

A Healthy Young Man Presenting with Multiple Rib Fractures

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⁵ Nonstandard abbreviations: CEDIA, cloned enzyme donor immunoassay; LCMS/MS, liquid chromatography–tandem mass spectrometry.

CASE

A 32-year-old, otherwise healthy man presented initially with right rib and sternal pain after lifting a heavy object. The patient also reported several rib fractures 1 year previously associated with coughing. On examination, the patient had bilateral rib tenderness. Chest x-ray revealed multiple healing fractures of the sixth, seventh, and eighth ribs. A bone scan demonstrated increased uptake in the sternum and bilaterally in the ribs.

A complete blood count was normal with the exception of a platelet count of 61 000/uL (reference interval, 130 000–440 000/uL). Alkaline phosphatase, creatinine, and calcium were within reference intervals. Total protein and albumin were 67 g/L (reference interval, 61–79 g/L) and 44 g/L (reference interval, 35–48 g/L), respectively. Ig concentrations were decreased: IgG 6.07 g/L (reference interval, 7.51–15.60 g/L), IgA 0.31 g/L (reference interval, 0.69–2.09 g/L), and IgM 0.10 g/L (reference interval, 0.48–2.74 g/L). We performed serum protein electrophoresis (SPEP)⁵ and immunofixation using the Sebia Hydrasys®. SPEP showed no monoclonal band in the γ region but an unexplained band in the β region with a reduced γ -globulin concentration of 3.9 g/L (reference interval, 6–14 g/L). Serum immunofixation electrophoresis showed a prominent λ monoclonal band in the β region and hypogammaglobulinemia. Immunofixation studies for IgG, IgA, and IgM were negative for the presence of monoclonal bands. β_2 -Microglobulin was increased at 3.51 mg/L (reference interval, <1.85 mg/L). Twentyfour-hour urine collection was significant for a total protein of 0.54 g/24 h (reference interval, <0.15 g/24 h); urine protein electrophoresis (UPEP) and immunofixation revealed 2 monoclonal λ light chain bands.

Questions to Consider

- List the significant and atypical findings in this case.
- Given the patient's SPEP and immunofixation results, what additional testing should be performed by the laboratory?
- What is the differential diagnosis of a monoclonal band that shows staining for light chains, but not for IgG, IgA or IgM?

Final Publication and Comments

The final published version with discussion and comments from the experts will appear in the September 2010 issue of *Clinical Chemistry*. To view the case and comments online, go to <http://www.clinchem.org/content/vol56/issue9> and follow the link to the Clinical Case Study and Commentaries.

Educational Centers

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