Ephedrine-Induced Intracerebral Hemorrhage and Central Nervous System Vasculitis

To the Editor:
A 68-year-old right-handed man was admitted to the emergency room 2 hours after developing headache, dysphasia, and right hemiplegia. Computed tomography demonstrated a left temporo-parietal hematoma with rupture into the lateral ventricle. On admission, his wife reported his use of an over-the-counter anti-asthma pill containing theophylline 0.025 gm, ephedrine 0.01 gm, caffeine 0.015 gm, and theobromine 0.025 gm. He had taken this medication for 10 years, four to six tablets a day, and had used it 2 hours before the onset of ictus. His medical history consisted of chronic obstructive pulmonary disease for 40 years. Neurologic examination demonstrated nuchal rigidity, confusion, and hemiplegia on his right side.

On the second hospital day, his level of consciousness deteriorated, and he showed an obvious dilatation of the left pupil. The hematoma was evacuated. Pathological examination demonstrated necrotizing angitis of the small vessels with infiltration of polymorphonuclear leukocytes, especially prominent in the intima. Congo red stain was negative. Angiography showed irregularity at the sphenoid and diffuse segmental irregularity of the intracranial medium-sized and small arteries. The patient improved with prednisone.

Ephedrine is a sympathomimetic agent and popular bronchodilator, similar to amphetamine and phenylpropanolamine in its effects. A drug-induced vasculitis is often associated with intracranial hemorrhage, while vasculitides of the central nervous system (CNS) rarely produce this finding. The features, benign course, and histologic findings of drug-induced vasculitides are also similar to each other and unlike the fatal and evolving disease seen in polyarteritis of the CNS.

The acute onset in our case is similar to another reported case of drug-induced vasculitis. This rapid onset of symptoms and the infiltration of polymorphonuclear leukocytes, particularly in the intima, seem more likely to be correlated with an immune complex-mediated process in its pathogenesis.

While the pathogenesis of drug-induced vasculitis is still unknown, withdrawal and discontinuation of the offending agent is mandatory. Our case underscores that a patient with intracerebral hematoma and no obvious etiology should be evaluated for drug-induced vasculitis.

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References

Pulmonary Arteriovenous Fistulas Are at High Neurologic Risk

To the Editor:
The development of neurologic complications from a pulmonary arteriovenous fistula in a case described by Reguera et al has recently been reported in two additional case reports. The suggested mechanism of paradoxical embolism from leg veins in the case of Reguera et al is interesting, but unfortunately remains unsubstantiated. While accepting the reported figures of a low incidence of pulmonary arteriovenous fistula in young stroke patients, one should not assume that neurological complications are rare in this condition; rather, it is because pulmonary arteriovenous fistulas are uncommon that they remain a small contributor to the overall burden of stroke.

The cerebral complication rate is high, particularly in untreated cases. There were three fatal strokes in 19 of 47 conservatively managed young patients; in another series of 76 patients, there was a history of cerebral abscess in 9%, stroke in 18%, and transient ischemic attacks in 37%. Embolization or surgery for pulmonary fistulas is appropriate in nearly all cases to reduce these high risks.

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References

Effect of Hyperoxia Differs During Ischemia and Reperfusion

To the Editor:
Recently, Reitan et al reported the beneficial effect of hyperbaric oxygen following ligation and section of the left carotid artery in the Mongolian gerbil. In discussing these results, the authors state, “The effects of oxygen therapy on experimental subjects is paradoxical. On one hand oxygen causes marked tissue damage and toxicity, while on the other hand it provides apparent treatment for neuronal ischemia, depending on the total dose and pressure.” They then cited our work on the deleterious effect of therapy with 100% normobaric oxygen during reperfusion.

The following discussion may show that the results of the study by Reitan et al and the results of our studies are not necessarily contradictory or paradoxical. During ischemia, increased oxygen dissolved in plasma may supply the penumbra that surrounds the area of total ischemia with sufficient oxygen to prevent glycolysis and subsequent intracellular lactic acidosis. In other words, aerobic
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