mean±SD age 36.7±12.8 years), from the same ethnic background. The frequency of factor V Leiden and of the MTHFR in patients with CVT were 10% (1/10) and 33.3% (3/10), respectively, ie, twice as much as that found in controls (5.8% [15/259] and 17.4% [45/259], respectively). Two patients had the MTHFR genotype and the G20210A PRTH variant simultaneously; 1 carried the PRTH and the factor V Leiden variants. On the whole, 3 patients (33.3%) showed the coexistence of 2 thrombophilic genes; this was significantly different from the prevalence of the coexistence among healthy subjects (5/259, 1.9%; $P=0.0019$). Three CVT patients had a family history of venous thromboembolism; all were heterozygous for the G20210A PRTH variant. Four patients showed recurrent venous thromboembolism; among them, 3 carried the G20210A PRTH variant and 2 showed the association of the latter with factor V Leiden or with the MTHFR 677TT genotype. In our female patients, 2 of 6 experienced CVT while using oral contraceptives; none of the polymorphisms was present in both cases.

The coexistence of PRTH and factor V mutation has been strongly associated with juvenile and recurrent venous thromboembolism.[6,7] The MTHFR variant increases the risk of deep-vein thrombosis in factor V Leiden carriers.[8] Despite the limitations of the sample size, these data confirm the role of the G20210A PRTH variant as a predisposing factor for CVT. Our data also indicate that thrombophilic genes often coexist in patients with CVT. Whether (and the extent towhich) thrombosis at this unusual site reflects a sustained hypercoagulable state needs to be further evaluated.

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No Side Effects After Low-Dose Amphetamine Administration in Stroke Rehabilitation

To the Editor:

We have previously reported the use of dextroamphetamine to enhance recovery from motor and language deficits subsequent to stroke.[1,2] However, some clinicians have questioned the safety of the use of a stimulant drug in stroke patients. We have now followed a series of patients with no side effects of low-dose amphetamine administration as an adjunct to stroke rehabilitation. The protocol, which we have found to be safe, specifies that patients be entered between days 10 and 40 after stroke onset. Hemiplegic/aphasic patients are administered an oral dose of 10 mg of dexedrine or placebo 30 minutes before relevant therapies for 10 sessions. We monitor blood pressure of all patients before and within each treatment session and document any adverse reactions.[3] We found no adverse reaction notations in any chart in a series of patients followed over a 1-year. Additionally, there were no differences in the blood pressure readings between drug- versus placebo-treated groups. Following are our subject definitions and blood pressure comparisons.

Forty-four stroke subjects with hemiplegia and/or aphasia and a radiologically verified lesion were studied. Criteria for entry into the study required that subjects have a single unilateral thromboembolic infarction and hemiplegia and/or aphasia, as defined by impairment level assessments. Exclusion criteria specified that none of the subjects have a terminal medical condition such as AIDS or cancer, other coincident neurological disease, history of psychiatric illness or extensive alcohol or drug abuse, unstable cardiac dysrhythmia or hypertension not controlled by medication (160/100 mm Hg), or untreated hyperthyroidism. Additionally, subjects could not be receiving α-adrenergic antagonists or agonists, major or minor tranquilizers, or be aged >80 years. Written informed consent was obtained from each subject before the study, and the research protocol was approved by the institutional review for human subjects at each of the participating medical centers.

The study group consisted of 28 amphetamine and 16 placebo patients. The mean age of the treatment group was 61 years; the mean age of the placebo group was 61 years. There were 11 men and17 women in the amphetamine group and 9 men and 7 women in the placebo group. In this blinded study, patients were entered between days 16 and 42 after onset and received an oral dose of 10 mg of amphetamine (dexedrine) or placebo on an alternating cycle of every third/fourth day for 10 sessions, paired with relevant therapies. Thirty minutes after drug/placebo administration, subjects began 1 hour to 1 hour 45 minutes of physical and/or language therapy, depending on their deficits. Documentation of side effects was made for all subjects across the study period. Blood pressure was monitored before and during the 10 treatment sessions in all subjects. Median systolic and diastolic blood pressure measurements were compared in the amphetamine- and placebo-treated subjects. The Wilcoxon rank sum test was performed on the difference of the medians between the 2 groups. Blood pressure readings of all subjects at baseline and across the 10 sessions were analyzed. Comparisons were made before drug administration (baseline) and 90 minutes into therapy sessions (within session) (see the Table for median

Median Blood Pressure Readings for Amphetamine- and Placebo-Treated Groups

	Baseline, mm Hg		Within Session, mm Hg	
Group	Systolic	Diastolic	Systolic	Diastolic
Amphetamine	130.00	77.5	131.75	80.5
Placebo	135.0	88.0	135.75	81.75

scores for each group). There was not a significant difference from baseline to within-session measure on either systolic ($P=0.1912$) or diastolic ($P=0.4056$) differences for the 2 groups. In addition, at no time during the 12-month course of the study was there documentation of any negative event that could be attributed to amphetamine administration.

These data suggest that in patients with well-controlled hypertension, the effects of low-dose amphetamine administration are negligible. The data also support previous findings which suggest that toxic symptoms with doses <15 mg are rare.[3] The subjects in this study may not represent all types of stroke subjects because of our careful exclusion criteria and patient screening. However, we did have patients with severe neurological impairments and other concomitant medical conditions who tolerated this low alternating dose without report of negative side effects.

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Transfemoral Digital Subtraction Angiography for Assessment of Vertebral Artery Occlusion in Rats

To the Editor:

The major disadvantage in rat models of global cerebral ischemia[1–3] is the difficulty of occluding the vertebral artery through the alar foramina because the electrocoagulations are done "blind." This mode of vertebral vessel occlusion is often unsatisfactory, and while postoperative selection on the basis of righting responses, EEG, and pupillary size is used in cerebral 4-vessel occlusion models,[1–3] there is no substitute for demonstrating the completeness of the vascular occlusion . This "blind" vertebral occlusion technique might also explain the wide variation in cerebral blood flow measurements after brain 4-vessel occlusion.[4,5] Furthermore, in the case of cerebral 2-vessel occlusion of the vertebral arteries, no validation parameter is available for confirmation that complete vertebral artery occlusion has been achieved. For all these reasons, we suggest the method of transfemoral digital subtraction angiography (DSA), which can be used for validation of successful vertebral artery electrocoagulation in rat models of global cerebral ischemia. DSA is the gold standard for the assessment of vascular occlusion. The DSA technique offers many advantages: it is a minimally invasive technique (5% mortality rate of 20 rats investigated), with high morphological resolution (Figures 1 and 2), which can be used repeatedly. When a DSA catheter (Tracker 10; Boston Scientific) was used with radiographic guidance, no traumatic disruptions of the arterial blood vessel system were obtained in any of the rats examined. The use of a maximum of 1.5 mL of contrast solution (Solutrast; Byk Gulden) had no marked influence on rat arterial blood gases, mean arterial blood pressure, or heart rate. After

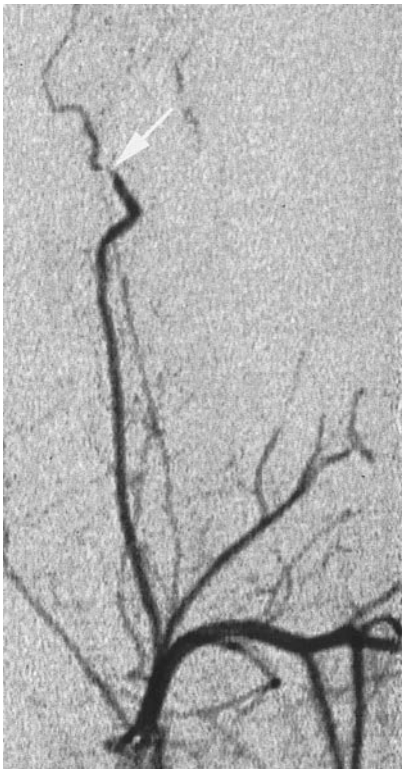

Figure 1. Incomplete vertebral occlusion. Injection of contrast medium into the subclavian artery shows a high-grade stenosis of the vertebral artery at the C-1 level (arrow). Occlusion is incomplete, and there is filling of the distal vertebral and basilar artery.

DSA, some animals adopted a hunchbacked posture after femoral artery ligation and walked with extended paws for about 1 week. However, rapid collateralization of vessels in the area of occluded arteries into the rat groin area leads to partial recovery of the blood supply to the paws.

In the present study, assessment of adequate rat vertebral vessel electrocoagulation was demonstrated with transfemoral DSA. In 33% of the animals (6 of 20), only an incomplete vertebral vessel occlusion was achieved (Figure 1). In contrast, Figure 2 demonstrates a complete rat vertebral vessel occlusion

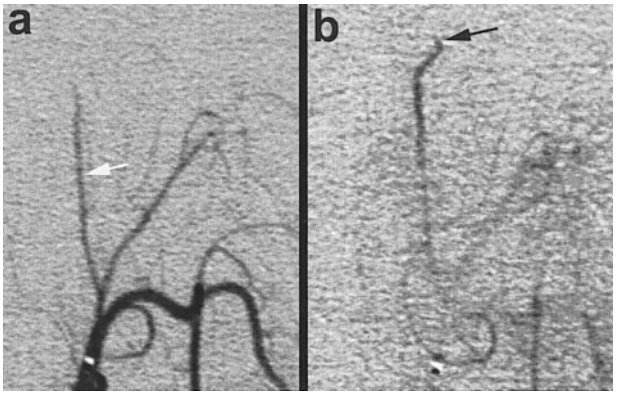

Figure 2. Complete vertebral occlusion. Injection of contrast medium into the left subclavian artery shows filling of the left vertebral artery in the cervical portion (a, white arrow). A later phase of the angiogram shows stasis of the contrast media at the C-1 level (b, black arrow) and no filling of the distal vertebral artery or basilar artery. Complete occlusion of the vertebral artery has been achieved.