European Cystic Fibrosis Society

Journal of Cystic Fibrosis
The Official Journal of the European Cystic Fibrosis Society

Cystic Fibrosis Research News

Title:

Long-term bone mineral density changes and fractures in lung transplant recipients with cystic fibrosis

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What was your research question?

Did bone health keep worsening after lung transplant in people with cystic fibrosis despite the quick initiation of anti-osteoporosis therapy?

Why is this important?

Lung transplant candidates with cystic fibrosis often have weak bones (bone fragility). Lung transplant is accompanied by the lifelong intake of drugs to suppress the immune system (immunosuppressants), which are harmful to the bones and may increase the risk of fractures. Fractures may cause pain, decrease quality of life and could have a negative impact on the functioning of the new lungs. To protect bones, so called anti-osteoporosis therapy is quickly started after transplant. However, we do not know the efficacy of this therapy to preserve bone health and prevent its worsening after transplant.

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What did you do?

We reviewed medical records of 131 individuals with cystic fibrosis who underwent a lung transplant between 2000 and 2015 at the *Centre hospitalier de l'Université de Montréal* (CHUM) in Montreal, Canada. We collected data on back (lumbar spine) and hip (femur) bone mass (bone mineral density) before transplant and 6 months, 1, 2, 5 and 10 years after transplant. Bone mineral density measured by a technique called DXA provide a snapshot of bone health. We also collected data on fractures that occurred before and after transplant. Data from men and women was analysed separately.

What did you find?

We found that a third of the individuals with CF had low bone mass before lung transplant despite largely being treated with anti-osteoporosis drugs soon after transplant. We showed that lumbar spine and femur bone mineral density kept worsening in the first months following transplant, more in women than in men. Bone mineral densities then progressively increased up to five years after transplant, but did not improve from pre-transplant values. We found that 21% of people with CF suffered fractures after transplant. Fracture rates after transplant did not differ between men and women.

What does this mean and reasons for caution?

The long-term recovery of bone mineral density after transplant may be reassuring, but the lack of improvement from pre-transplant values and the presence of fractures underline that people with CF may remain at risk of skeletal fragility after transplant.

What's next?

In our study, the anti-osteoporosis therapy consisted mostly of bisphosphonates, which are compounds that block the degradation of bone. There are other agents used to treat osteoporosis that build up new bone. It would be interesting to see whether these drugs are better in improving bone health of people with cystic fibrosis after lung transplant.

Original manuscript citation in PubMed

NA 14 November 2020