

To treat a leading cause of osteoporosis, surgery is better than widely used medications

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Dr. Michael Yeh, UCLA associate professor of surgery and medicine. Credit: UCLA Health

While most cases of osteoporosis are caused by normal aging, another leading cause of the bone-loss disease is a condition called hyperparathyroidism, in which the parathyroid glands release an excessive amount of a hormone that regulates the body's calcium levels.

Doctors commonly treat hyperparathyroidism using a class of prescription drugs called bisphosphonates, including alendronate (marketed under the brand name Fosamax) and ibandronate (Boniva), which are supposed to strengthen bones.

Now, a study led by scientists at UCLA found that those drugs actually increase the risk of fracture, meaning that taking them is worse than doing nothing at all to treat the condition. The research also revealed that patients who have surgery to remove the overactive parathyroid glands have fewer subsequent bone fractures.

The report appears in the April 5 issue of the *Annals of Internal Medicine*.

About 400,000 people in the U.S.—1 in 400 women and 1 in 1,200 men—have hyperparathyroidism; and osteoporotic fractures are a major public health and economic burden, said Dr. Michael Yeh, an associate professor of surgery and medicine, and the study's first author.

"Hip fractures in particular are associated with significant rates of mortality, disability and loss of independence," said Yeh, who also is the chief of endocrine surgery at the UCLA David Geffen School of Medicine. "Before this study, there was no data that compared parathyroid surgery with prescribing medication on the risk for fractures in people with hyperparathyroidism."

The researchers analyzed data from more than 6,000 people who had been diagnosed with hyperparathyroidism between 1995 and 2010. All had health care coverage through Kaiser Permanente Southern California, and their demographic and socioeconomic profiles mirrored those of the greater Los Angeles population.

Yeh described the findings as "startling."

- Among study participants who were not treated for hyperparathyroidism, there were 56 hip fractures per 1,000 people after 10 years.
- Among those who had parathyroid surgery, there were just 20 fractures per 1,000 people.
- For those taking bisphosphonate medications, the rate of hip fractures was 86 per 1,000 patients—higher than the combined rate for those who underwent surgery or did nothing at all.

The researchers also reviewed the number of bone fractures of all types (including hip fractures), and the results were similar: For people who did not receive treatment, there were 206 fractures per 1,000; for those who had surgery, 157 fractures per 1,000; and for those taking bisphosphonate medications, 303 fractures per 1,000.

Yeh said it was also surprising that people taking medications had a higher risk for fractures, even though X-rays showed that they had similar gains in bone density to the people who had undergone surgery.

"The drugs make the bones look dense on scans, but that is deceptive," Yeh said. "We must presume there is a defect in the quality of the bone. But we don't know why."

Researchers also found that the risk for fractures among people taking bisphosphonates was higher whether people had osteopenia, or early bone loss, or full-blown osteoporosis, which Yeh said could suggest that either the drugs themselves are harmful or that the people taking them had other risk factors.

"Regardless, we were unable to demonstrate any benefit associated with this class of drugs, which have been around and routinely prescribed for more than 20 years," he said. "These findings should make bisphosphonates less attractive as an alternative to parathyroid surgery in

patients with primary hyperparathyroidism."

Yeh said more research is needed to see if bisphosphonates also increase the risk for fractures for people with underlying causes of osteoporosis other than hyperparathyroidism. Women are more likely to have osteoporosis; other key risk factors are a lack of vitamin D, calcium or estrogen. Osteoporosis afflicts some 54 million people over age 50 in the U.S. and is responsible for 2 million bone fractures a year.

More information: *Annals of Internal Medicine*,
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