Medical Xpress

Researchers find depression in hip fracture patients hinders physical recovery and compromises immunity

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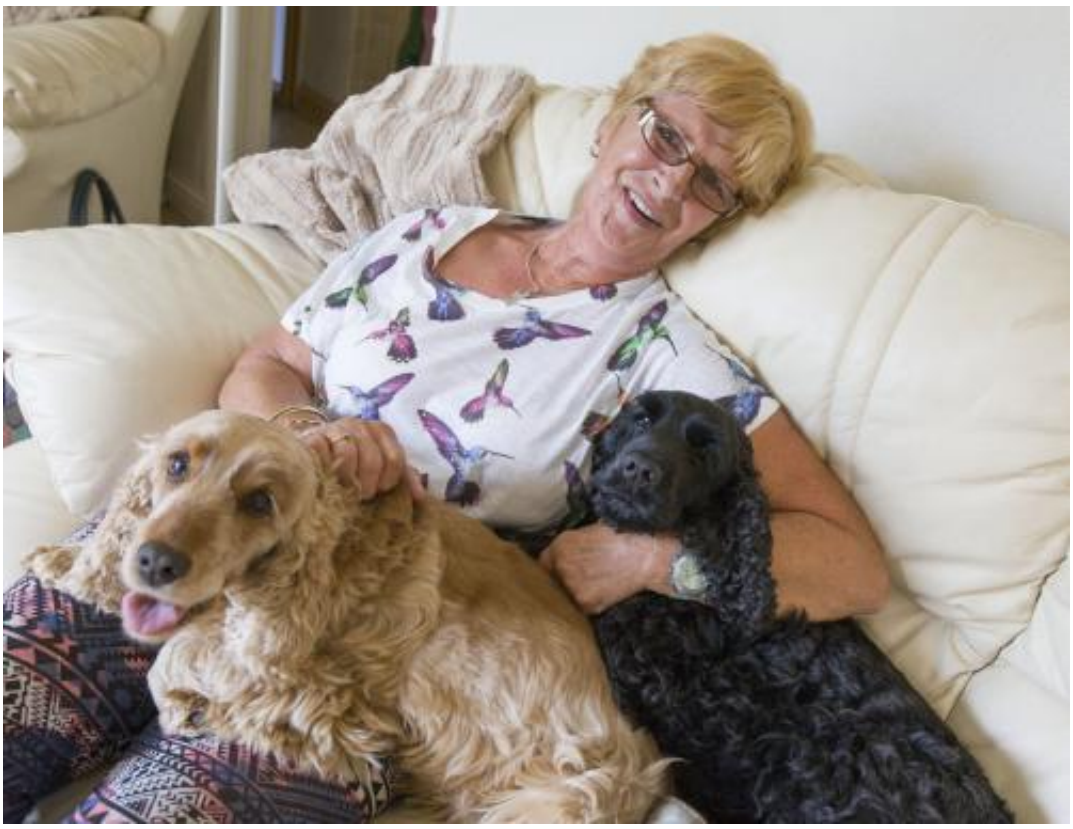

Older people who suffer a hip fracture should be routinely tested and treated for depression to aid their recovery and prevent their immune systems from being compromised, according to new research from the

University of Birmingham.

As many as 40% of older people who suffer a hip fracture go on to develop depressive symptoms, but currently, they are not screened for depressive symptoms as a matter of course. At least half of the people who suffer a hip fracture never regain their previous walking ability – and up to a quarter may die within a year of the fracture with many more developing infections and illnesses.

The Birmingham research shows that depression has a negative effect on both the physical recovery of older people who suffer a hip fracture and on their immune system, leaving them at risk of developing infections like pneumonia as well as failing to regain their pre-fracture physical ability.

Researchers used the geriatric depression scale (GDS) to determine whether the participants in the study were suffering from depression – and anyone who had been diagnosed with depression before their hip fracture was excluded. Thirty-eight per cent of participants were found to be suffering from depression six weeks following their hip fracture (averaging 8.2 on the GDS, compared to the non-depressed group which averaged 2.6). Six months after their fracture, most of this group was found to be still depressed.

The research shows that those patients who were categorised as depressed following their fracture were less able to carry out activities of daily living when tested both six weeks and six months after the injury than patients who were not depressed. The depressed group of patients also had a slower walking speed at both the six week and six month point. The depressed group took an average of 69.6 seconds to complete a timed walking task, compared to just 52.4 seconds for the non-depressed group.

The research, Depression following hip fracture is associated with increased physical frailty in older adults: the role of the cortisol: dehydroepiandrosterone sulphate ratio, published in BMC Geriatrics, illustrates that the effect on walking speed in particular was shown to be affected by differences in the ratio between two types of hormone – the stress hormone cortisol and steroid hormone dehydroepiandrosterone sulphate (DHEAS), with the ratio being higher in the depressed group.

Therefore, to speed up physical recovery patients should be assessed for depression, and treated accordingly. The Birmingham team now plans to carry out a clinical trial – possibly by giving hip fracture patients nutritional supplements of DHEA to reduce the ratio between levels of that hormone and cortisol.

Dr Anna Phillips, Reader in Behavioural Medicine in the School of Sport and Exercise Sciences at the University of Birmingham said: "Although the priority for older hip fracture patients is surgery to mend the fracture, it is also very important to understand and measure the factors that affect wellbeing and recovery once individuals leave hospital.

"Depression is one such factor which can affect resistance to disease and physical function as well as obviously quality of life and mental wellbeing; identifying and treating this depression is therefore key to a good recovery."

Alongside these results, the researchers discovered that depression in hip fracture patients also leads to a weaker immune system, which could leave the patient vulnerable to infections. The depressive symptoms can lead to a reduction in the function of neutrophils, a type of white blood cell, and their ability to produce the chemical which kills off pathogens. The decline in the immune system is not found in patients who have suffered a hip fracture but are not exhibiting signs of depression.

The researchers concluded that developing depressive symptoms after a hip fracture was the main driver of immune suppression – and that prevention and treatment of depression in people with hip fractures was key to improving the health outcomes in older patients. They recommend treating depression pharmacologically where appropriate but also by counselling, psychological support, broadening social involvement and healthy lifestyles as a way of minimising the chances of a patient developing depression, and treating those who do develop the symptoms.

Hazel Broadmore, from Chelmsley Wood in Birmingham, fractured her hip after slipping over while out walking. She said: "You have to keep active. I can see quite easily how people who don't have the support of family and friends that I do can become depressed. And then you can just sit and have no reason to go out, and everything gets worse.

"I wasn't going to let that happen to me – I couldn't wait to get back to walk my dogs – but I can see how easily it could happen to others."

Professor Janet Lord, director of the MRC-ARUK Centre for Musculoskeletal Ageing Research at the University of Birmingham, said: "We went in to this study assuming that the stress of a hip fracture would be the major factor resulting in poor immune function in these patients and that depression might make things a little worse.

"Instead the data revealed that the depression was the major factor influencing how well a patient recovered. Our work emphasises the importance of preventing or treating depression in this vulnerable patient group. Such a simple intervention could save many lives and reduce costs to the NHS."

This research, Depressive symptoms are associated with reduced neutrophil function in hip fracture patients, is due to be published in the

October issue of the journal *Brain Behaviour and Immunity* and is now available online.

Provided by University of Birmingham