Cow's milk interferes with absorption of thyroid supplement levothyroxine

April 2 2017

Taking the common oral thyroid hormone medication levothyroxine with a glass of cow's milk significantly decreases the body's ability to absorb the drug, a preliminary study finds. Results will be presented Sunday at ENDO 2017, the Endocrine Society's 99th annual meeting in Orlando, Fla.

"These findings support previous research showing that calcium supplements can interfere with levothyroxine absorption," said principal investigator Deborah Chon, M.D., an endocrinology fellow at the UCLA David Geffen School of Medicine and the VA (Veterans Affairs) Greater Los Angeles Healthcare System, Los Angeles, Calif. "Decreased absorption means that patients may not get the full dose of thyroid

hormone that they are prescribed."

Although it makes sense that milk, which contains calcium, might interfere with levothyroxine absorption, no study has proved that it does until now, according to Chon.

Levothyroxine is prescribed for patients with an underactive thyroid, called hypothyroidism, to replace the natural thyroid hormone thyroxine (T4) that is too low, or for patients with thyroid cancer, to suppress their thyroid stimulating hormone levels. In 2014, levothyroxine was the most commonly prescribed medication in the U.S., a survey from the IMS Institute for Healthcare Informatics (now QuintilesIMS) found.

Chon and fellow investigators studied 10 adults (six men and four women), with an average age of 33.7 years, who had no known thyroid disease and had normal thyroid hormone function at the start of the study. No one was allergic to cow's milk or levothyroxine, and none of the women were pregnant or using birth control pills.

Participants fasted overnight before each of two study visits, spaced a month apart. At one visit, participants took 1,000 micrograms of oral levothyroxine alone and at the other visit, they took the same dose concurrently with 12 ounces of 2 percent milk. Before dosing and one, two, four and six hours after ingestion of levothyroxine, participants gave blood samples for measurement of their total T4 levels. Chon said they tested with generic levothyroxine, which most of their patients are taking.

The investigators measured the levothyroxine absorption as the concentration of total T4 in the blood plotted on a graphic curve against time after drug administration, called area under the curve. Over the six hours after the participants took levothyroxine, those who consumed milk at the same time as the medicine had significantly lower total T4

absorption than when they took the drug alone: average area under the curve of 67.3 versus 73.5.

The manufacturer of a brand of levothyroxine recommends that the medication be taken preferably on an empty stomach, 30 to 60 minutes before eating food or taking other medications or vitamins.

"The main message of this study is that patients managed with thyroid hormone replacement therapy should be advised to avoid taking levothyroxine simultaneously with cow's milk, given its interference," Chon said.

Provided by The Endocrine Society