

## Unusual Serum Electrophoresis Pattern in a Woman with Pancreatic Carcinoma

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### 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  $\mu\text{mol/L}$ , reference value  $<22 \mu\text{mol/L}$ ), which consisted mainly of direct bilirubin (215  $\mu\text{mol/L}$ , reference value  $<4 \mu\text{mol/L}$ ). 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  $\beta$  and the  $\gamma$  region. Results of immunofixation with antibodies against G, M, and A heavy chains and  $\kappa$  and  $\lambda$  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
<ul style="list-style-type: none"><li>• Explain the potential causes of an abnormal electrophoresis pattern.</li></ul>
<ul style="list-style-type: none"><li>• Describe the factors that should be considered in cases of positive serum protein electrophoresis and negative immunofixation.</li></ul>
<ul style="list-style-type: none"><li>• List things that the laboratory can do to resolve such cases.</li></ul>

## 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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