Quetiapine-induced hypothyroidism

Quetiapine is an atypical antipsychotic drug with a greater affinity for serotonin-2A receptors than for dopamine-2 receptors. It has a favourable side-effect profile. We report the case of a patient who developed hypothyroidism after quetiapine was added to her medication regimen.

The patient is a 43-year-old woman with a history of schizoaffective disorder, bipolar type. Her past medical history was significant for lithium-induced hypothyroidism, which had been treated with levothyroxine, 75 µg/d. However, after a consultation with an endocrinologist for a thyroid-stimulating hormone (TSH) value of less than 0.05 mU/L (reference range 0.42–6.2 mU/L) and a free thyroxine (T_4) level of 109.4 pmol/L (reference range 9.0–24.5 pmol/L), levothyroxine and lithium were discontinued. The patient was clinically and biochemically euthyroid for the next 4 years. About 9 months ago, she was admitted to hospital with suicidal ideation and paranoia. At the time of admission, she was taking ziprasidone and valproic acid. Quetiapine, 200 mg twice daily, was initiated to control her symptoms. Five months later, she was seen by her primary care physician for symptoms that were suggestive of hypothyroidism, including a 20-kg weight gain, leg edema, hoarseness of voice, chronic constipation and a TSH value of 9.01. She was prescribed levothyroxine, 50 µg/d, and quetiapine was tapered off and discontinued. However, over the following 2 months, low-dose quetiapine was used on an as-needed basis to control any persistent symptoms. During the patient's most recent stay in hospital, her TSH normalized at 1.80 mU/L and T_4 at 10.3 pmol/L. The findings of her urine drug screen were negative for illicit drugs. The patient continues to take levothyroxine sodium, 50 µg/d, and has remained euthyroid.

Quetiapine is known to have adverse effects on thyroid function. In clinical trials, about 0.4% (10/2386) of patients treated with quetiapine experienced TSH elevations, and 6 of these subjects required thyroid hormone supplementation.[1]

Our patient was clinically and biochemically euthyroid immediately before beginning quetiapine therapy. The quetiapine-induced hypothyroid state resolved after levothyroxine was initiated and quetiapine, discontinued. Use of the Naranjo Adverse Drug Reaction probability scale[2] indicated a probable relation between the development of hypothyroidism and quetiapine therapy in this patient. The history of lithium-induced hypothyroidism in our patient might be a potential confounding factor. The mechanism of action by which quetiapine causes hypothyroidism is unknown. Studies demonstrating a high prevalence of antithyroid antibodies in patients who become hypothyroid on lithium[3,4] suggest that autoimmunity may mediate this effect. In one study, the prevalence of clinical hypothyroidism during lithium therapy was 10.4%, and the main risk factor was female sex.[5] It is plausible that similar factors may be involved in our patient who developed hypothyroidism on quetiapine therapy. Unfortunately, we did not measure antithyroid antibody titers.

The only published case report of hypothyroidism related to quetiapine therapy was of a patient who had been previously treated with radioactive iodine.[6] Our patient did not have a similar history.

In any case, it is important that prescribing clinicians be aware of the potential for developing hypothyroidism in patients receiving quetiapine.

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