

## 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 crystals<sup>1</sup>. 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*<sup>2</sup>, de Vos, *et al*<sup>3</sup>, Kamatani, *et al*<sup>4</sup>, Dijkgraaf, *et al*<sup>5</sup>, and Olin, *et al*<sup>6</sup> identified the crystals by x-ray powder diffraction. Aoyama, *et al*<sup>7</sup> 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*<sup>8</sup> Pynn, *et al*<sup>9</sup>, Vargas, *et al*<sup>10</sup>, and Strobl, *et al*<sup>11</sup> found CPPD crystals by infrared spectrophotometry. Onodera, *et al*<sup>12</sup> used electron-probe microanalysis and found CPPD crystals. Interestingly, Zemplyeni and Calcatera<sup>13</sup> found both CPPD and hydroxyapatite crystals in their patients' tissue by electron-probe elemental analysis.

Given Dr. Wener's case<sup>14</sup>, and the data from Zemplyeni and Calcatera<sup>13</sup>, 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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## REFERENCES

1. Reynolds JL, Matthew IR, Chalmers A. Tophaceous calcium pyrophosphate dihydrate deposition disease of the temporomandibular joint. *J Rheumatol* 2008;35:717-21.
2. Pritzker KPH, Phillips H, Luk SC, Koven IH, Kiss A, Houpt JB. Pseudotumor of temporomandibular joint: destructive calcium pyrophosphate dihydrate arthropathy. *J Rheumatol* 1976;3:70-81.
3. de Vos RAI, Brants J, Kusen GJ, Becker AE. Calcium pyrophosphate dihydrate arthropathy of the temporomandibular joint. *Oral Surg Oral Med Oral Pathol* 1981;51:497-502.
4. Kamatani Y, Tagawa T, Hirano Y, Nomura J, Murata M. Destructive calcium pyrophosphate dihydrate temporo-mandibular arthropathy (pseudogout). *Int J Oral Maxillofac Surg* 1987;16:749-52.
5. Dijkgraaf LC, de Bont LGM, Liem RSB. Calcium pyrophosphate dihydrate crystal deposition disease of the temporomandibular joint: Report of a case. *J Oral Maxillofac Surg* 1992;50:1003-9.
6. Olin HBD, Pedersen K, Francis D, Hansen H, Poulsen FW. A very rare benign tumour in the parotid region: calcium pyrophosphate dihydrate crystal deposition disease. *J Laryngol Otol* 2001;115:504-6.
7. Aoyama S, Kino K, Amagasa T, Kayano T, Ichinose S, Kimijima Y. Differential diagnosis of calcium pyrophosphate dihydrate deposition of the temporomandibular joint. *Br J Oral Maxillofac Surg* 2000;38:550-3.
8. Mogi G, Kuga M, Kawauchi H. Chondrocalcinosis of the temporomandibular joint. *Arch Otolaryngol Head Neck Surg* 1987;113:1117-9.
9. Pynn BR, Weinberg S, Irish J. Calcium pyrophosphate dihydrate deposition disease of the temporomandibular joint. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1995;79:278-84.
10. Vargas A, Teruel J, Trull J, Lopez E, Pont J, Velayos A. Calcium pyrophosphate dihydrate crystal deposition disease presenting as a pseudotumor of the temporomandibular joint. *Eur Radiol* 1997;7:1452-3.
11. Strobl H, Emshoff R, Kreczy A. Calcium pyrophosphate deposition disease of the temporomandibular joint. *Oral Surg Oral Med Oral Pathol* 1998;85:349-51.
12. Onodera K, Ichinohasama R, Saito M, Ooya K. A case of the calcium pyrophosphate dihydrate (CPPD) deposition disease without condylar destruction of the temporomandibular joint. *Pathol Int* 1997;47:622-6.
13. Zemplyeni J, Calcatera TC. Chondrocalcinosis of the temporomandibular joint. *Arch Otolaryngol* 1985;111:403-5.
14. Grant GA, Wener MH, Yaziji H, et al. Destructive tophaceous calcium hydroxyapatite tumor of the infratemporal fossa. Case report and review of the literature. *J Neurosurg* 1999;90:148-52.

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