quired for all urines, and more recently Benham and O’Kell (2) reported that chemical testing for leukocyte may eliminate the need for routine microscopic examination.

Important clinical as well as economic factors must be carefully evaluated before making a decision to discontinue the microscopic examination of urine specimens as a routine procedure. A study was conducted in our laboratory to help resolve this timely dilemma.

Macroscopic (“Bili-Labstix for Clinitek”; Ames Division, Miles Laboratories, Inc.) and microscopic examination was performed on 2580 specimens. The microscopic observations were tabulated for 1204 of these urines (47%) that were negative by chemical analysis (negative results for protein, glucose, bilirubin, and hemoglobin) and appeared clear or non-turbid:

1–5 erythrocytes/low-power field (hpf), in males 0.2%
>10 hyaline casts/low-power field (hpf) 0.6%
1–5 granular casts/low-power field (hpf) 0.2%
trichomonads 0.2%
1–5 leukocytes/hpf 0.3%
6–20 leukocytes/hpf 1.0%
>20 leukocytes/hpf 1.6%
no significant finding 7.7%

When the leukocyte observations were adjusted for possible contamination during specimen collection (as evidenced by squamous epithelial cells seen in the microscopic examination) the number of clinically significant findings was greatly reduced:

1–5 leukocytes/hpf 1.6%
6–20 leukocytes/hpf 0.9%
>20 leukocytes/hpf 0.6%

Overall, 22.2% of urines with negative macroscopic examinations had positive microscopic observations; when adjusted for possible contamination this percentage was reduced to 4.2%. Urines were not tested for leukocyte esterase in this study; the practical 60-s assay for leukocyte esterase is not yet commercially available. However, Benham and O’Kell (2) reported a 5% false-negative rate with the leukocyte esterase test, of which 4% were apparently due to contamination. Our data suggest that an additional 1.7% of urines with macroscopic examination would be positive for elements other than leukocytes: hyaline casts, granular cast, trichomonads, and erythrocytes in males. We think that a minimum 2.7% yield (1% leukocytes, as suggested by Benham and O’Kell, plus 1.7%, other elements) justifies performing microscopic urinalysis in our laboratory, but we plan to re-examine our position when the 60-s leukocyte esterase test becomes commercially available.

Another study in our laboratory has revealed much difference in opinion as to what constitutes a clinically significant microscopic observation (unpublished results), so we urge readers to interpret these data with respect to their own standards of clinical significance.

References

David W. Kinniburgh
K. Owen Ash
Dept. of Pathol.

Martin C. Gregory
Dept. of Med.
Univ. of Utah Med. Center
Salt Lake City, UT 84132

High Serum Ceruloplasmin Activity in Pulmonary Tuberculosis

To the Editor:

Assessment of disease activity in pulmonary tuberculosis is very difficult. Erythrocyte sedimentation rate (ESR) has long been used as a nonspecific index of disease activity but its reliability is open to question. Reportedly, the α2-globulin concentration in serum increases in pulmonary tuberculosis and declines after anti-tuberculosis chemotherapy (1). We evaluated serum ceruloplasmin (a copper-containing α2-globulin) as a possible index of disease activity in pulmonary tuberculosis.

We measured serum ceruloplasmin activity (2) in 58 patients with pulmonary tuberculosis before institution of specific chemotherapy and in 20 age- and sex-matched controls. The diagnosis of pulmonary tuberculosis was confirmed by demonstration of acid-fast bacilli in the sputum of patients. Other conditions that could affect serum ceruloplasmin activity were excluded by clinical examination and relevant investigations. The data were analyzed statistically by use of Student’s t-test.

The mean (and SD) serum ceruloplasmin activity was 76.6 (10.7) U/L in the control group and 185.1 (55.0) U/L in the patients with pulmonary tuberculosis, a statistically significant (p < 0.001) difference. All except two of the patients had serum ceruloplasmin activity exceeding the mean plus 2 SD for our control group.

To examine serum ceruloplasmin activity in relation to the severity of the disease, we divided the patients into three groups—minimal lesions (n = 12), moderately advanced lesions (n = 24), and far-advanced lesions (n = 22)—according to the criteria of the National Tuberculosis Association of the U.S.A. (3). The mean (and SD) serum ceruloplasmin activity in these three groups was 130.6 (20.1), 165.9 (29.8), and 235.9 (47.1) U/L, respectively. Each mean differed significantly (p < 0.001) from the other two.

The mean (and SD) ESR (Westergren) was 54.4 (12.6) mm/h for patients with minimal lesions, 66.3 (15.5) mm/h for patients with moderately advanced lesions, and 70.5 (19.5) mm/h in patients with far-advanced lesions. The difference between the first two groups was significant (p < 0.05) but that between the last two groups was not (p > 0.05).

Evidently, serum ceruloplasmin activity is a better index of disease activity in pulmonary tuberculosis than is the ESR.

References

Bachhu Singh Verma1
Ramesh Chandra Gupta2
Bhagwan Singh Chaudhary1
Prem Prakash Singh2

Depts. of Tuberculosis & Chest Diseases1 & Biochem.2
R.N.T. Medical College
Udaipur-313001, India

Improved Sample Preparation before Liquid-Chromatographic Determination of Probeneicid in Cerebrospinal Fluid

To the Editor:

Our recently described (1) liquid-chromatographic method for probeneicid in human cerebrospinal fluid (CSF) requires solvent-extraction and evaporation steps in sample preparation. More recently, small packed columns ("SEP-PAK" cartridge; Waters Asso-

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The Acetone Precipitation Step Is Needed in Determining the Lecithin/Sphingomyelin (L/S) Ratio of Amniotic Fluid

To the Editor:

Recently Brown et al. (1) described a new procedure for determining the L/S ratio of amniotic fluid. In their method the acetone precipitation step is isolated from the surface-active lecithin is omitted. Objections against an acetone precipitation were also made by Penney et al. (2) and in the Selected Method for determining L/S ratios (3) this step is considered unnecessary.

There are, however, two arguments against such an alteration of the original procedure of Gluck et al. (4):

1) The threshold value of 2.0 for the L/S ratio, when there is no longer danger of respiratory distress, will have to be replaced by a new value. It is unknown at present whether the test will then retain its clinical usefulness for determining fetal lung maturity. Gluck et al. in fact (4) specifically stated that: "those variations that omit the acetone precipitation may introduce large errors and are not acceptable."

2) We (5) have published the complete fatty-acid analysis of the acetone-soluble and acetone-insoluble lecithin of amniotic fluid collected at term. The fatty acid composition of the latter appears to be almost identical to that of the lecithin of the lamellar bodies, the lung surfactant (6, 7).

Thus as long as the L/S ratio is determined in clinical chemical laboratories as an aid to the obstetrician, the acetone precipitation step will remain mandatory. A totally different question is whether this determination will not soon be superseded by a better method that will be easier to standardize and less time consuming. Duck-Chong and Brown (6), in their survey, have shown that considerable such advances have been made, but that the ideal method is yet to be published.

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J. Y. K. Hsieh
R. K. Yang
K. L. Davis

Dept. of Psychiatry
Mt. Sinai School of Med.
New York, NY 10029,
and The Bronx VA Med. Center
130 W. Kingsbridge Rd.
Bronx, NY 10468

Address correspondence to this author at The Bronx VA Medical Center.


Use of Heparinized Samples for Salicylate Determination with the Du Pont aca Validated

To the Editor:

Use of phlebotomy tubes containing no anticoagulant adds 15 to 20 min to specimen-processing time as compared with tubes containing appropriate anticoagulant. For this reason, use of noninterfering anticoagulant is preferred by our laboratory for urgent samples.

The Du Pont aca (Du Pont Instruments, Wilmington, DE 19889) is well suited for use in the assay of emergency samples. Data on the use of heparin for most tests offered with this instrument system are available; however, supporting data for salicylate determinations are incomplete. We extended them, using 41 samples from outpatients who were being treated with salicylate. We collected specimens of blood concurrently, one in a 10-mL red-top Vacutainer Tube containing no anticoagulant and the other in a 10-mL red-top Vacutainer Tube containing 1.25 mg/mL aca.

References


Fig. 1. Agreement between plasma and serum salicylate values determined with the aca