Dr. Reynolds, *et al* reply

To the Editor:

We thank Dr. Wener for his insightful comments regarding the types of crystals causing tophaceous pseudogout. Unfortunately, more specific testing to identify the molecular nature of the crystals was not available for our patient, and the diagnosis is based on histopathology and the birefringence properties of the crystals¹. However, data regarding more specific assays of the molecular structure of the crystals were available in 12 of the previous published cases.

Pritzker, *et al*², de Vos, *et al*³, Kamatani, *et al*⁴, Dijkgraaf, *et al*⁵, and Olin, *et al*⁶ identified the crystals by x-ray powder diffraction. Aoyama, *et al*⁷ did not specify their technique but did quantitative analysis and found the calcium:phosphorous ratio to be 1.1:1, consistent with the calcium pyrophosphate dihydrate (CPPD) crystals. Mogi, *et al*⁸ Pynn, *et al*⁹, Vargas, *et al*¹⁰, and Strobl, *et al*¹¹ found CPPD crystals by infrared spectrophotometry. Onodera, *et al*¹² used electron-probe microanalysis and found CPPD crystals. Interestingly, Zemlenyi and Calcaterra¹³ found both CPPD and hydroxyapatite crystals in their patients' tissue by electron-probe elemental analysis.

Given Dr. Wener's case¹⁴, and the data from Zemlenyi and Calcaterra¹³, it appears that hydroxyapatite, or both CPPD and hydroxyapatite crystals, may also cause tophaceous pseudogout symptoms. It is important to screen patients with tophaceous pseudogout for parathyroid disease, as it could predispose to either CPPD or hydroxyapatite crystal deposition.

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