

## Woman's tea addiction led to loss of teeth, bone problems

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Extreme levels of fluoride from daily consumption of a concentrated brew caused pain, brittle teeth.

(HealthDay)—Here's a cautionary tale about the value of moderation. A case study reported in the March 21 issue of the *New England Journal of Medicine* shows how habitually drinking an extreme form of highly concentrated tea over almost 20 years created a hard-to-diagnose case of severe bone damage in a 47-year-old woman.

Worried that she had cancer, the patient told her primary care doctor in Lansing, Mich., that she was concerned about bone pain she had been having in her lower back, arms, legs and hips for five years. She also had had all her teeth extracted due to brittleness.

Her X-rays showed her bones were unusually dense, but there was no sign of disease. The fluoride level in her blood was also high. She was referred to Dr. Sudhaker Rao, section head of bone and mineral

metabolism and director of the bone and mineral research laboratory at Henry Ford Health System in Detroit, for a bone biopsy.

The patient's intake of brewed tea was astronomically high, said Rao, who learned that the patient had been regularly drinking a pitcher a day of tea made from about 100 to 150 [tea bags](#), which gave her more than 20 milligrams (mg) of fluoride. She had a fluoride concentration in her blood of 0.43 milligrams per liter, while the normal concentration is less than 0.10 mg per liter, Rao reported.

Fluoride is used to prevent [tooth decay](#) and is usually prescribed for children and adults whose homes have water that does not naturally have fluoride in it, according to the U.S. National Library of Medicine.

It turns out that Rao, the author of the case study, came from an area in India where fluoride levels in the water were naturally extremely high, sometimes causing a condition called skeletal fluorosis. He has also recently consulted on a few cases involving high fluoride in the blood, he pointed out.

"Most of us can excrete fluoride extremely well, but if you drink too much, it can be a problem," he said. Brewed tea has one of the highest fluoride contents of all the beverages in the United States, according to Rao. He immediately wondered if the fluoride in the concentrated tea concoction the woman was regularly drinking could be the cause of her bone troubles, he said. "There have been about three to four cases reported in the U.S. associated with ingesting tea, especially large amounts of it," he noted.

When Rao tried to perform the biopsy, the woman's bone was so hard he said his instrument could not penetrate the bone. "It was like steel," he said. "Her bone density was very high, seven times denser than normal."

The outlook for the patient is positive, however. Rao said he knows from his experience in India that if a person moves from an area with high fluoride concentration in the water to an area with low fluoride concentration, their bones can get healthier. But it's hard to know how long it will take for the body to rid itself of the excess fluoride accumulation, he noted.

The fluoride would naturally be removed from the bone by "bone remodeling," a process that occurs throughout life to replace mature bone tissue with new bone. But in adults, the pace of that process is unpredictable and typically rather slow, Rao explained.

The patient stopped drinking tea and her pain has diminished, said Rao. Now he is considering a variety of approaches to try to speed up the process of ridding her body of the excess fluoride.

Giving her parathyroid hormone may help speed up the removal of [fluoride](#) from the bone, but it could also increase bone density more than would be advisable, and the right dose is tough to pin down, he noted. The hormone controls calcium, phosphorus and vitamin D levels in the blood and bone. Another option would be to put her on a low calcium, low vitamin D diet, he said.

Dr. Joseph Lane, chief of the metabolic [bone](#) disease service at Weill Cornell Medical College, in New York City, said this case study shows the risk of adopting an unusual diet. "I had a patient who started taking a lot of fish oil, and then she had a minor injury and bled a lot, almost like hemophilia [a disease in which it is hard for blood to clot]. It turns out the patient had too much vitamin E in the blood," Lane explained.

Lane suggests that people talk with their physician about any change in their diet they are considering, especially if it is somewhat unusual. As for off-the-shelf food and beverage items, he suggests taking a close

look at the ingredients.

**More information:** Learn more about fluoride from the [U.S. Centers for Disease Control and Prevention](#).

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