Unusual Serum Electrophoresis Pattern in a Woman with Pancreatic Carcinoma

Joris R. Delanghe,1* Marc L. De Buyzere,2 Veerle Casneuf,2 and Marc Peeters2

Departments of 1 Clinical Chemistry and 2 Gastroenterology, University Hospital Ghent, Ghent, Belgium.
*Address correspondence to this author at: Department of Clinical Chemistry, University Hospital Ghent, De Pintelaan 185 (2P8), B-9000 Gent, Belgium. Fax +32-9-332-4985; e-mail joris.delanghe@ugent.be.

CASE DESCRIPTION

A 51-year-old woman presented with progressive severe icterus associated with advanced inoperable pancreatic carcinoma. Biopsy of the liver revealed metastasis of a moderately differentiated adenocarcinoma, possibly of pancreatic origin. Imaging studies did not show any primary tumor in the pancreas but did reveal a deep vein thrombosis of the left lower extremity and a pulmonary embolism. Bone scans revealed metastases. The patient began treatment with chemotherapy (gemcitabine), radiotherapy to alleviate pain, and placement of a percutaneous transhepatic stent in the right biliary system because of progressive icterus.

Routine biochemical investigation of the patient’s serum revealed increased total bilirubin (275 μmol/L, reference value <22 μmol/L), which consisted mainly of direct bilirubin (215 μmol/L, reference value <4 μmol/L). The cytosolic liver enzymes alanine aminotransferase (115 U/L) and aspartate aminotransferase (143 U/L) were moderately increased. The serum protein concentration was 68 g/L (reference interval 60–85 g/L), but capillary electrophoresis of serum proteins (Capilaris, Sebia) demonstrated a low albumin fraction together with a marked additional peak observed between the β and the γ region. Results of immunofixation with antibodies against G, M, and A heavy chains and κ and λ light chains were negative, indicating that this additional electrophoretic fraction did not indicate the presence of a paraprotein. Agarose gel electrophoresis confirmed the abnormal pattern, ruling out analytical interference caused by atypical ultraviolet absorbance.

Questions to Consider

- Explain the potential causes of an abnormal electrophoresis pattern.
- Describe the factors that should be considered in cases of positive serum protein electrophoresis and negative immunofixation.
- List things that the laboratory can do to resolve such cases.
Final Publication and Comments
The final published version with discussion and comments from the experts will appear in the September 2008 issue of Clinical Chemistry. To view the case and comments online, go to http://www.clinchem.org/content/vol54/issue9/ and follow the link to the Clinical Case Study and Commentaries.

Educational Centers
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