

# A 68-Year-Old Violinist Who Developed Diplopia

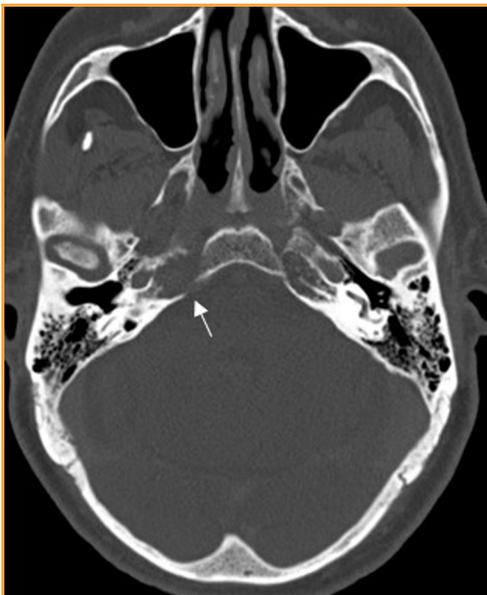
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**A** 68-year-old violinist noted sudden diplopia when scanning his musical score and had to stop playing for a week. He was admitted to the hospital after experiencing nausea and vomiting. He had diabetes and metabolic syndrome but no history of trauma, headache, or fever and no prior admissions. His examination was normal except for right abducens nerve palsy. Computed tomography of the head revealed a single lytic lesion at the apex of the petrous bone (Figure 1). The blood count was normal, as were the urinalysis, renal function, international normalized ratio, serum proteins, and calcium. The erythrocyte sedimentation rate was 52 mm/hr. Liver enzymes showed a minimally increased aspartate aminotransferase (50 IU/L) and gamma-glutamyl transpeptidase (70 IU/L) only. Abdominal ultrasound revealed a 13-cm liver mass. Whole body computed tomography showed enhancement with bilateral adrenal

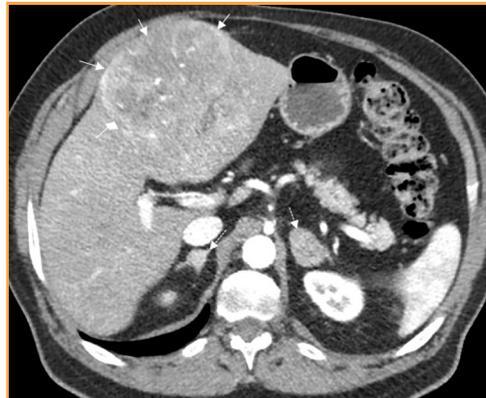
masses and lytic lesions of the left iliac bone (Figure 2).

Alpha-fetoprotein was markedly increased (10832 ng/mL). Hepatitis C antibodies and RNA and HB<sub>s</sub>Ag were negative. There was no history of alcohol abuse and no fatty liver

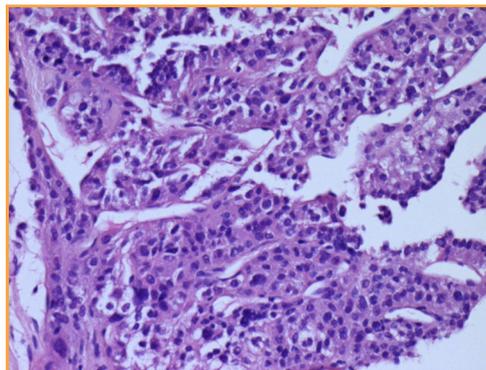
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**FIGURE 1.** Axial computed tomography image through the temporal bones showing a lytic bone lesion in the right petrous apex (arrow).



**FIGURE 2.** Axial contrast enhanced computed tomography showing a large mass in the left lobe of a normal appearing liver (arrows) with heterogeneous enhancement in the late arterial phase and bilateral adrenal masses (dashed arrows).



**FIGURE 3.** Liver biopsy showing well-differentiated hepatocellular carcinoma (hematoxylin and eosin staining,  $\times 150$ ). The tumor cells show morphologic features of hepatocytes, trabecular pattern and Hep Par I immunopositivity (the latter not shown).

or cause of chronic liver disease. Liver biopsy showed well-differentiated hepatocellular carcinoma (HCC) (Figure 3). Palliative oncological treatment was started.

Isolated sixth nerve palsy is strongly associated with diabetes,<sup>1</sup> and most patients fully recover. Here however, it was caused by a serious pathology of the petrous apex of the temporal bone revealed by the imaging studies. Petrous apex lesions can be caused by an inflammatory process (usually associated with fever and pain), vascular lesions, osseous dysplasias, benign tumors, and malignant tumors.<sup>2</sup> The latter can arise in situ (eg, chondrosarcoma), infiltrate from adjacent locations (eg, nasopharyngeal carcinoma), or be due to hematogenous metastases reported primarily in breast cancer. Its special susceptibility is thought to be due to sluggish blood flow through the petrous apex marrow, allowing filtering and

deposition of tumor cells.<sup>2</sup> HCC occurs without underlying cirrhosis in about 1 of 5 patients, and diabetes may be an important risk factor.<sup>3</sup> Bones are the second most common organ to be affected by metastases, following the lungs. However, presentation of HCC developing in a normal liver by a symptomatic petrous apex lesion is distinctly unusual.

#### ACKNOWLEDGMENT

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1. Patel SV, Holmes JM, Hodge DO, Burke JP. Diabetes and hypertension in isolated sixth nerve palsy. A population-based study. *Ophthalmology*. 2005;112(5):760-763.
2. Razeq AA, Huang BY. Lesions of the petrous apex: classification and findings at CT and MR imaging. *Radiographics*. 2012;32(1):151-173.
3. Farazi PA, DePinho RA. Hepatocellular carcinoma pathogenesis: from genes to environment. *Nat Rev Cancer*. 2006;6(9):674-687.