|  |
| --- |
| **The importance of Levothyroxine bioavailability for TSH at goal** |
| Ajay Kumar, MBBS,MD Etleva Bejko, MD Kulsoom Fatima, MD Keyvan Ravakhah, MD,MBA |
| Internal Medicine, St. Vincent Charity Medical Center, Cleveland, OH |
| **Introduction**  Multiple factors can hamper the ability to maintain a desired TSH level in hypothyroid patient on oral LT4 replacement theray. Variables like patient adherence, medical conditions, medications, food and beverages that affect the LT4 absorption and metabolism are among the most common ones.  **Case**  A 35-year-old Caucasian woman with a PMH of Hypothyroidism, Depression, Insomnia, Alcohol use and Tobacco dependency presented with the chief complaint of swelling which extended from periorbital are to the face, abdomen, upper and lower extremities. The symptoms progressed within 48 hours and were associated with a brief episode of shortness of breath. She denied any food/drug allergies, or exposure to any possible allergen. On the review of systems, she reported weight gain of 9 lbs in 1 month. She was compliant with all of the medications, including solid tablet LT4, which she was taking it every morning 30 minutes before breakfast with a cup of coffee. Other medications used were Duloxetine and Trazodone. On exam vitals were stable with the exception of HR of 100. The pertinent findings were periorbital and face edema, tachycardia, diffuse abdominal swelling, bilateral distal upper extremities and lower extremities non-pitting edema and DTR of upper extremities 3+, lower extremities 4+. Her WBC was 15.8, MCV of 99.2, CK of 256, TSH of 145.400, fT3 of 1.26 and fT4 of 0.51. Pt was diagnosed as Myxedema and her LT4 was resumed along with supportive care. Once stable she was safely discharged home with outpatient follow up.  **Discussion**  Treatment failure in hypothyroidism is easily unrecognized. It happened in our patient due to the concurrent intake of LT4 and drinking coffee. One study comparing intake of LT4 fasting, at bedtime and with breakfast showed optimal absorption under fasting conditions, with reduction from 80% to 40-64% with concurrent food. The TSH results were highest on the regimen where the LT4 was given with breakfast, lower at bedtime and lowest in fasting state. LT4 should be taken on an empty stomach, ideally an hour before breakfast. In patients who are not able to wait a full hour, LT4 administration with breakfast could be an alternative, but these patients should be followed more closely due to the TSH variability. Oral liquid LT4 formulations could diminish the problem of malabsorption caused by coffee when using the traditional tablet formulations. Thus to conclude that physicians should discuss with their patients the importance of the timing of LT4 administration, its relationship to food, and its impact on disease manifestations. |