Poster

[P26-2] P26-2: Central nervous system drugs (1)

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[P26-2-8] Evaluation the influence of ten interference drugs of lithium determination in atomic absorption spectroscopy and colorimetric method

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Background

lithium, as a key stone therapy in bipolar disorders, was still considered by most experts and recent guidelines as a first-choice mood stabilizer, protecting against both depression and mania and reducing the risk of suicide and short-term mortality. The therapeutic range of lithium in serum is 0.4-1.2 mmol/L, and the concentration exceeding 1.3 mmol/L is considered potentially toxic, therefore, levels of the drug ought to be constantly monitored . Concomitant medication is common in clinical therapy, which possibly interferes with lithium determination. The aim of this study is to compare the colorimetric assay and the AAS method for serum lithium assay, and evaluated the drug interferences that could occur in the real serum samples.

Methods

Ten interference drugs used for interference study were antipsychotic drugs (Quetiapine, Risperidone, Olanzapine), antidepressants (Citalopram, Sertraline, Paroxetine, Venlafaxine, Fluoxetine) , and mood stabilizers (Valproic acid, Carbamazepine). There are low, medium and high levels in each of the interference drugs. Each sample was determined by both AAS and colorimetric assay for three rounds. Determinations in both increasing and descending concentration sequence order were performed for every round, and the average of six results were calculated. In addition, diluent samples containing 0mmol/L,0.5mmol/L and 1.0mmol/L lithium and the blank serum were determined for six rounds (12 times in total) in both two methods. The results of two methods were compared by Wilcoxon's Sign Rank Test, and the influences of interference drugs on lithium detection were analyzed by Kruskal-Wallis Test.

Results

There were significant statistical differences but no clinical significance between two assay methods (Z=-7.728, P=0.000). The concentration of interference drugs was of no significant effect on lithium determination by AAS (χ^2=0.624, P=0.732) and colorimetry assay(χ^2=0.577, P=0.749).

Conclusions

The AAS method was equivalent to the colorimetry assay in serum lithium detection, and the ten kinds of combined drugs didn't interfere with lithium determination.