stress (embarrassment). The fourth study aimed to examine the relationship between psychological indicators and rosacea symptoms on a daily basis. The fifth study consisted of three case studies looking at the use of Cognitive Behavioural Therapy (CBT) and Task Concentration Training (TCT) with rosacea sufferers presenting with social anxiety and fear of blushing symptoms.

In study 1, sixty-two participants were asked to complete the Blushing Propensity Scale (BPS), Fear of Negative Evaluation (FNE), Depression, Anxiety and Stress Scale (DASS), Social Interaction Anxiety Scale (SIAS) and Social Phobia Scale (SPS). Outcomes from the first study indicated that Type 2 rosacea sufferers (n=12) perceived themselves as blushing more frequently and intensely than Type 1 rosacea sufferers (n=19) or controls (n=31). This suggested that Type 2 rosacea sufferers experiencing frequent blushing may have a lower sensitivity threshold to

blushing episodes. In addition, Type 2 rosacea sufferers perceived themselves as more stressed than Type 1 rosacea sufferers or controls, possibly indicating that managing the condition can be stressful. Contrary to previous reports (Gupta et al., 2006; National Rosacea Society, 2005) severity of rosacea was not associated with depression, social anxiety or fear of negative evaluation. However, a few participants who reported high social anxiety and stress scores were offered psychological intervention (Study 5).

The aim of the second study was to investigate vascular responses in rosacea sufferers. Cutaneous endothelial and axon reflex function was assessed using an acetylcholine dose response curve. The axon reflex was assessed by inducing a flare with ACh iontophoresis. Outcomes from this study indicated that Type 2 rosacea sufferers had a greater axon reflex response than Type 1 rosacea sufferers. Thus over-reactivity of the axon reflex in Type 2 rosacea sufferers might contribute to prolonged vasodilatation. However, cutaneous endothelial responses to ACh were similar in rosacea and control groups. The results suggested that neural pathways mediated the flushing response rather than cutaneous endothelial function.

The third study investigated facial blood flow while participants attempted laboratory induced embarrassment tasks. Type 2 rosacea sufferers were found to have a greater blood flow in the facial region than Type 1 rosacea sufferers during singing and speech tasks, suggesting that Type 2 rosacea sufferers blushed more than type 1 rosacea sufferers or controls. Furthermore, Type 2 rosacea sufferers

reported higher embarrassment and blushing ratings than Type 1 rosacea sufferers. This indicated that Type 2 rosacea sufferers perceived themselves as emotionally more aroused than other participants. Taken together, it would appear that a combination of physiological and cognitive factors increased facial blood flow in Type 2 rosacea sufferers in laboratory induced embarrassment tasks.

The fourth study explored the relationship between stress and symptoms of rosacea. Using a diary, 15 rosacea sufferers recorded their stress, anxiety and mood and their intensity of rosacea symptoms daily. Stress was associated with increased stinging/facial redness on the same day for 1 to 2 months. Furthermore, it was associated with increased stinging ratings the next day. However, feeling anxious or having low mood was not related to increase stinging the next day. The presence of increased stress found in rosacea participants on the day where stinging and redness occurred should be taken into consideration when formulating psychological interventions for rosacea sufferers.

In study 5, individual psychological intervention was provided to three participants experiencing stress, fear of blushing and social anxiety symptoms. Cognitive Behavioural Therapy (CBT) and Task Concentration Training (TCT) were helpful in managing stress, anxiety and fear of blushing symptoms in individual rosacea sufferers. Encouragingly, all participants reported a gain in their repertoire of strategies and showed a decrease in anxiety symptoms on assessment questionnaires following their intervention. Replication of the intervention protocol and investigation of other psychological approaches are

required to establish best practise outcome for rosacea sufferers who require psychological interventions.

The present findings suggest that over-reactivity of axon reflexes contributes to facial flushing. In addition, emotional flushing in rosacea sufferers appears to be maintained by a combination of cognitive and physiological factors. On a clinical level, the study recommends that emotional stress associated with facial flushing in rosacea sufferers to be targeted for psychological intervention.

Keywords: Rosacea, fear of blushing, embarrassment, facial flushing, vascular disturbances, axon reflex response, acetylcholine, iontophoresis, CBT and TCT.

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