

INTERACTION OF LEVOTHYROXINE WITH PROTEASE INHIBITORS

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Background:

The effect of Ritonavir on thyroid hormone metabolism has been previously described in case reports, however, this interaction is not well-known among clinicians. Ritonavir is a protease inhibitor and is frequently used as a first-line therapy in treatment for patients with HIV. We present a case series of significant Ritonavir interaction with Levothyroxine among two patients with well-controlled HIV disease on anti-retroviral treatment.

Methods:

N/A

Results:

A 54-year-old male with history of hypothyroidism was subsequently diagnosed with HIV and started on HAART regimen consisting of Ritonavir. Patient started requiring increasing doses of TH replacement. Prior to ART initiation, he was on a stable dose of Levothyroxine 225 mcg, and after initiation of ART, his Levothyroxine dose increased to 375 mcg. One year later, patient's HAART regimen was switched to Emtricitabine and Tenofovir and her hypothyroidism resolved. The second case a 61-year-old female with HIV and hypothyroidism who was on stable doses of TH. However, patient started to develop symptoms of dry, itchy skin and cold intolerance with elevated TSH values. Her initial levothyroxine dose had to be increased from 200 mcg to 225 mcg. Ritonavir was subsequently discontinued and her TSH normalized and levothyroxine doses stabilized as well.

Conclusion:

This case series demonstrates the significant effect of Ritonavir on TH metabolism and the increased requirements for TH replacement. All protease inhibitors, including Ritonavir, are metabolized by CYP P450 enzymes and are also inducers of various enzymes, including Glucuronyl Transferase. Ritonavir can induce various CYP enzymes as well as UGT, increasing the metabolism of levothyroxine. Reviewing previous case reports, when patient's regimens were switched from Ritonavir to another form of ART, not associated with UGT induction, TSH values were eventually normalized. Patients on Levothyroxine will require significant adjustment of their medication when starting or stopping this class of anti-retrovirals.