Teaching Neuro*Image*

MRI contrast extravasation with enlarging hyperacute thrombolysis-related hemorrhage

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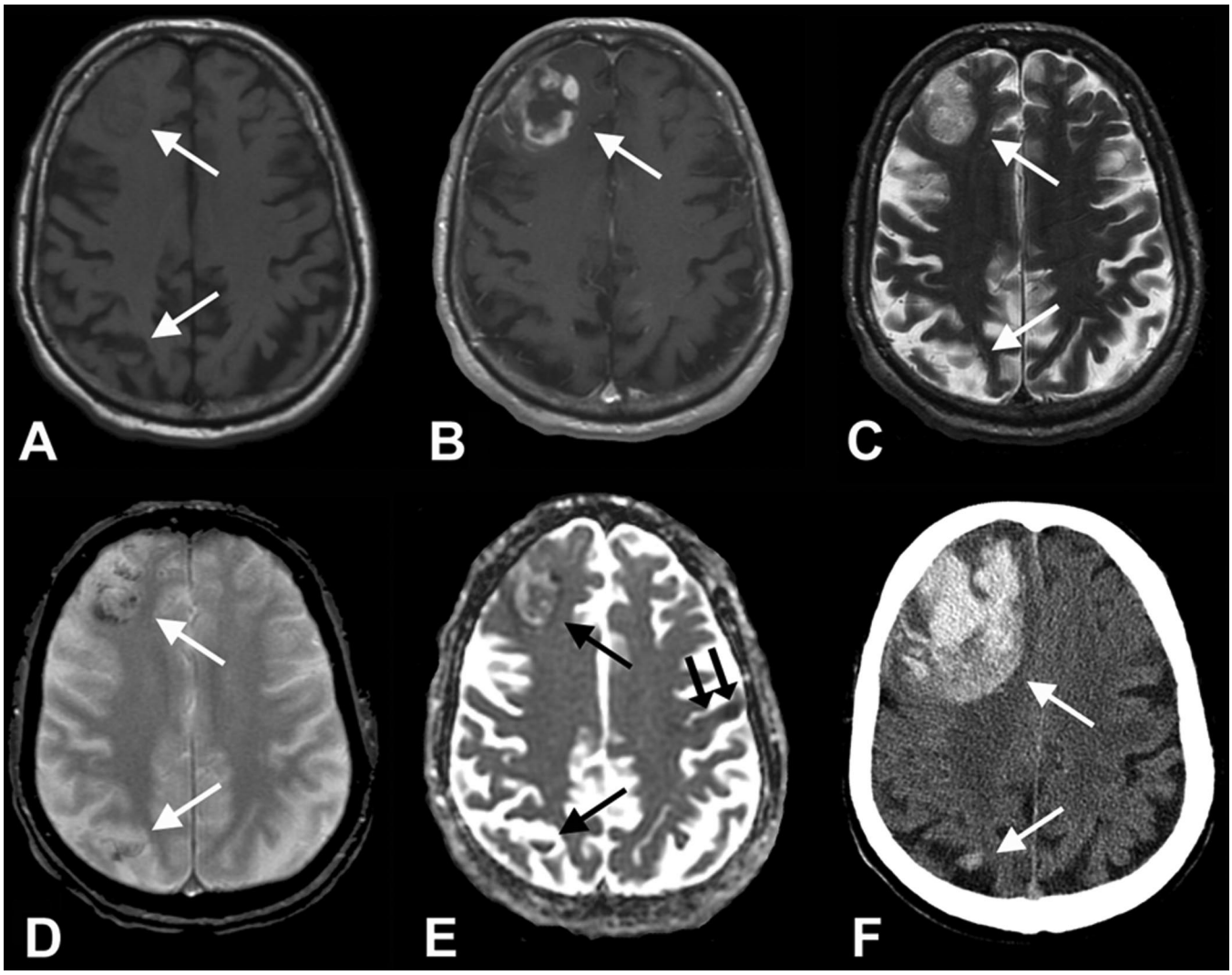

Figure. MRI T1-weighted (A), T1-weighted with gadolinium (B), T2-weighted (C), and susceptibility-weighted (D) sequences show hyperacute hemorrhages in the right frontal lobe and right parietal lobe (arrows). There is marked peripheral nodular gadolinium enhancement within the right frontal hemorrhage (B, arrow). The apparent diffusion coefficient map (E) shows hyperintensity within the right frontal hemorrhage (arrow) and hypointensity due to acute infarction in the left precentral gyrus (double arrow). CT scan (F) 5.5 hours following MRI shows enlargement of the right frontal hemorrhage and no change in size of the right parietal hemorrhage (arrows).

A 77-year-old man presented with acute dysarthria and right hemiparesis. He was treated with IV tPA, after a head CT excluded hemorrhage, at 2.5 hours. Routine MRI at eight hours revealed an 8.8 cm^3 right frontal lesion with mixed T1 hypointensity/isointensity, T2 hyperintensity, increased central apparent diffusion coefficient (ADC), peripheral hypointensity on susceptibility, and nodular peripheral gadolinium enhancement (figure), suggesting hemorrhage. ADC was decreased in the left precentral gyrus, consistent with acute infarction. At 12 hours, the patient developed a left hemiparesis. Head CT showed the right frontal lesion had increased to 58.7 cm^3. Cryoprecipitate and platelets were administered, followed by surgical evacuation of a pathologically confirmed hematoma.

Differentiation of hyperacute hemorrhage from other MRI lesions relies on the recognition of the peripheral T2 hypointensity and susceptibility effect caused by the early appearance of deoxygenated hemoglobin.[1] MRI has been shown to be as sensitive as CT for hyperacute hemorrhage.[1] If there is diagnostic uncertainty, however, rapid referral for CT is indicated. We hypothesize that the gadolinium enhancement reflected ongoing contrast extravasation from ruptured vessels and indicated a propensity to hematoma expansion, which was observed on the follow-up CT.[2] Detection of post-thrombolysis hyperacute hemorrhage on MRI should prompt close observation for hematoma expansion.

References

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