Medical Xpress

Can you die of a broken heart? Bereavement can weaken the body's ability to fight infections

March 28 2012

(Medical Xpress) -- Immunity experts at the University of Birmingham have found biological evidence to suggest that bereavement lowers physical immunity, putting older people at risk of life-threatening infections..

They found that the emotional stress of bereavement is associated with a drop in the efficiency of white blood cells known as neutrophils, which combat infections such a pneumonia, a major cause of death in older adults.

The research, which was funded by the Dunhill Medical Trust, helps to explain why, for example, it is not uncommon for both partners in a long and happy marriage to die within a relatively short period.

As we age our immune system becomes less efficient. We also experience the adrenopause. The adrenal glands produce the stress hormone cortisol, an immune suppressor which has long been prescribed as steroids to reduce inflammation. The adrenals also produce Dehydroepiandrosterone DHEAS, which counters the negative effects of cortisol and helps to increase immune function.

‘We hypothesised that the emotional stress of bereavement would suppress immune function, specifically neutrophil bactericidal activity, in older adults,’ explains Dr Anna Phillips, of the School of Sports and

Exercise Sciences (SportEx), who co-authored the research with Riyad Khanfer, also of SportEx, and Professor Janet Lord, Professor of Immune Cell Biology at Birmingham.

The researchers assessed neutrophil phagocytosis (engulfing by white blood cells) and stimulated superoxide (killing chemical) production against E.coli in 24 bereaved and 24 age and sex-matched non-bereaved controls all aged 65 years and over. Cortisol and DHEAS levels were determined in serum to assess potential mechanisms. Neutrophil superoxide production was significantly reduced among the bereaved when challenged with E.coli. The same group also had a significantly higher cortisol: DHEAS ratio compared to the controls. There was no difference in neutrophil phagocytosis between the two groups.

Alongside the clinical tests, the results of a psychological questionnaire showed that bereaved older people had significantly greater depression and anxiety symptoms that the non-bereaved.

‘The emotional stress of bereavement is associated with suppressed neutrophil superoxide production and with a raised cortisol:DHEAS ratio,’ the authors conclude. ‘The stress of bereavement exaggerates the age-related decline in hypothalamic-pituitary-adrenal axis (HPA axis) and combines with immune ageing to further suppress immune function, which may help to explain increased risk of infection in bereaved older adults.’

The latest results build on research previously published by Dr Phillips and her team which has shown that older adults who have suffered bereavement in the past 12 months had a poorer antibody response to the annual flu jab compared to non-bereaved adults. The team has also shown that a significant physical stress, hip fracture, can worsen neutrophil bactericidal ability in older adults, which has been associated with increased susceptibility to infection following surgery.

Dr Phillips comments: ‘We would like to catch elderly people at the crucial point when cortisol is going to be doing the most damage. We think if they were prescribed DHEA shortly after bereavement this would do the most good. It wouldn’t just help with their immunity but would boost their mood as well, as DHEA is known to increase feelings of well-being. Ideally, this could be combined with other treatments such as psycho-social therapies, to help older people through very difficult times and help to prevent them becoming ill.’

Professor Lord, who heads the University’s Centre for Healthy Ageing Research, added: ‘I think the most important aspect of our work is showing that bereavement does have a physiological impact on the body and that the bereaved need to be supported by friends, relatives and clinicians rather than being told to keep a stiff upper lip’

The research was published in the journal *Brain Behaviour and Immunity.*

Provided by University of Birmingham

Citation: Can you die of a broken heart? Bereavement can weaken the body's ability to fight infections (2012, March 28) retrieved 20 September 2024 from https://medicalxpress.com/news/2012-03-die-broken-heart-bereavement-weaken.html

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