

Amusia for Pitch Caused by Right Middle Cerebral Artery Infarct

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A 61-year-old right-handed man with hypertension and dyslipidemia noted that he was singing along to classic rock songs on his car radio, but his voice was off pitch. Six days later, a magnetic resonance imaging scan of his brain revealed a cerebral infarct of the right temporal parietal cortex and insula. Case reports of the precise anatomic correlates of disordered pitch musical processing have been few and fragmentary. The anatomic involvement of our case coincides with the areas of involvement in 3 previously reported cases. Increased awareness of amusia as a rare clinical presentation of stroke should lead to earlier stroke intervention. **Key Words:** Amusia—pitch—cerebral infarct—right middle cerebral artery.

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A 61-year-old right-handed optometrist with hypertension and dyslipidemia noted that he was singing along to classic rock songs on his car radio off pitch when he had lifelong always sung in tune. Three days later, his neurologic examination was normal without receptive or expressive aphasia, alexia, or agraphia.

Six days after the onset of his inability to sing along in tune, a magnetic resonance imaging (MRI) scan of his brain (Fig 1) revealed confluent and gyriform areas of restricted diffusion, fluid-attenuated inversion recovery hyperintensity and gyriform enhancement of the right insula, perisylvian and right parietal cortex, and gyriform hyperintensity on T₁-weighted images in some of these areas. One month later, a repeat MRI scan (Fig 2) revealed gyriform petechial hemorrhage and/or cortical laminar

necrosis along the right temporoparietal cortex and right insula consistent with evolution of the previously noted early subacute right posterior middle cerebral artery (MCA) infarct. Intracranial and neck magnetic resonance angiography scans were normal.

Impairment of processing of music has been termed amusia^{1,2} or musical agnosia,^{2,3} and has been associated with lesions of the right hemisphere.¹⁻³ The precise anatomic correlates of amusia with impairment of pitch have varied among case reports, which are few and fragmentary.¹⁻³ After the clipping of ruptured right MCA aneurysms, Ayotte et al³ reported 2 cases of disordered pitch perception—termed apperceptive music agnosia—that were associated with computed tomographic scans that revealed infarcts of the right posterior superior temporal lobe and/or insula. Terao et al¹ described a professional tango singer with a deficit in pitch perception and a more severe inability to reproduce a presented pitch, which they termed vocal amusia, after a stroke of the right superior temporal cortex extending to the supramarginal gyrus posterior aspect of the postcentral gyrus and the posterior insula on MRI. Our patient's MRI featured the same anatomic areas of involvement as these 3 previously reported cases—all of which point to the right posterior temporal lobe and/or insula as the anatomic correlate of disordered pitch.

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Figure 1. Magnetic resonance imaging results at presentation. (A) Axial diffusion-weighted image. Note the hyperintense restricted diffusion of the right posterior insula and adjacent temporal lobe. (B) Axial fluid-attenuated inversion recovery image. Note the corresponding hyperintense signal of the right posterior insula and temporal lobe.

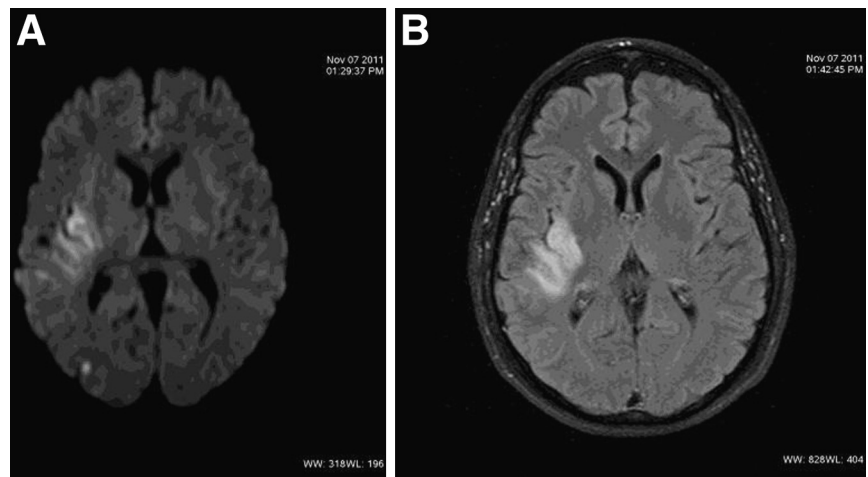
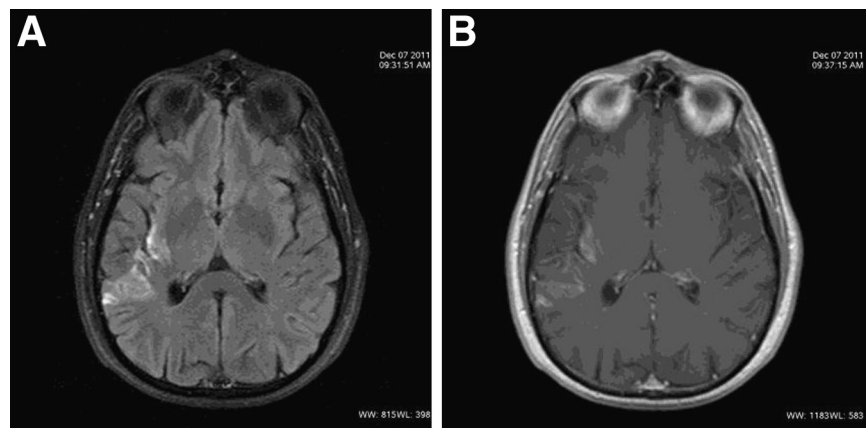


Figure 2. Magnetic resonance imaging results at 1 month of follow-up. (A) Axial fluid-attenuated inversion recovery imaging shows increased signal and reduced swelling of the infarcted tissue along the right insula and temporoparietal cortex. (B) Axial postcontrast T1-weighted imaging reveals a hyperintensity corresponding to regions of enhancement and cortical laminar necrosis of the right insula and temporoparietal cortex.



Increased awareness of amusia as a rare clinical presentation of stroke should lead to earlier stroke intervention.

References

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