How age alters our immune response to bereavement

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Young people have a more robust immune response to the loss of a loved one, according to new research from the University of Birmingham, providing insight into how different generations cope with loss.

The study, published in the journal *Immunity and Ageing*, shows how the balance of our stress hormones during grief changes as we age – meaning elderly people are more likely to have reduced immune function and, as a result, suffer from infections.

It is the first research to compare different generations and display the relationship between stress hormones and immune function across different stages in our life.

Dr Anna Phillips, Reader in Behavioural Medicine at the University of Birmingham, explained, "During the difficult weeks and months after loss we can suffer from reduced neutrophil function. Neutrophils are the most abundant type of white blood cell and as such are essential at combating infections and illness, so we become vulnerable when this happens."

The results of the study suggest a relationship between neutrophil function and the balance of our stress hormones. Two stress hormones in particular appear to display different responses to loss as we age; cortisol and dehydroepiandrosterone sulphate (DHEAS).

In younger participants, the ratio of cortisol and DHEAS was more

balanced, whereas the cortisol:DHEAS ratio was significantly higher in the older study group.

Dr Phillips continued, "The effects of loss are poorly understood on the whole – we know that it affects the immune system amongst other things – but we don't fully understand the role played by our stress hormones. We hope that this is a step towards that understanding, and being able to provide the best possible support."

Professor Janet Lord, Professor of Immune Cell Biology at the University of Birmingham, added, "Cortisol is known to suppress elements of the immune system during times of high stress, so having an unbalanced ratio of cortisol and DHEAS is going to affect how able we are to ward of illness and infection when grieving. But, of course, it is also incredibly useful - particularly in activating some anti-stress and anti-inflammation pathways – so it's not as simple as trying to suppress the cortisol in vulnerable people."

The researchers, speaking at the British Science Festival in Birmingham, consider that hormonal supplements or similar products could be used to help people at an increased risk of stress but that this is not the only solution.

Dr Phillips concluded, "The changing ratio is something we need to learn much more about, and need to test whether altering that balance artificially could be a short-term help at times of stress. However, there is, quite simply, no substitute for a strong support network of family and friends to help manage the risks during a period of grieving."

Participants were studied whilst grieving for the loss of a loved one; either a spouse or close family member.

More information: 'Bereavement reduces neutrophil oxidative burst

only in older adults: role of the HPA axis and immunesenescence' Ana Vitlic, Riyad Khanfer, Janet M Lord, Douglas Carroll and Anna C Phillips. *Immunity & Ageing* 2014, 11:13 DOI: 10.1186/1742-4933-11-13