has not yet ended, and more results and experience should be obtained.

References

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Causes of Multiple Abnormal Bands in Serum Protein Electrophoresis

To the Editor:

In a recent Case Report Vladutiu and Kohli (1) described a patient whose serum protein electrophoresis pattern exhibited a double spike, attributed to a monoclonal IgG lambda paraprotein and lambda Bence Jones protein. Hobbs (2) has summarized the various causes of multiple abnormal bands found in protein electrophoresis, these being mainly polymerization or degradation of the paraprotein. Faint abnormal bands may also appear on protein electrophoresis because of increased lysozyme activity (3) and increased C-reactive protein in the blood in many diseases involving active inflammation and tissue destruction. Bands attributable to lysozyme are found in the post-gamma position, often quite separate from the cathodic end of the gamma-globulin region. C-reactive protein is found in the slow-gamma region and can appear as a faint discrete band, especially if the remainder of the gamma-globulin fraction is decreased, as is often the case in myeloma patients. It is therefore possible that some sera may show several abnormal bands on protein electrophoresis owing to the presence of C-reactive protein and lysozyme, and also owing to polymerization or denaturation of the major paraprotein. Two recent cases of ours illustrate this point.

Case 1: Serum from a 79-year-old man displayed three abnormal bands on protein electrophoresis on cellulose acetate. Two were of about equal intensity; the third band, a faint one, appeared in the post-gamma position. Immuno-electrophoresis suggested that the two major bands were IgM kappa paraproteins, possibly 19S IgM and one of the several breakdown products of IgM that have been described (2, 4). By the Ouchterlony double-diffusion technique, the patient's serum was strongly positive for lysozyme, suggesting that the faint abnormal band in the post-gamma position was lysozyme.

Case 2: Serum from a 70-year-old man displayed one strong and three faint abnormal bands on cellulose acetate protein electrophoresis. Similar bands were seen after cellulose acetate electrophoresis of the patient's concentrated urine. Immuno-electrophoresis of the serum against the appropriate antisera indicated that the major band in the serum was an IgG kappa paraprotein, and one of the faint bands in the serum was kappa Bence Jones protein. Of the other two faint abnormal bands seen on the serum protein electrophoresis, one was probably lysozyme, as judged from its position and the fact that the patient's serum was strongly positive for lysozyme in the Ouchterlony double-diffusion test. The other faint abnormal band was probably C-reactive protein, as judged from its position and the high concentration of C-reactive protein (110 mg/liter) in the patient's serum, as determined by Laurell electroimmunoassay. It was probably visible as a discrete band in this patient's serum because of the considerable amount of immune paresis, the IgA concentration being 200 mg/liter and that of the IgM the same. The components of lower molecular weight, namely lysozyme and Bence Jones protein, were found in relatively greater concentration in the urine than in the serum.

References

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