tions (n = 7), systematic autoimmune disease (n = 8), AMI (n = 3), and miscellaneous (n = 5). None of these patients had received streptokinase.

In the early phase of AMI, cardiac antigens are released. The immunological response to this release often results clinically in the so-called Dressler syndrome, which can be observed in 1 to 7% of patients with a recent AMI (2). Ten days after AMI, antibodies against myosin, actin, and myoglobin could be shown in a large proportion of patients (3).

Also, enzyme molecules may act as antigens in this process; 10 days after AMI, we observed macro-CK complexes, which were absent at the early stages of the patient's AMI (4). In patients with atherosclerosis, which is the pathological condition underlying AMI, the incidence of macro-CK was increased (4). According to Ross and Glomset (5, 6), autoimmunity plays an important role in the pathogenesis of atherosclerosis. In the post-pericardiomy syndrome, antigenic determinants are apparently modified and give rise to an immune response (7).

When we examined atherosclerotic aortic walls for their LDH-isoenzyme pattern according to the method of Wieme (8), we observed a relative predominance of LDH-3 and LDH-4. Table 1 summarizes the results of the LDH-electrophoresis of inner (intima + media) and outer (adventitia) regions of three aortic walls.

In macro-CK formation, the antibody always shows an affinity for CK-BB, which is abundant in the vascular wall (9). In macro-CK forms observed after AMI, the antibody was found to be complexed to LDH-3, which is also predominant in atherosclerotic vascular wall. As in the case of CK-BB, LDH-3 can be regarded as a typical example of a vascular wall protein, which may undergo structural changes in the post-AMI period.

We believe the occurrence of macro-LDH after AMI can be explained as an autoimmune reaction against proteins of the cardiovascular system. The presence of macro-LDH in the absence of therapy with streptokinase and the evidence of autoimmune features in atherosclerosis support this view.

References

Joris Delanghe
Marc De Buyzere
Ivan De Scheerder
Jan Vanderborght
Roger Wieme

Depts. of Clin. Chem., and Cardiology
University Hospital
De Pintelaan 185 (IB2)
B-9000 Gent, Belgium

Correction of Precision Equations in NCCLS EP5-T

To the Editor:

The NCCLS document EP5-T (1) is a valuable resource used often in method evaluations. However, the equations for calculating total precision in EP5-T are incorrect. The purpose of this Letter is to explain the error and to provide correct equations. Equations 1 and 2 are recommended by EP5-T for calculating total precision for the cases when there are one or two runs per day, respectively. $S_p = \text{total precision}$, $B = \text{standard deviation of daily means}$, $A = \text{standard deviation of run means}$, $S_{wr} = \text{within-run precision}$, and $N = \text{number of observations within a run}$.

$$S_p = \left[ \left( B^2 + (N - 1)S_{wr}^2 \right) \right]^{1/2}$$

$$S_T = \left( (2B^2 + A^2 + S_{wr}^2) \right)^{1/2}$$

The problem with equation 1 will be explained. The results can be extended to equation 2. Equation 1 is a result of combining the equation for the day-to-day component $S_{dd}$, into the equation for total precision, (4).

$$S_{dd} = \left[ B^2 - S_{wr}^2/N \right]^{1/2}$$

and $S_T = \left( S_{dd} + S_{wr}^2 \right)^{1/2}$

This is valid if and only if the estimate of $S_{dd}$ is greater than or equal to zero. For example, if $B = 0$ (i.e., the means on all days are the same) and $N = 2$, then according to equation 1, $S_T = S_{wr}/\sqrt{2}$, which is theoretically impossible (2), because total precision cannot be less than within-run precision. The true $S_{dd}$ can never be less than zero. However, if the true $S_{dd}$ were zero, 50% of the time $S_{dd}$ would be estimated to be less than zero due to sampling error.

The correct method is to calculate the day-to-day component of precision by using equation 3. If the result for equation 3 is negative, set it to 0. Then use equation 4. (One may wish to test for statistical significance for positive estimates of $S_{dd}$ using an F test. Non-statistically significant results would also be set to zero before using equation 4.)

References

Joris Delanghe
Marc De Buyzere
Ivan De Scheerder
Jan Vanderborght
Roger Wieme

Depts. of Clin. Chem., and Cardiology
University Hospital
De Pintelaan 185 (IB2)
B-9000 Gent, Belgium

Table 1. LDH-Isoenzyme Distribution in Three Atherosclerotic Aortic Walls

<table>
<thead>
<tr>
<th>Relative abundance, %</th>
<th>Intima + media</th>
<th>Adventitia</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDH-1</td>
<td>7.6±0.7</td>
<td>20.3±1.1</td>
</tr>
<tr>
<td>LDH-2</td>
<td>14.3±0.9</td>
<td>19.4±1.7</td>
</tr>
<tr>
<td>LDH-3</td>
<td>27.4±1.0</td>
<td>23.6±1.9</td>
</tr>
<tr>
<td>LDH-4</td>
<td>37.4±1.5</td>
<td>25.6±1.7</td>
</tr>
<tr>
<td>LDH-5</td>
<td>13.0±1.0</td>
<td>11.1±1.0</td>
</tr>
</tbody>
</table>

*Mean ± SD.

Corrections of Precision Equations in NCCLS EP5-T

Jan S. Krouwer
William N. Stewart

Ciba Corning Diagnostics Corp.
63 North St.
Medfield, MA 02052

Plasma Acidification Increases Atrial Natriuretic Peptide as Measured by Radioimmunoassay

To the Editor:

Considerable evidence now suggests that the atrial natriuretic peptides...