Two Cases of Cytosol Aminopeptidase–Immunoglobulin Complex

To the Editor:

There have been many reports of soluble complexes between immunoglobulins and enzymes in human sera. Maekawa et al. (1) reported a case with various enzyme–immunoglobulin (Ig) complexes, including a cytosol aminopeptidase (c-AP; EC 3.4.11.1) and a cysteolaminopeptidase (c-AP; EC 3.4.11.3). We also identified a complex between c-AP and immunoglobulins by using counterimmunoelectrophoresis in a modification of Tozawa’s technique involving Titan III separating medium (3).

Leucinamide-splitting aminopeptidases in human serum consist of c-AP, microsomal aminopeptidase (EC 3.4.11.2), and cysteolaminopeptidase (EC 3.4.11.3). We separated each aminopeptidase by electrophoresis on Cellogel membrane with barbital buffer (0.06 M, pH 8.6). Activity staining was performed with L-leucinamide as the substrate, as described by Kanda et al. (2). We detected the existence of complex between c-AP and immunoglobulins by using counterimmunoelectrophoresis in a modification of Tozawa’s technique involving Titan III separating medium (3).

The IgG fraction was prepared from the patient’s serum as described by Sudo et al. (4) for studying reconstitution of enzyme–IgG fractions.

Case 1: A 37-year-old woman with RA was admitted to our hospital for fever and swelling of her feet. Her laboratory data included an LAP concentration of 179 U/L (reference interval: 26–44 U/L) and a lactate dehydrogenase (LD; EC 1.1.1.27) concentration of 546 U/L (162–323 U/L), both increases that were attributed to Staphylococcus aureus infection. The remainder of her biochemistry profile was almost within normal range. With the use of antibiotics, her symptoms lessened and the LD and LAP activities decreased. However, the electrophoretic pattern for LAP remained abnormal, with an extra band that migrated more slowly than the normal c-AP, when her LAP activity was greatest (Figure 1). It was suggested that this abnormal pattern correlated with RA rather than the acute symptom of myelitis. Counterimmunoelectrophoresis suggested that the abnormal band was c-AP–IgG(kappa) complex.

Case 2: This patient, a 14-year-old girl with AML, has been followed in our hospital. Her laboratory data included an LAP value of 114 U/L and an LD concentration of 808 U/L. An extra band, located between the origin and the “fast γ” region, was observed in association with the increases of LAP activity (Figure 1). Counter immunoimmunoelectrophoresis suggested that the abnormal band was c-AP–IgG(λ) complex.

We mixed the serum IgG fraction from case 2 with serum containing high c-AP activity and incubated the mixture overnight at room temperature. A new band, corresponding to the extra band reported above, appeared in electrophoresis. This finding suggested that the extra band originated from the complex between IgG and c-AP.

Because the concentration of serum LAP and the fractional determination of each aminopeptidase are useful for the assessment of liver disease (5), viral infection (6, 7), and other diseases, we routinely evaluate serum LAP activity as a part of a patient’s laboratory examination. If measurements of serum LAP activity become more widely undertaken, more cases of “macro” LAP will probably be reported.

References

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Use of Cholesterol/Triglyceride Ratio and the Friedewald Formula

To the Editor:

Gonzalez G’-Estrada et al. (1) criticized the Friedewald and DeLong formulas for use in estimating low-density-lipoprotein (LDL) cholesterol. Unfortunately, their evaluation is replete with errors, exaggerates the problems associated with derived or calculated LDL values, and proposes a remedy that is impractical for routine use.

The authors imply that a large portion of patients will have a serum cholesterol/triglyceride (C/TG) ratio too low for either formula. In their control group, 24 of 62 (38.7%) had a