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# Celebrating 35 Years of the AJNR

July 1985 edition

## Intravenous DSA and Duplex Sonography as Screening Examinations for Carotid Disease: Comparison in 102 Vessels

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Duplex sonography and intravenous digital subtraction angiography (DSA) were compared in 102 carotid bifurcations in 51 patients. Sonograms were adequate in 87 (85%) vessels and angiograms were adequate on at least one view in 86 (84%) vessels. An adequate image was obtained by one or the other method in all but two vessels (98%). Although most vessels were seen well on one view only on DSA, agreement with sonography was exact in 73% of compared vessels and acceptable in 96%. Furthermore, no difference was found in the rate of agreement with sonography for vessels seen well by DSA on two or more views compared with those seen well on one view only. It was concluded that DSA and sonography are comparable screening methods for carotid disease and that a suboptimal study by either can usually be compensated for by performance of the other.

Duplex sonography and intravenous digital subtraction angiography (DSA) are now widely used as screening tests for the evaluation of the extracranial cerebral vessels in patients with suspected cerebrovascular disease. The details of the performance, capabilities, and limitations of each method are well described in the literature as is their acceptable accuracy in the assessment of carotid disease relative to conventional angiography [1-13]. Little information is available, however, directly comparing the two methods for technical adequacy and the extent of agreement in estimates of disease. We compared the DSA and sonographic findings in 102 carotid bifurcations in 51 patients with suspected cerebrovascular disease.

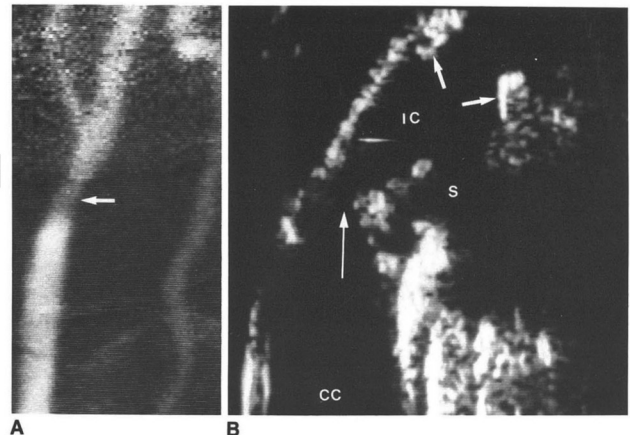
### Subjects and Methods

At our hospital intravenous DSA or sonography of the carotid bifurcations in patients with suspected common indications for either test are definite disease, asymptomatic neck bruits, or a history of intraarterial DSA or conventional angiography is typical histories of cerebral hemispheric or ocular evaluations before carotid endarterectomy. The patients referred for intravenous DSA. For the performed on all these subjects before or soon after without knowledge of the results of the corresponding DSA was performed using a Technicare DR 96 Optomatic 100 kW generator, selectable 6 or 9 inch Video-Med 3 TV system. The central processing unit using a 512 x 512 image display matrix and 1/4 preparation, an 8 x 16 gauge intracatheter was inserted 5% dextrose was layered over 40 ml Renografin at 12 ml/sec. Exposures commenced 4 sec after image sequence was usually recorded at a frame rate 32 mAs. Views obtained routinely were 45°-55° RPO projectors of the neck, 55° RPO of the aortic

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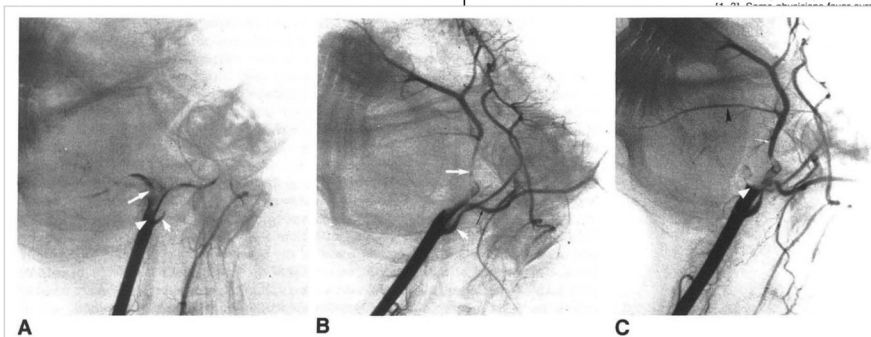


## Streptokinase Clot Lysis in Acute Occlusions of the Cranial Circulation: Study in Rabbits

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An animal model of acute cerebrovascular thromboembolism was developed to evaluate the feasibility of selective fibrinolysis. In 20 Flemish Giant rabbits, autologous clot was deposited via selective catheterization of the distal end of the common carotid artery. The rates of clot lysis with streptokinase were compared in eight control rabbits and after three different dosage regimens in four rabbits each. Group A received selective infusion of 5000 U/hr; group B received 4000 U/min for 1 hr, 3000 U/min for 2 hr, and 5000 U/hr for 2 hr; and group C was treated similar to group B plus receiving an initial 20,000 U bolus of streptokinase. Lysis was evaluated by serial angiograms obtained hourly for up to 6 hr after the clot was deposited. Five proximal vessels arising from the common carotid artery were chosen for the angiographic grading system. The control group showed beginning lysis after 5-6 hr. Group A appeared to show a slight improvement about 4 hr after clotting. Group B demonstrated an early and greater improvement at 2 hr that appeared to be sustained throughout the experiment. Group C showed no difference compared with the control group. The Dunnett 1 procedure and the Kruskal-Wallis nonparametric analysis of variance were used for comparing the angiograms of the treatment groups with those of the control group at corresponding study times. The results of these animal experiments do not indicate a definite benefit of streptokinase treatment alone over no treatment. Further controlled studies are needed before the value of streptokinase in routine clinical practice can be determined.

Optimal treatment of acute cerebrovascular disease, including transient ischemic attack, reversible ischemic neurologic deficit, and acute stroke, remains a controversial issue. Medical management has been attempted with a variety of agents, most notably anticoagulants, but no clear-cut clinical benefit has been established [1, 2]. The management of acute stroke [4, 5]. While surgical management for acute stroke is accepted therapy for most patients with acute stroke, but no controlled studies are available, nor need [6, 7]. We tried to determine the efficacy of streptokinase in an animal model that might further serve for



was used in 20 Flemish Giant rabbits (weight range, 30-40 kg) for controls and four each were assigned to three dosage regimens (A, B, and C). A drop of Thrombin was placed on a milliliter of saline and allowed to stand for 1 hr in a glass beaker. Then, 0.75 ml of the common carotid artery of each of the 20 rabbits was occluded via the femoral artery. A test injection of a small amount of the clot, the carotid artery was then left in place and an angiogram was obtained. The group A rabbits received 5000