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The Ames Seralyzer Reagent Strip System Evaluated for Measuring Serum Phenytoin, *Peter F. K. Mace and James Hughes* (Clinical Chemistry, University Hospital, Queens Medical Centre, Nottingham NG7 2UH, U.K.)

We have assessed the performance of the new Seralyzer Phenytoin Reagent Strip System (Miles Laboratories Ltd., Stoke Poges, England) and defined situations where it is most likely to be of value.

Samples diluted with de-ionized water were applied to the reagent strip, which was then inserted into the Seralyzer Reflectance Photometer and the result read in 90 s.

Results from 97 patients by the Seralyzer method (y) were compared with those by our "high-performance" liquid chromatography (HPLC) method (x), and precision and interference studies were performed. Linear regression analysis of the patients' data showed $y = 1.17x - 0.85$ ($r = 0.99$). Paired specimens showed precisions (CV) of 4.5% and 7.4% for the Seralyzer and HPLC methods, respectively. The Seralyzer method gave analytical recoveries between 96% and 101%. Studies of between-run and within-run precision with commercial quality-control sera showed CVs of <5.5% except for the control at subtherapeutic concentration (4.7 mg/L; CV = 9.1%). Phenytoin results were unaffected by the addition of bilirubin (up to 150 μmol/L), hemoglobin (up to 300 mg/L), or lipemia (triglyceride up to 22 mmol/L).

We conclude that the Seralyzer Phenytoin Reagent Strip System is acceptable for therapeutic drug monitoring. Although analysis of large batches of samples seems not as advantageous as with some automated systems now available, the portability of the reflectance photometer makes it eminently suitable for outpatient clinics. Particularly, after calibration (which may be stored), the rapidity of each assay and the low volume of serum required make it ideal for emergency and pediatric work.

A Statistical Search for a Routine Laboratory Tumor Marker for Lung Cancer, *Timothy T. Dick and Thomas A. Webb* (Dept. of Pathol., Deaconess Hospital, 600 Mary St., Evansville, IN 47747)

In an attempt to identify a routine marker, we measured the following variables in serum from 150 individuals with primary lung cancer (mixed histopathology): glucose, urea nitrogen, uric acid, creatinine, sodium, potassium, chloride, calcium, phosphorus, alkaline phosphatase, total protein, albumin, globulins, albumin/globulin ratio, total bilirubin, aspartate aminotranferase, lactate dehydrogenase (LD), creatine kinase (CPK), triglyceride, and cholesterol. All were measured at the time of the initial visit to the hospital, before any confirmed diagnosis of primary lung cancer and (or) treatment of the disease. The average time required for diagnosis was about a week, with 72% of the lesions detected radiographically, 20% by cytological examination, and 6% by both techniques. Biopsies for histological examination accounted for the tumor diagnosis in 92% of the cases.

We used Student's t-test of the mean for the diseased population compared with the normal population to determine the significance (t critical is 2.576, alpha 0.01).

The following were found to be statistically significantly increased in lung cancer patients as compared with the control population: glucose, urea nitrogen, uric acid, creatinine, globulin, LD. Values for total protein and albumin were significantly lower than in the control population.

Although the eight above-mentioned analytes are not specific for the disease and have limited sensitivity, they may be of some value. For example, if a heavy smoker, 55–70 years old, presents with a combination of abnormal values for several of the eight tests, the physician would be encouraged to diligently search for a lung carcinoma.

What Is the Most Efficient Way to Evaluate Immunoglobulins? *Arnold L. Schultz and Louis M. Fink* (Lab. Service, Veterans Admin. Med. Center, Denver, CO 80220, and Dept. of Pathol., Univ. of Colorado, Health Sciences Center, Denver, CO 80220)

We reviewed data obtained for quantification of IgG, IgM, IgA, and kappa and lambda light chains in the serum of 41 patients and presented the data to 20 members of the Denver electrophoresis club. We asked them to evaluate the immunoglobulin status of these patients from the quantitative immunoglobulin results alone. We then compared their interpretation of the data with the results obtained for the same samples by immunofixation.

Given only the quantitative results, all members of the club correctly evaluated the abnormal immunoglobulins in all patients for whom there was an increase in only one of the heavy-chain and one of the light-chain types, when the remainder of the values were normal or subnormal. This represented 26 of the 41 patients in the study. In another case in which there was an increase in only one light-chain type, a kappa light chain abnormality was correctly identified.

We also calculated the ratio of each result to the upper limit of the reference range for the corresponding immunoglobulin. Selecting the highest ratio of the observed value to the upper limit of the reference range led to correct immunoglobulin evaluation in 12 of the remaining 14 cases.

Thus, in our study of 41 patients with paraproteins, 39 (95%) were correctly evaluated by quantification of immunoglobulins when compared with the interpretation of immunofixation results. Serum protein electrophoresis gave