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Teaching NeuroImages: Perfusion imaging of cerebral hyperperfusion syndrome following revascularization

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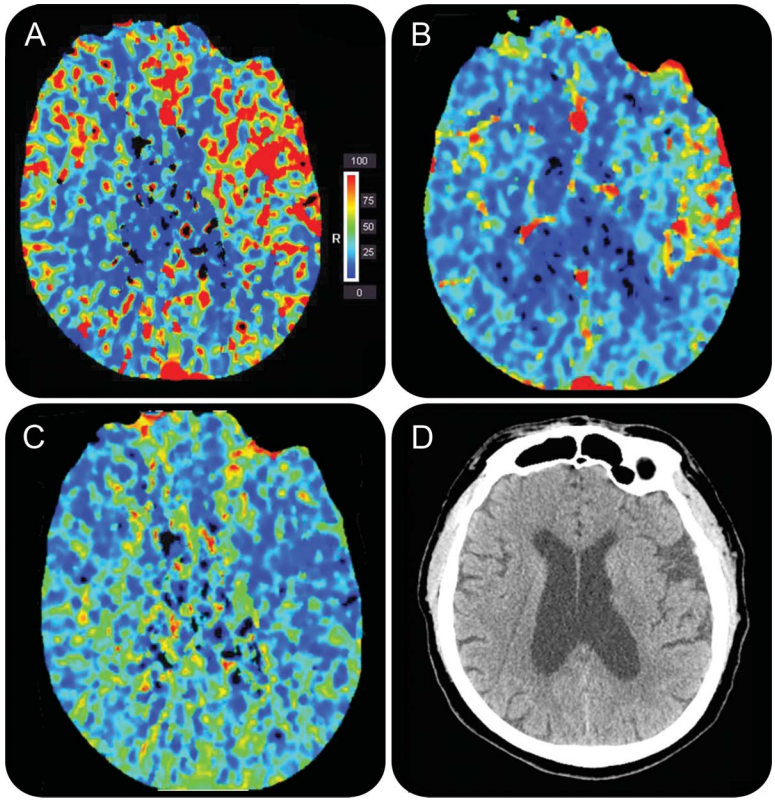
Figure CT perfusion performed 1 day following left carotid endarterectomy



CT shows left middle cerebral artery distribution increased relative cerebral blood flow (A), increased relative cerebral blood volume (B), and decreased mean transit time (C)—findings are consistent with cerebral hyperperfusion syndrome following revascularization. Noncontrast CT shows no hemorrhage or edema (D).

A 69-year-old man developed acute-onset confusion and hypertension with systolic pressures in the 160s 1 day after carotid endarterectomy for right facial droop from left hemispheric lacunar infarcts. CT perfusion (figure, A–D) demonstrated findings consistent with cerebral hyperperfusion syndrome (CHS) following revascularization. CHS is caused by loss of autoregulation, hypertension, and ischemia-reperfusion injury resulting in increased regional blood flow and vascular congestion.[1] CHS following revascularization may present as ipsilateral headache, focal seizure, or neurologic deficit. Nonperfusion imaging may show intraparenchymal hemorrhage or edema. Labetalol and clonidine are used for aggressive blood pressure control until cerebral autoregulation is restored.[2]

AUTHOR CONTRIBUTIONS

Vivek Kalra: drafting/revising the manuscript, analysis or interpretation of data, accepts responsibility for conduct of research and will give final approval. Balaji Rao: study concept or design, analysis or interpretation of data, accepts responsibility for conduct of research and will give final approval, acquisition of data. Ajay Malhotra: drafting/revising the manuscript, study concept or design, analysis or interpretation of data, accepts responsibility for conduct of research and will give final approval, acquisition of data, study supervision.

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