Detection of Bence-Jones Proteinuria by a Modified Method

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Table 1. Urine supernatant precipitation with TCA and TSA

Dear Sir,

Recognition of urinary Bence-Jones protein (BJP) at an earlier clinical stage of the disease is very important. Immunoelectrophoresis and immunofixation of an adequately concentrated urine are the gold standard methods for detection of BJP. To our knowledge, the best routine test for BJP detection is the method that was described in 1962 by Cohen and Raducha [1]. In this study, 10 ml fresh urine was centrifuged at 1,000 g for 10 min, 1 ml supernatant was slowly layered on top of 0.5 ml τ -toluene sulfonic acid (TSA) 12% in glacial acetic acid in a test tube (100 $\times$ 11 mm). In some cases, thick creamy or turbid precipitate was seen on the interface, then the test tube was put in boiling water. The precipitate completely disappeared after a few minutes only in cases with BJP and reappeared at room temperature (RT). Urine from 20 healthy persons, 30 patients with nephrotic syndrome, 15 gammopathy (8 multiple myeloma, 7 light chain deposit disease) and 10 gross hematuria due to urological problems were studied. Simultaneously, 0.5 ml trichloroacetic acid 12% (TCA) plus 1 ml urine supernatant was used for qualitative measurement of total proteinuria. Results are shown in table 1.

As can be seen from table 1, only BJP precipitate completely disappears after boiling and reappears after cooling. TSA was negative with Tamm-Horsfall (100 ml/l), human albumin (5%) and was positive with human γ -globulin (16%) in which the precipitate was not dissolved by boiling. In conclusion, it seems to us that this modification improves the applications of TSA for urinary BJP detection as a screening test and seems to be useful for detection of pure albuminuria (selective) from nonselective proteinuria. Further work is needed to evaluate its application in tubular proteinuria.

Reference

Cohen E, Raducha J: Detection of urinary Bence-Jones protein by means of τ -toluene sulfonic acid. Am J Clin Pathol 1962;37:600-663.

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