

## A Healthy Young Man Presenting with Multiple Rib Fractures

Lindsey Harle,<sup>1</sup> Clayton Chan,<sup>2</sup> Nadhipuram V. Bhagavan,<sup>3</sup> Carlos N. Rios,<sup>1,4</sup> Cheryl E. Sugiyama,<sup>4</sup> Miki Loscalzo,<sup>4</sup> Jane Uyehara-Lock,<sup>1,4</sup> and Stacey A.A. Honda<sup>1,4</sup>

<sup>1</sup> Department of Pathology and <sup>3</sup> Department of Anatomy, Biochemistry and Physiology, John A. Burns School of Medicine, University of Hawaii, Honolulu, HI; <sup>2</sup> Department of Oncology and <sup>4</sup> Department of Pathology, Kaiser Foundation Hospital, Honolulu, HI.

Address correspondence to this author at: Pathology/Regional Laboratory, Kaiser Foundation Hospital, 3288 Moanalua Road, Honolulu, HI 96819. E-mail [stacey.honda@kp.org](mailto:stacey.honda@kp.org).

<sup>5</sup> 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)<sup>5</sup> and immunofixation using the Sebia Hydrasys®. SPEP showed no monoclonal band in the  $\gamma$  region but an unexplained band in the  $\beta$  region with a reduced  $\gamma$ -globulin concentration of 3.9 g/L (reference interval, 6–14 g/L). Serum immunofixation electrophoresis showed a prominent  $\lambda$  monoclonal band in the  $\beta$  region and hypogammaglobulinemia. Immunofixation studies for IgG, IgA, and IgM were negative for the presence of monoclonal bands.  $\beta_2$ -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  $\lambda$  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.

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