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Tricyclic antidepressant immunoassays may be a reliable quantitative screen for quetiapine adherence

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To The Editor:

As part of an ongoing treatment study of co-occurring bipolar mania and cannabis abuse in adolescents, we obtained bi-monthly urine toxicology screens using the Status DSTM immunoassay. It was noted that the first five subjects initially tested negative for tricyclic antidepressants (TCAs) but all five tested positive after being treated with topiramate or placebo and quetiapine. All of the patients denied using TCAs, but were forthcoming regarding their drug use. A quetiapine trough blood level was also obtained on the same morning that the urine toxicology screens were performed and the results paralleled the TCA toxicology findings, i.e., when subjects showed quetiapine in their serum (5.1 to 85 ng/ml), they tested positive for TCAs. However, when two of the subjects were non-adherent to their medications and their quetiapine levels were undetectable, their toxicology screens were negative for TCAs. After these two patients were encouraged to take their medications and had detectable quetiapine levels, they once again tested positive for TCAs.

The structure of quetiapine is similar to that of TCAs (both contain a similar tricyclic framework), and there have been two prior case reports in the literature that noted false positives for TCAs in adult patients taking quetiapine (1,2). Three in vitro studies (1–3) found false positive TCA results in some immunoassays using concentrations as low as 160 ng/ml of quetiapine. To our knowledge, there have been no prior reports of cannabis or topiramate causing false positives for TCAs. Therefore, we concluded that treatment with quetiapine was causing the positive TCA toxicology screens in our subjects, which occurred even at levels close to the detection threshold (as low as 5.1 ng/ml). Doses of quetiapine ranged from 300 to 600 mg and there was high variability in serum level between subjects for a specific dose of quetiapine. These data are consistent with prior research which reported only modest to no correlation between dose and serum concentration with high intersubject variability and no correlation with therapeutic effectiveness (4,5). Adolescents with bipolar disorder are poorly adherent to their medications. Therefore, qualitative measures of quetiapine may be useful to determine whether patients have been medication adherent. Our findings suggest that certain immunoassays for TCAs are useful as a qualitative test for quetiapine adherence and may avoid the need for more expensive serum levels. Regardless, physicians should be aware of this potential cross-reactivity in patients taking quetiapine.

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