Joint Meeting on Stroke and Cerebral Circulation

The Stroke Council of the American Heart Association is pleased to announce a meeting on Cerebrovascular Disease and Cerebral Circulation, which will be held at the new National Headquarters of the American Heart Association in Dallas, Texas, February 27-28, 1976. The meeting is held in conjunction with the Cerebrovascular Surgery Section, American Association of Neurological Surgeons; Canadian Stroke Society, Canadian Heart Association; and The Society for Vascular Surgery.

Members of the Stroke Council and others interested in diseases of the cerebral circulation and the physiology and pathological changes in the cerebral circulation are encouraged to submit abstracts to the Program Committee for consideration for presentation at that meeting.

Abstracts are due September 15, 1975, and should be mailed to Dr. Robert G. Siekert, Chairman of the Program Committee, Mayo Clinic, 200 First Street, S.W., Rochester, Minnesota, 55901. Guidelines and further information may be obtained by writing: Administrator, Postgraduate Courses, American Heart Association, 44 East 23rd Street, New York, New York, 10010.

Abstracts

AB-2138-75
Norepinephrine Depletion in Idiopathic Orthostatic Hypotension — Kontos HA (Department of Medicine, Medical College of Virginia, Health Sciences Division, Virginia Commonwealth University, Richmond, Virginia), Richardson DW, Norvell JE — Ann Int Med 82:336-341 (Mar) 1975*

Five patients with idiopathic orthostatic hypotension and defective vasoconstrictor responses to the Valsalva maneuver and to application of ice to the forehead were found to have absent vasoconstriction in the forearm in response to intra-arterial administration of tyramine and enhanced vasoconstrictor responses in response to intra-arterial administration of norepinephrine. These findings strongly suggested norepinephrine depletion from the nerve endings and inability of the sympathetic nerve endings to take up norepinephrine. The depletion of norepinephrine from sympathetic nerve endings was confirmed in four patients by demonstrating histochemically the absence of catecholamine-specific fluorescence in sympathetic vasomotor nerves from deltoid muscle. It is suggested that depletion of norepinephrine from nerve endings was responsible for autonomic dysfunction and orthostatic hypotension in these patients.

AB-2139-75
Diagnostic Value of Brain Scans in Cerebral Infarction After Recanalization — Irino T (Division of Neurological Diseases and Stroke through Contract Number NSF-0933 with Dr. Robert Siekert, Head, Abstract Section, Mayo Clinic, Rochester, Minnesota 55901).

In 13 patients with the major cerebral arterial occlusion demonstrated by cerebral angiography, angiographies were repeated to inspect recanalization, and brain scans were performed at three to four weeks and/or more than five weeks after the stroke. Five cases demonstrated recanalization within seven days after the onset. All cases after recanalization showed increased uptake of Tc-99m with brain scans performed at three to four weeks after the stroke.

In spite of diagnostic value in the acute stage, angiographies sometimes do not provide diagnostic information in the chronic stage because of frequent arterial recanalization. On the other hand, brain scans frequently provide diagnostic information even in the chronic stage. Considering the mechanism of high uptake of radioisotope in brain scans, it may be natural that findings of brain scans accurately reflect brain tissue damage caused by ischemia with or without arterial recanalization. Brain scans frequently enable "retrospective" diagnosis of cerebral infarction even at the chronic stage.

AB-2140-75
Pharmacological Characterization of Adrenergic Alpha and Beta Receptors Mediating the Vasomotor Responses of Cerebral Arteries In Vitro — Edvinsson L, Owman C (Department of Histology, University of Lund, S-223 62 Lund, Sweden) — Circulation Research 35:835-849 (Dec) 1974*

The adrenergic receptors in the isolated feline middle cerebral artery were characterized pharmacologically using a sensitive system for recording circular contractions in vitro. Epinephrine, norepinephrine, isoproterenol, and phenylephrine contracted the vessel in the mentioned order of potency. Together with the inhibitory patterns obtained with graded doses of piperoxan (reversible competitive inhibition) and dibenamine or phenoxymethylamine (irreversible competitive inhibition), these results showed that the contraction was mediated by alpha receptors. With piperoxan and norepinephrine, the mean value for pA2 was 7.06 and for K A 1.73 X 107M. The mean value for K A calculated for norepinephrine before and after partial irreversible blockade of the alpha receptors with phenoxymethylamine was 1.73 X 10-5M. The norepinephrine response was not directly proportional to the amount of receptors occupied; ED60 was reached when only about 11% of the receptors were occupied and the EAm response was obtained when 75% of the receptors were occupied. Dilation was achieved only after an active tonic contraction had been induced (with 5-
hydroxytryptamine) in the vessels, and the order of potency was isoproterenol > norepinephrine = epinephrine > terbutaline. Inhibition with INPRA and propranolol was competitive, as confirmed by Arunlakshana-Schild plots, showing that the dilatory response was a beta-receptor effect. The values for pA2 (8.78 and 9.17) and K0 (2.31 x 10^-9 M and 1.77 x 10^-8 M) for propranolol were indistinguishable in tests with terbutaline and isoproterenol, respectively. Comparison of the relative potencies of norepinephrine and epinephrine as well as isoproterenol and terbutaline suggested that the receptors were of the beta, type.

**AB-2141-75**

**Comparison of 86Krypton and 133Xenon Cerebral Blood Flow Measurements Before, During, and Following Focal, Incomplete Ischemia in the Squirrel Monkey** — Hanson EJ Jr, Anderson RE, Sundt TM Jr (Cerebrovascular Clinical Research Center, Mayo Clinic, Rochester, Minnesota 55901) — *Circulation Research* 36:18-26 (Jan) 1975*

A comparison of regional cerebral blood flow measurements made with beta- and gamma-emitting isotopes revealed good correspondence in areas of normal perfusion and reactive hyperemia but poor correspondence in areas of focal ischemia. After middle cerebral artery occlusion at normocapnia, there was a 65% reduction in regional cerebral blood flow from 1.40 ± 0.27 ml/g min^-1 to 0.49 ± 0.10 ml/g min^-1 in monkeys studied with 86Kr but only a 27% reduction in regional cerebral blood flow from 0.84 ± 0.09 ml/g min^-1 to 0.61 ± 0.08 ml/g min^-1 in monkeys studied with 133Xe. The lack of correlation within areas of focal, incomplete ischemia was attributed to an impairment of isotope delivery to the area of ischemia coupled with the inherent lack of spatial resolution of determinations made with 133Xe. This finding may partly explain the numerous discrepancies in experimental and clinical studies of the effects of alterations in the arterial partial pressure of CO2 on regional cerebral blood flow in areas of ischemia; it may also explain the failure of such studies to reflect the true severity of focal ischemia.

**AB-2142-75**

**Intimal Injury and Regrowth in the Rabbit Aorta. Medial Smooth Muscle Cells as a Source of Neointima** — Spaet TH (Division of Hematology, Montefiore Hospital and Medical Center, Albert Einstein College of Medicine, Bronx, New York 10467), Stemerman MB, Veith FJ, Lejnieks I — *Circulation Research* 36:58-70 (Jan) 1975*

The present study was undertaken to determine the mechanism of neointima formation in rabbit arteries subjected to extensive endothelial desquamation. Endothelial cells were selectively removed from the abdominal aorta by passing an inflated balloon catheter through the vessel. The healing response was then studied serially for up to a week, when neointima formation had provided a virtually complete cover. In en face preparations, the early neointimal cells appeared in random locations; they did not develop in apposition to residual, healthy endothelium. The possibility of blood cell colonization was explored by inserting killed aortic homografts. Since these homografts showed neointima formation only close to the site of junction with the normal aorta and as a direct extension of healthy endothelium, the likelihood of significant blood cell colonization was deemed small. Histologic and electron microscopic sections provided evidence that the early neointimal cells in the healing aorta were derived from medial smooth muscle cells. Healing of the injured arterial intima was accompanied by thickening instead of prompt restoration to normal, and the thickened intima resembled an arteriosclerotic plaque. The present study thus supports the concept that arteriosclerosis is a disease involving proliferation of medial smooth muscle cells.

**AB-2143-75**

**Platelet Survival Time Following Aortic Valve Replacement** — Steele P (Denver VA Hospital, Denver, Colorado 80220), Weily H, Davies H, Pappas G, Genton E — *Circulation* 51:358-362 (Feb) 1975*

Thromboembolism continues to complicate the course of patients following aortic valve replacement. In patients with prosthetic and homograft mitral valves, platelet survival time has been shown to correlate with occurrence of thromboembolism. This study extends these observations to patients with aortic valve disease. Platelet survival time was measured (by the chromium-51 method) in 73 patients with aortic valve disease. Eighteen patients were studied preoperatively and had platelet survival times of 3.4 ± 0.14 days (mean ± standard error of the mean), almost the same as normal (3.7 ± 0.4 days). Platelet survival time was shortened (P < 0.001) following aortic valve replacement with Starr-Edwards prostheses — Model 1000: 2.5 ± 0.13 days (N = 6); Model 1200-1260: 3.0 ± 0.10 (N = 14); Model 2300-2320: 3.0 ± 0.15 days (N = 9) — and with stented aortic homografts: 3.0 ± 0.10 days (N = 16). Platelet survival time was normal following aortic valve replacement in patients with directly sewn aortic homografts 3.7 days ± 0.24 days (N = 10). Eleven patients with Starr-Edwards prostheses had a history of thromboembolism and all also showed shortened platelet survival time (2.7 ± 0.12 days, P < 0.001), a measurement which was significantly different (P < 0.01) from the 18 patients with Starr-Edwards prostheses and no thromboembolism (3.0 ± 0.09 days). Platelet suppressant therapy prolonged platelet survival in eight patients with Starr-Edwards devices, thromboembolism, and shortened platelet survival time. These results suggest that insertion of Starr-Edwards valves and stented aortic homografts after platelet survival time but that direct homografts do not. A correlation between occurrence of thromboembolism after aortic valve replacement and shortened platelet survival time has been shown.

**AB-2144-75**

**Learned Control of Blood Pressure in Patients With High Blood Pressure** — Kristt DA, Engel BT (Gerontology Research Center, Baltimore City Hospitals, Baltimore, Maryland 21224) — *Circulation* 51:370-378 (Feb) 1975*

Five patients with documented histories of essential hypertension of at least ten years' duration participated in a triphasic study of training to control systolic blood pressure (SBP). Phase 1 was a seven-week period during which patients took their BP (systolic and diastolic) at home and mailed these data to us daily. Phase 2 was a three-week period during which patients were taught to control SBP using a noninvasive technique: patients were trained to raise, to lower and to alternately lower and raise SBP. Phase 3 was
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a three-month period during which patients again took their BP at home and mailed these data to us daily. Results: (1) all patients learned SBP control: average increase — 15%; average decrease — 11%; (2) during SBP control heart rates, breathing rates, triceps brachii muscle tension and EEG activity did not change; (3) follow-up tests at one and three months showed evidence of retained SBP control; (4) baseline SBP fell from 153 mm Hg during laboratory training to 135 mm Hg at the three-month follow-up; (5) phase 3 home BPs fell 18/8 mm Hg from phase 1 levels; (6) at home patients also were able to reduce SBP from 141 mm Hg (average) to 125 mm Hg (average) by means of the lowering technique learned in the laboratory.

AB-2145-75
Effect of Hypoxia on Vascular Responses to the Carotid Baroreflex — Pelletier CL, Shepherd JT (Mayo Clinic, Rochester, Minnesota 55901) — Amer J Physiol 228:331-336 (Jan) 1975*

The effect of systemic hypoxia on the vascular responses to the carotid baroreflex was studied in anesthetized, vagotomized, artificially ventilated dogs. One hindlimb, kidney, gracilis muscle, and paw were perfused at constant flow, and neurograms were obtained from renal sympathetic fibers. Bilateral carotid occlusions were performed while the animal was breathing a mixture of air and O2 (mean arterial PO2 = 106 mm Hg) and again during ventilation with 10% O2 (PO2 = 40 mm Hg). With occlusion, the average increase in mean aortic pressure was 36 mm Hg greater during hypoxia than during normoxia and the increase in renal perfusion pressure was 87 mm Hg greater; the increase in hindlimb perfusion pressure was identical in both situations. Hypoxia did not change the reflex response of the paw to carotid occlusion and increased that of the muscle vessels by only 10%; the increase in renal sympathetic activity averaged 56 ± 10% more with hypoxia than with normoxia. When the carotid chemoreceptors were destroyed, the greater increase in aortic and renal pressure response to carotid occlusion during hypoxia as compared to normoxia was abolished. Thus systemic hypoxia markedly potentiates the reflex renal constriction caused by the baroreflex, and this effect is due to the carotid chemoreceptor afferent input.

AB-2146-75
A Simplified Neck Suction Device for Activation of Carotid Baroreceptors — Eckberg DL (Cardiovascular Division, Department of Internal Medicine, University of Iowa College of Medicine, Iowa City, Iowa 52242), Cavanaugh MS, Mark AL, Abboud FM — J Lab Clin Med 85:167-173 (Jan) 1975*

Application of negative neck pressure is a valuable research technique for activation of carotid baroreceptors in man, but its use has been limited because a simple, effective, comfortable neck suction chamber has not been available. We have developed a new neck suction device which may have significant advantages over earlier models. Construction details are illustrated for this chamber which has the following attributes: (1) it is simple and inexpensive to construct, (2) one model fits most adults in relative comfort, and (3) the design of the chamber permits rapid initiation of neck suction to preselected levels leading to stimulus-related cardiac slowing and arterial hypotension.

*Authors’ abstract.

AB-2147-75
The Effect of Age Upon the Coagulation System — Hamilton PJ, Allardyce M, Ogston D, Dawson AA, Douglas AS (Departments of Medicine and Pathology, University of Aberdeen, Scotland) — J Clin Path 27:980-982, 1974*

Factors V, VII, VIII, X, XI, and XII of the coagulation system, platelet count, and antithrombin III levels were assayed in 20 healthy volunteers aged 20 to 40 years and 61 elderly subjects aged 66 to 96 years whose skinfold thickness was also measured. Factors XI, XII, and antithrombin III levels tended to increase in women and decrease in men while factors X, VII, and V tended to increase in both males and females with advancing years. No age or sex differences were found in platelet counts or factor VIII levels. Factor VIII levels were inversely correlated with obesity in elderly males (r = -0.56, P < 0.005).

AB-2148-75
Effects of Polyunsaturated Fats on Lipid Metabolism in Patients With Hypertriglyceridemia — Grundy SM (Department of Medicine, University of California School of Medicine, San Diego, California 92161) — J Clin Invest 55:269-282 (Feb) 1975*

Studies were carried out on the effects of polyunsaturated fats on lipid metabolism in 11 patients with hypertriglyceridemia. During cholesterol balance studies performed in eight patients, the feeding of polyunsaturated fats, as compared with saturated fats, caused an increased excretion of endogenous neutral steroids, acidic steroids, or both in most patients. Increases in steroid excretions were marked in some patients and generally exceeded the decrement of cholesterol in the plasma compartment. The finding of a greater excretion of fecal steroids on polyunsaturated fats in hypertriglyceridemic patients contrasts to the lack of change in sterol balance previously reported for patients with familial hypercholesterolemia; however, other workers have found that polyunsaturated fats also enhance steroid excretion in normal subjects.

In most of the patients, simultaneous studies were carried out on biliary lipid composition, hourly outputs of biliary lipids, and pool sizes of bile acids. In several but not all patients, fasting gallbladder bile became more lithogenic after institution of polyunsaturated fats. This increased lithogenicity was not due to a decrease in bile acid pools; in no case was the pool decreased by polyunsaturated fats. On the other hand, two patients showed an increased output of biliary cholesterol, and frequently there was an increase in fecal neutral steroids that were derived from cholesterol; thus, polyunsaturated fats may increase bile lithogenicity in some patients through mobilization of cholesterol into bile.

Reductions in plasma cholesterol during the feeding of polyunsaturated fats were seen in most patients, and these changes were usually associated with a decrease in concentration of plasma triglycerides. In fact, the degree of cholesterol lowering was closely correlated with the extent of triglyceride reduction. Therefore, in hypertriglyceridemic patients polyunsaturated fats may contribute to cholesterol reduction by changing the metabolism of triglycerides or very low density lipoproteins.

The findings of changes in the metabolism of cholesterol, bile acids, and triglycerides in the patients of this study suggest that polyunsaturated fats may cause a lowering of cholesterol through multiple mechanisms, and it seems un-
likely that a single action can explain all the effects of these fats on the plasma lipids.

AB-2149-75

Focal blood flow was measured in the lateral funiculus and center of the spinal cord in the rhesus monkey both before and after a 600 gm-cm injury at T-10. Measurements made by the hydrogen clearance technique showed that blood flow in the lateral funiculus more than doubled within four hours after injury, returned to normal by eight hours, and remained in the normal range for 24 hours. At no time was a hypoperfusion in the lateral funiculus present. Blood flow in the center of the spinal cord, at the level of the lesion, began to fall within one hour following injury and continued to fall for four hours. These data challenge the notion that spreading ischemia of the white matter is an important factor in the pathophysiology of experimental spinal cord injury.

AB-2150-75
Results of Treatment of Intracranial Aneurysms by Wrapping and Coating — Mount LA (Neurological Institute, New York, New York 10032), Antunes JL — J Neurosurg 42:189-193 (Feb) 1975*

The authors report the results of treatment of 58 intracranial aneurysms by wrapping with muscle or muslin gauze, and/or coating with Selverstone plastic material. They conclude that reinforcement with muscle is of little value, but that muslin gauze and plastic produced satisfactory results.

AB-2151-75
Cerebral Vasospasm With Subarachnoid Haemorrhage From Arteriovenous Malformations of the Brain — Nishimura K, Hawkins TD (Department of Radiology, Addenbrooke's Hospital, Hills Road, Cambridge CB2 2QQ, Great Britain) — Neuroradiology 8:201-207, 1975*

The results of a retrospective review of the clinical and radiological records of 63 patients with proved cerebral arteriovenous malformation are reported. Patients with dural arteriovenous malformations and malformations with atypical angiographic features were excluded from the study. Of these 63 patients, 52 had a proved or suspected subarachnoid hemorrhage and eight patients showed angiographic evidence of cerebral arterial spasm. Two of these patients had an associated intracranial aneurysm and were excluded from the study. The other six patients were shown to have spasm between 2 to 13 days after a subarachnoid hemorrhage. The incidence of vasospasm associated with subarachnoid hemorrhage in this series was at most 12%. The probable explanation for the relative rarity of vasospasm associated with arteriovenous malformations of the brain, reported by other authors and confirmed by this study, is that the majority of these malformations are peripherally or deeply situated and subarachnoid bleeding is less likely to reach the base of the brain where arterial spasm mainly occurs as compared with hemorrhage from an aneurysm arising from the circle of Willis.

AB-2152-75
An Anomalous Posterior Cerebral Artery — Bergquist E (Department of Diagnostic Radiology, University Hospital, S-75014 Uppsala, Sweden) — Neuroradiology 8:213-215, 1975*

A patient in whom the posterior temporal and internal occipital branches of the posterior cerebral artery originated separately from the carotid siphon is reported. The possible embryological mechanism underlying this anomaly is discussed.

AB-2153-75
Cervical Spinal Angioma Combined With Arterial Aneurysm — Vogelsang H (Department of Neuroradiology, Medical School, Hannover, Federal Republic of Germany), Dietz H — Neuroradiology 8:223-228, 1975*

A 14-year-old child who had three episodes of subarachnoid hemorrhage was found by spinal arteriography to have a cervical extramedullary arterial aneurysm combined with an intramedullary arteriovenous angioma. The source of the bleeding, the aneurysm, was excised surgically but the intramedullary arteriovenous angioma was not accessible for operation.

AB-2154-75
Neuroradiology of the Sphenoidal Region — Hasso AN (Department of Radiology, Loma Linda University School of Medicine, Loma Linda, California 92354), Benson JR, Wilson GH, Vignaud J — Radiology 114:619-627 (Mar) 1975*

The neuroradiological techniques employed in diagnosing a series of 54 lesions involving the superior orbital fissure and cavernous sinus (sphenoidal region) were reviewed in order to compare the value of sphenoidal tomography, pneumoencephalography, cerebral arteriography and sphenoidal venography. The patients included in the series exhibited clinical syndromes of sphenoidal region cranial nerve deficits. Confirmation of the sphenoidal region disorder was obtained in all cases. Of the four procedures, sphenoidal venography and basal tomography yielded the highest rate of positive studies.

AB-2155-75

Three ocular complications directly related to orbital venography are described, one resulting in permanent loss of vision. This patient had a lymphangioma of the orbit which evidently had bled secondary to increased venous pressure and injection of contrast bolus. Both of the two patients with transient visual disturbances had diabetic retinopathy. The common factor is felt to be an impaired vascular bed which cannot meet the stress of increased venous pressure and contrast medium injection. Conditions which predispose to ocular-orbital stasis and/or hemorrhage are discussed.

AB-2156-75
Adrenergic Mechanisms in the Cephalic and Cerebral Circulations of the Subhuman Primate — Hobson RW

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*Authors' abstract.
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(Deartment of Experimental Surgery, Division of Surgery, Walter Reed Army Institute of Research, Washington, D.C. 20012), Wright CB, Lamoy RE — Surgery 77:304-310 (Feb) 1975*

Our data suggest the presence of alpha- and beta-adrenergic receptor sites within the cephalic circulation resulting in significant flow responses to intra-arterial adrenergic amines. The absence of responses in the cerebral circulation suggests that circulating catecholamines do not significantly influence or regulate the cerebral vasculature. In addition the data suggest that use of adrenergic agonists to alter the hemodynamics of the cerebral circulation is limited.

AB-2157-75
Use of the Axillary Artery in Complex Cerebral Revascularization — Bergan JJ (Department of Surgery, The Medical School, Northwestern University, Ward Memorial Building, Chicago, Illinois 60611), Dean RH, Yao JST — Surgery 77:338-344 (Mar) 1975*

Two cases of complex common carotid and innominate artery disease managed by axillocarotid autogenous saphenous vein bypass are presented, including a detailed description of the operative technique. The results in each case were gratifying. Although the concept of extra-anatomic repair is not new, this modification in operative technique expands the surgeon's armamentarium. The ease and safety of exposure and anastomosis of the axillary artery combine to make it the preferable donor vessel for extra-anatomic cerebral revascularization in the poor-risk, elderly patient population.

AB-2158-75
Focal Myocardial Necrosis in Cases of Increased Intracranial Pressure — Heinrich D, Müller W (Pathologisches Institut der Universität, Joseph-Stelzmann-Str. 9, D-5 Köln 41, BRD) — Europ Neurol 12:369-376, 1974*

Small areas of myocardial necrosis were found in 36 of 100 patients dying secondary to central nervous system disease, such as subarachnoid hemorrhage, parenchymal intracerebral hemorrhage, encephalomalacia, and various brain tumors. The myocardial lesions were observed with increasing frequency in the following disorders: subarachnoid hemorrhage, parenchymal intracerebral hemorrhage, encephalomalacia, and brain tumors. The main factor in the pathogenesis of these myocardial lesions appears to represent neurohumoral mechanisms with a hyperactivity of the sympathetic nervous system. These findings may be important for human cardiac transplantation.

AB-2159-75
"iatrogenic" Brain Stem Infarction. A Complication of X-Ray Examination of the Cervical Spine and Following Posterior Tamponation of the Nose — Fogelholm R (Department of Neurology, University of Helsinki, Haartmaninkatu 4, Helsinki 29, Finland), Karl P — Europ Neurol 13:6-12, 1975*

Two patients sustained an ischemic brain stem infarction during medical examination and treatment. The first patient lost consciousness and the spontaneous respiration ceased during x-ray examination of the cervical spine when the neck was hyperextended. After some minutes he regained consciousness but was found to be tetraplegic, and the patient died four months later. The angiogram revealed thrombosis of the basilar artery. The other patient had a profuse nosebleed and was treated with posterior tamponation during which she sat for about ten minutes with the neck hyperextended. Some hours after this procedure symptoms and signs of lateral caudal brain stem infarction emerged.

AB-2160-75
Conservative Management of the Recently Ruptured Aneurysm — Mullan S (Division of Neurological Surgery, University of Chicago Hospitals, Chicago, Illinois 60637) — Surg Neurol 3:77-83 (Jan) 1975*

Antifibrinolytic drugs, hypotensive drugs and stenosis of the carotid artery have been investigated in a series of 168 patients with recently ruptured intracranial aneurysms. It is concluded that epsilon-aminocaproic acid offers effective treatment, that aggressive hypotensive therapy is dangerous in the severely obtunded patient, and that epsilon-aminocaproic acid plus carotid stenosis (supplemented by a moderate hypotensive regimen) offer the best treatment, in this experience, in the prevention of recurrent hemorrhages.

AB-2161-75
Effect of Phenoxybenzamine on Experimental Cerebral Arterial Spasm in Cats — Handa J (Department of Neurosurgery, Kyoto University Hospital, 606 Kyoto, Japan), Yoneda S, Matsuda M, Koyama T, Handa H — Surg Neurol 3:71-74 (Feb) 1975*

The effect of topical and intravenous administration of phenoxybenzamine, an alpha adrenergic blocking agent, on experimental vasospasm was studied in cats. Topical application of phenoxybenzamine prevented the occurrence of vasospasm without noticeable systemic alpha adrenergic blocking effect. Intravenous use, however, was ineffective in the dosage with which total systemic alpha adrenergic blockade was obtained. Effects of intravenous administration in much larger dosage seemed to be largely due to the non-specific action of phenoxybenzamine on vascular smooth muscle.

AB-2162-75
Traumatic Pseudoaneurysm and Arteriovenous Fistula Involving the Middle Meningeal Artery — Sicat LC, Brinker RA (St. Vincent's Hospital, New York, New York 10011), Abad RM, Rovit RL — Surg Neurol 3:97-103 (Feb) 1975*

Two cases of traumatic pseudoaneurysm and arteriovenous fistula involving the middle meningeal artery are reported with a review of the world literature on these specific entities. The two conditions appear to evolve through similar mechanisms and may lead to a confusing clinical picture. High-quality angiography is important in making an early diagnosis, prior to performing a definitive surgical procedure.

AB-2163-75
Diffuse Experimental Brain Injury: Methods, Histological Findings, and Changes in Intracranial Pressure and Blood Pressure — Valtonen S, Troupp H (Neurosurgical Clinic, Helsinki University Central Hospital, Helsinki, Finland) — Acta Neurochir 31:1-9, 1975*

*Authors' abstract.
This paper deals with the effects of a diffuse experimental brain injury in the rabbit. The injury was induced by injecting a small amount of olive oil into one internal carotid artery. Out of 27 experimental animals 12 died from the injury after a mean interval of 62 minutes; the remainder survived for at least this period with little or no rise in intracranial pressure. The animals which died from injury had a confluens sinuum pressure of 73 mm Hg and a confluens sinuum/arterial blood pressure ratio of 0.68. This ratio is higher than that seen after a severe local cold injury, but lower than that seen in connection with hydrostatically raised intracranial pressure. These findings support the view that a large local injury reduces the power of the brain to withstand raised intracranial pressure, and that scattered small lesions are less detrimental than one large one. The confluens sinuum pressures recorded tally well with clinically recorded pressures. It may be assumed that this type of experimental injury resembles severe clinical injuries — brain contusions — to a considerable extent.

ABSTRACTS

AB-2164-75


Angioscintigraphy augmented by programmed analysis of cerebral perfusion provides a technique of remarkable diagnostic accuracy which, compared to other investigations, is both simple and safe. This study shows that a 20% perfusion difference between the cerebral hemispheres indicates a vascular anomaly requiring further investigation. The examination is mainly a way of examining territories of supply by major blood vessels in cases of vascular disease. It allows the elimination of vascular lesions from diagnosis when the perfusion difference between the cerebral hemispheres is less than 20%. This is particularly helpful in cases where large blood vessel disease is suspected.

AB-2165-75

Cerebrovasculopathy Following Irradiation in Childhood — Painter M (Department of Pediatrics, Magee-Womens Hospital, Pittsburgh, Pennsylvania 15213), Chutorian AM, Hilal SK — Neurology 25:189-194 (Feb) 1975*

Symptomatic intracranial vasculopathy developed in four patients following irradiation for central nervous system tumors. All the patients presented with a stroke-like picture from 2 to 22 years after the completion of radiotherapy. Two of the patients showed abnormalities on arteriography consisting of narrowing of the supraclinoid portion of the internal carotid artery and the adjacent proximal anterior and middle cerebral arteries. Although the risks of radiotherapy for central nervous system tumors of malignant potential are outweighed by potential benefit, the risks should be carefully considered in cases of tumors with little or no malignant potential.

AB-2166-75

Computerized Axial Tomography: Clinopathologic Correlation — Kistler JP, Hochberg FH (Neuropathology Laboratory, Massachusetts General Hospital, Boston, Massachusetts 02114), Brooks BR, Richardson EP Jr, New PFJ, Schnur J — Neurology 25:201-209 (Mar) 1975*

Between August 1973 and April 1974 more than 750 patients had computerized axial tomography (CT) scans at the Massachusetts General Hospital. Ten brains from previously CT-scanned patients in this group were sectioned in the plane of the scan. Nearly exact correlation was found between the anatomic location and extent of intracranial lesions demonstrated by CT scan and the findings on gross and microscopic pathologic examination in cases of primary intracranial tumors, obstructive hydrocephalus, intracerebral hemorrhage, ischemic and hemorrhagic infarctions, pineal tumor, and thermal-burn encephalopathy. Determination of absorption values (mu) of 47 pathologically verified processes showed that high-absorption intracerebral hemorrhage and calcium-containing tumors are readily separable from other processes on the basis of mu values alone. However, the abnormal mu values of primary brain tumor, edema, and infarction are difficult to distinguish from those of normal spinal fluid and white matter.

AB-2167-75

Resuscitation of the Monkey Brain After One Hour's Complete Ischemia. II. Brain Water and Electrolytes — Zimmermann V, Hossmann K-A (Max-Planck Institut für Hirnforschung, Abteilung für Allgemeine Neurologie, 5 Cologne-Merheim, Federal Republic of Germany) — Brain Res 85:1-12, 1975*

Adult normothermic rhesus monkeys were submitted to one hour's complete cerebral ischemia, followed by periods of blood recirculation varying from 45 min to 24 h. The functional impact of ischemia and the subsequent recovery was monitored by electrophysiological recording and a distinction was made between animals with signs of functional recovery and animals without recovery. Prior to ischemia the water content of the gray matter was 81.1 ± 0.3% (mean ± SD) and the white matter 68.9 ± 0.8%. The sodium-potassium ratio in the gray matter was 0.43 ± 0.02 and in the white matter 0.62 ± 0.06. During one hour's ischemia brain water did not change significantly, but the differences in the sodium-potassium ratio in white and gray matter were reduced. Blood recirculation of the brain after ischemia caused a considerable increase in brain water content and a shift in the sodium-potassium ratio up to 1.0. Calculated brain swelling was maximal after 45 min when it reached 11.1% of the total brain volume in an animal with recovery and 12.2% in another one without recovery.

In animals with signs of functional recovery brain swelling rapidly diminished, followed by a more gradual normalization of brain electrolytes within 24 h. In animals without functional recovery electrolyte shifts were irreversible or even progressed further. It is concluded that brain swelling and electrolyte derangements following one hour's cerebral ischemia are fully reversible when signs of functional recovery appear and brain metabolism returns.

AB-2168-75

Rhinocerebral Phymomyces and Internal Carotid Artery Thrombosis — Lowe JT Jr, Hudson WR (Division of Otolaryngology, Department of Surgery, Duke University Medical Center, Durham, North Carolina 27710) — Arch Otolaryngol 101:100-103 (Feb) 1975*
Ab-2170-75

Ischemie Vertebro-Basilaire et Dysplasie Fibromusculaire des Arteres Vertebrales (A Propos de 3 Observations avec Aspect Angiographique Evocateur de Dysplasie Fibromusculaire) (Vertebral-Basilar Ischaemia and Fibromuscular Dysplasia of the Vertebral Arteries. With Reference to 3 Cases in Which Angiography Suggested Fibro-muscular Dysplasia of the Vertebral Arteries. The authors present three cases suggesting fibromuscular dysplasia of the vertebral arteries. All three were discovered as a result of ischemia in the vertebrobasilar area, a possibility described only occasionally until now.

In all three cases, ischemia was greatest in the laterobulbar area, which may be explained by the fact that FMD lesions are most often found in the upper part of the vertebral artery, and which, in two cases, resulted in total thrombosis of the end of the vertebral artery. The authors were able to perform an angiographic examination of the vertebral lesions in one case, six months later, and were surprised to observe the almost total disappearance of the anomalies in one vertebral artery. This regressive evolution of the lesions, if observed in other cases of FMD, should change the concept of a dysplasia, congenital disease causing malformations.

Ab-2171-75


A group of 187 volunteers aged 30 to 60 years were divided into heavy and light smokers and nonsmokers. Heavy smokers smoked over 20 cigarettes per day and light smokers between 5 and 15, averaging about seven cigarettes per day.

(1) Compared with male nonsmokers (NS), the male heavy smokers (HS) had a higher fasting serum turbidity, higher levels of cholesterol (mainly confined to the ester cholesterol fraction), and higher levels of serum phospholipids and triglycerides. In this HS group, the estimated fatty acid index (EFI) of beta and prebeta lipoprotein were also raised as shown by paper and cellulose acetate electrophoresis. The Stypven clotting times were also shorter than for the NS group.

(2) Increased levels of triglycerides, prebeta EFI, longer fibrinolysis times and shorter Stypven times were recorded in the group of female heavy smokers. Changes in cholesterol levels, beta EFI, phospholipids and fasting serum turbidity were not seen in this group.

(3) Again, in the male heavy smokers, hematocrit and hemoglobin levels and mean corpuscular volumes were raised. The white cell count (WBC) was very significantly raised and a differential count indicated rises in neutrophils and lymphocytes. These changes were not significant in the female HS group.

(4) No significant changes were found in the group of light smokers but a trend was usually seen that suggested these changes were influenced by the number of cigarettes smoked.

Ab-2172-75


In six cases an attempt was made to relieve the tension on intracranial aneurysms by temporarily clamping the internal carotid artery in the neck, so as to increase the expansibility of the artery. This approach was based on the concept (or “A principle”) that hemorrhage is caused by the aneurysm having to bear the full force of systolic pulse pressure when atherosclerosis prevents this pressure being taken up by the normally expansile arterial wall. Follow-up has been fairly short, but the preliminary findings in four of the six patients are encouraging. More attention must be paid in the future to the significance of atherosclerosis in the onset of bleeding from intracranial aneurysms and the incidence of postoperative problems. The argument that atherosclerosis permits the transmission of the systolic pulse directly to the aneurysm wall requires further investigation. The earlier pathological signs of atherosclerosis must receive greater attention, and postmortem study of the walls of arteries in immediate juxtaposition to aneurysms with high-powered magnification is required.

Ab-2173-75

Epidemiological Study of Cerebral Apoplexy and Myocardial Infarction in Japan — Nakazawa K, Murata K (Department of Medicine and Physical Therapy, University of Tokyo School of Medicine, 7-3-1, Hongo, Bunkyoku, Tokyo, Japan) — Geront Clin 16:195-202, 1974

*Authors’ abstract.

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Epidemiological studies were performed on patients in Japan suffering from apoplexy and ischemic heart disease from which they subsequently died. The following results were obtained: (1) During five years approximately 0.15% of the population died from apoplexy each year. The average ages in years for the following diagnostic group of patients were: subarachnoid hemorrhage 57, cerebral hemorrhage 63, cerebral thrombosis 70, and myocardial infarction 70. (2) The systolic blood pressure in the cerebral hemorrhage group (210 mm Hg) was significantly higher than that in the myocardial infarction group at the P level of 1%. (3) After the onset of a stroke, the percentage of subjects in the respective groups who died within 24 h, 72 h, and one week were 33, 59, and 72%. (4) The serum cholesterol level in the myocardial infarction group (211 mg/100 ml) was statistically higher than that in the cerebral thrombosis group (167 mg/100 ml).

AB-2174-75

Effects of Morphine-Nitrous Oxide Anesthesia on Cerebral Autoregulation — Joes DR (Department of Anesthesia, University of Pennsylvania, Philadelphia, Pennsylvania 19104), Kennell E, Bitter R, Swenson E, Wollman H — Anesthesiology 42:30-34 (Jan) 1975*

The effects of morphine-nitrous oxide anesthesia on cerebral autoregulation were studied in healthy male volunteers. Anesthesia was morphine, 2 mg/kg, and 70% nitrous oxide in oxygen. Ventilation was controlled and carbon dioxide added to keep Paco2 constant at 40 torr. Cerebral blood flow was measured first at the subject's normal mean arterial blood pressure, then at 60 torr and at 120 torr in a randomly assigned balanced order. Last, in five subjects cerebral blood flow was measured again at normal mean pressure. Blood pressure alteration was accomplished using phenylephrine or trimethaphan. Cerebral blood flow and cerebral metabolic rate for oxygen were unaffected by changes in cerebral perfusion pressure. Cerebral blood flow was 38.9 ± 6.4 (SEM) ml/100 gm/min at normal mean pressure, 49.5 ± 9.8 ml/100 gm/min at 120 torr, and 44.0 ± 10.7 ml/100 gm/min at 60 torr. These values are not different at P < 0.05. The data were analyzed for the possible effect of time on cerebral blood flow, and no change could be demonstrated. It is concluded that with Paco2 constant at 40 torr morphine-nitrous oxide anesthesia does not significantly affect cerebral autoregulation in normal man.

AB-2175-75

Transient Ischemic Attacks Due to Atherosclerosis. A Prospective Study of 160 Patients — Toole JF (Department of Neurology, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, North Carolina 27103), Janeway R, Choi K, Cordell R, Davis C, Johnston F, Miller HS — Arch Neurol 32:5-12 (Jan) 1975*

Patients with transient ischemic attacks (TIAs) due to atherosclerosis were studied by aortocranial arteriography. Onset of TIAs was before age 55 in 24% and between 55 and 64 in 47%. Men exceeded women by two to one. Of 160 patients, 77 were treated medically and 82 surgically. Five died in the immediate postoperative period. In the survivors, mortality has been the same in the medically and surgically managed groups. For patients with multiple lesions, surgical reconstruction of the carotid arteries was associated with very high surgical risk. In the medically treated group, anticoagulant therapy reduced the frequency of TIAs, but did not appear to protect patients from stroke. Mortality was 23% at four years, 57% of deaths being attributable to myocardial infarction and 38% to stroke.

AB-2176-75

Increased Platelet Aggregability in Young Patients With Stroke. Diagnosis and Therapy — Kalendovsky Z (Department of Neurology, University of Colorado Medical Center, Denver, Colorado 80220), Austin J, Steele P — Arch Neurol 32:13-20 (Jan) 1975*

Four patients ages 20 to 38 years had repeated cerebrovascular occlusions. Three of the four patients had vascular headaches (classical migraine in two) for some years before their first occlusive event occurred. When first seen at the time of their major cerebrovascular occlusion, all had evidence of plasma hypercoagulability, and two of the women were receiving birth control pills.

Many months later, while off the "pill" and on warfarin sodium (Coumadin) therapy, two women and one man continued to have new cerebrovascular symptoms. For the first time, their platelet aggregability was tested to several biological substances known to come in contact with platelets in vivo. At this time, all four patients were found to have platelet hyperaggregability. The three symptomatic patients also had a shortened platelet survival time. Long-term management of these patients with chronic platelet aggregability and chronic plasma hypercoagulability is described.

AB-2177-75

Catecholamines in Experimental Brain Ischemia — Kogure K, Scheinberg P (Department of Neurology, University of Miami School of Medicine, Miami, Florida 33152), Matsumoto A, Busto R, Reimnuth OM — Arch Neurol 32:21-24 (Jan) 1975*

Local cerebral ischemia was produced in rats by internal carotid artery injection of 35 μ carbon microspheres, and brain norepinephrine (NE), dopamine, and cyclic adenosine 3’,5’-monophosphate (cAMP) were measured in embolized and intact hemispheres at intervals up to four hours. Sham-operated animals were controls.

There was an instantaneous increase of cAMP. Norepinephrine was reduced within two minutes after embolization and remained low for four hours. Dopamine increased by five minutes after embolization and returned to normal after four hours. Results were qualitatively similar, but less, in the nonembolized hemisphere. Accumulation of cAMP is thought to be due to a direct effect of ischemic hypoxia and may be the initiating factor in increased glycolysis that occurs in ischemia. Decrease in NE may be secondary to its generalized release from presynaptic terminals throughout the brain and could be a factor in cortical vasoconstriction that follows embolization. Dopamine changes are a reflection of alterations in energy metabolism.

AB-2178-75

Contralateral Gaze Deviation With Supratentorial Hemorrhage. Three Pathologically Verified Cases — Kane JR (Department of Neurology, Los Angeles County-University of Southern California Medical Center, Los Angeles, California) — Arch Neurol 32:119-122 (Feb) 1975*
ABSTRACTS

Three patients with spontaneous supratentorial intracerebral hemorrhage had contralateral sustained conjugate gaze deviation. The autopsies disclosed large thalamic-basal ganglia hemorrhages whose caudal extension was limited to the midbrain. Current knowledge of oculomotor localization does not adequately explain this "wrong-side" gaze deviation, and the mechanism remains obscure. The present cases suggest that thalamic hemorrhage can produce contralateral gaze deviation without involving postdecussation horizontal oculomotor pathways. Contralateral gaze deviation is not a rare occurrence with deep supratentorial hemorrhages, and awareness of this confusing sign should assist in localizing intracerebral hematomas.

AB-2179-75
Atheromatous Emboli in Renal Biopsies. An Ultrastructural Study — Jones DB (Department of Pathology, State University of New York, Upstate Medical Center, Syracuse, New York 13210), Iannaccone PM — Amer J Path 78:261-276 (Feb) 1975*

In a series of 755 renal biopsies atheromatous emboli were found in biopsies of eight men from 49 to 72 years of age. Unexplained recent deterioration of renal function was present in each. This previously unreported incidence of 8/755 biopsies is ascribed to the selection for biopsy of patients with unexplained deterioration in renal function. Hypertension was a major feature in six, hyperlipidemia in two, a leaking aortic aneurysm in one, carcinoma of the pancreas in one, and chronic glomerulonephritis in one patient. Toluidine-blue-stained epoxy sections proved to be more effective in recognizing small emboli than paraffin sections. Ultrastructural observation concerned (a) early lesions (e.g., fresh emboli with endothelial distortion or injury), (b) intermediate lesions (e.g., histiocytic or giant cell reaction and intimal proliferation), and (c) later lesions (e.g., extraluminalization of the crystals eventually resulting in inert location in intraluminal stroma). Osmiophilic deposits on the crystal surfaces were myelin-form in structure and were felt to result from lysosomal action.

AB-2180-75
Ischemic Carotid Endothelium. Scanning Electron Microscopical Studies — Nelson E (Department of Neurology, University of Maryland School of Medicine, Baltimore, Maryland 21201), Sunaga T, Shimamoto T, Kawamura J, Rennels ML, Hebel R — Arch Path 99:125-131 (Mar) 1975*

The normal luminal surface and the effect of ischemia on the endothelium of the common carotid arteries of rhesus monkeys were examined by scanning electron microscopy. Clamps were placed proximally and distally on the right common carotid arteries, occluding the vessels for periods ranging from five minutes to four hours. The clamps were then removed and fixation carried out by intravascular perfusion. The contralateral sham-operated carotids, as well as those from unoperated animals, were used as control specimens. The most obvious effect of ischemia was the appearance of conical, crater-like defects in the cytoplasm of endothelial cells. Such "craters" were observed following as little as 15 minutes of ischemia, were much less frequent in sham-operated vessels, and were not seen in the unoperated control specimens.

AB-2181-75

The effects of pyridinol carbamate, a drug with demonstrated capacity to inhibit development of atherosclerotic plaques in the rabbit, were studied in humans with symptoms of arterial occlusive disease in the lower extremities. Microcirculation, perfusion, claudication distance, peripheral pulsations, and angiographic appearances were supplemented by clinical impressions over a two-year period. Although the drug was discontinued in several patients from a larger group because of gastrointestinal tract symptoms, and for other reasons, seven of eight patients receiving it showed no progression of their disease, whereas all 15 patients receiving identical-appearing placebos did. Although the number of patients is not sufficient to warrant statistical conclusions, the observations were totally objective and strongly encourage further control studies.

AB-2182-75
Regional Cerebral Blood Flow and Intraventricular Pressure in Acute Head Injuries — Fieschi C (Department of Neurology, University of Siena, Siena, Italy), Battistini N, Bedruchi A, Boselli L, Rossana M — J Neurol Neurosurg Psychiat 37:1378-1388 (Dec) 1974*

Twelve patients who were comatose after head injuries were studied with serial determinations of regional cerebral blood flow, jugular P02 tension, and intraventricular pressure. These determinations began a few hours after the injury, and were followed throughout the clinical course. Diffuse derangement of cerebral vasomotor regulation is confirmed after severe head trauma, which may contribute to deterioration and poor prognosis, and which indicates a need for therapeutic maintenance of rich oxygenation, hyperventilation with moderate hypocapnia, and steady blood pressure. Continuous recording of IVP (eventually sensitized by fluid infusion or CO2 inhalation tests) may give an early indication of the subsequent clinical state and may suggest the need to submit the patients to further investigative and therapeutic procedures.

AB-2183-75
Segmental Intervertebral Anastomosis in Subclavian Steal — Baker RA (Department of Radiology, Harvard Medical School, Boston, Massachusetts), Rosenbaum AE, Robertson GH — Brit J Radiol 48:101-107 (Feb) 1975*

Segmental intervertebral arterial connections originate from normal vascular channels which are commonly seen on selective vertebral arteriography. In subclavian steal, these vessels can hypertrophy and form important collateral pathways. The significance of their hemodynamic contributions may be assessed by their multiplicity and caliber. Lateral or oblique projections in addition to frontal visualization may be required to differentiate the various transcervical channels which lie either anterior or posterior to the vertebral bodies.

AB-2184-75
Cerebral Metabolism in Hypoxic Hypoxia. 1. Pattern of Activation of Glycolysis: A Re-Evaluation — Norberg K, Siesjo BK (Brain Research Laboratory, E-
In order to evaluate the pattern of activation of glycolysis in cerebral cortex during hypoxic hypoxia, lightly anesthetized rats were subjected to a lowering of arterial Po2 to about 25 mm Hg and brains were frozen in situ for metabolite analyses either 1, 2, 5, 15 or 30 minutes following the induction of hypoxia. The lactate and pyruvate concentrations increased progressively during the 30-minute period of hypoxia. At one minute and two minutes there were decreases in G-6-P and F-6-P, and increases in FDP, DHAP and 3-PG, indicating activation of phosphofructokinase. At five minutes this pattern of changes was less pronounced and at 15 minutes it was absent in spite of the fact that the lactate and pyruvate concentrations were further increased. At 30 minutes G-6-P and F-6-P had further increased but the levels of DHAP, FDP and 3-PG were normal. Evidently, phosphofructokinase activation can only be detected in the early stages of hypoxia, i.e., when the maximal increase in glycolytic flux occurs and before there has been a corresponding activation of other rate-limiting enzymatic steps.

Signs of activation of phosphofructokinase were observed in the absence of changes in tissue concentrations of ATP or AMP, with minimal elevation of NH4+, and in spite of increased (or unchanged) levels of citrate. However, since there were small but significant increases in ADP in one and two minutes, and pH-independent decreases in phosphocreatine, the results indicate that hypoxia is accompanied by an initial imbalance between production and utilization of ATP. The metabolic consequences of this imbalance (decrease in phosphocreatine, increases in ADP and Pi) may be at least partly responsible for activation of phosphofructokinase.

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Cerebral Metabolism in Hypoxic Hypoxia. II. Citric Acid Cycle Intermediates and Associated Amino Acids — Norberg K, Siesjö BK (Brain Research Laboratory, E-blocket, University Hospital, S-221 85 Lund, Sweden) — Brain Res 86:45-54 (Mar 14) 1975*

In order to study the influence of hypoxia upon the metabolism of citric acid cycle intermediates and associated amino acids in the cerebral cortex, lightly anesthetized rats were subjected to a lowering of arterial Po2 to about 25 mm Hg, and brains were frozen in situ for metabolite analyses either 1, 2, 5, 15 or 30 min following the induction of hypoxia. The size of the citric acid cycle pool as calculated from the concentrations of citrate, isocitrate, a-ketoglutarate, succinate, fumarate, malate and oxaloacetate increased gradually during the course of hypoxia. It is concluded that the main anaplerotic reactions were CO2 fixation at the pyruvate carboxylase step and a shift in the alanine aminotransferase reaction.

There was a decrease in a-ketoglutarate at 1 min, in all probability due to a primary change in malate-oxaloacetate ratio and a secondary shift in the aspartate aminotransferase reaction. Later, a-ketoglutarate increased in parallel with the generalized increase in pool size and with the rise in alanine concentration. The cytoplasmic NADH-NA D+ ratio, as calculated from intracellular pH1 and malate-oxaloacetate ratio, increased by about 50% at 1 min and remained constant during the course of hypoxia. The results suggest that the lactate dehydrogenase reaction was off equilibrium when glycolytic flux was maximally increased. Aspartate decreased already at 1 min, a significant increase in alanine occurred at 15 min, and elevated levels of GABA and glutamine were observed at 30 min. The increase in GABA was unrelated to loss of a-ketoglutarate and may (like the rise in glutamine concentration) have resulted from enhanced amination of a-ketoglutarate, possibly combined with a relative loss of NAD+.

Disseminated Intravascular Coagulation in Heat Stroke. Response to Heparin Therapy — Perchick JS (Department of Medicine, Montefiore Hospital, Pittsburgh, Pennsylvania 15213), Winklestein A, Shaduck RK — JAMA 231:480-483 (Feb 3) 1975

A previously well 14-year-old boy collapsed while strenuously exercising, and was found to be comatose, hypotensive, febrile (106.5°) and anhydrotic on initial examination. He soon had a generalized seizure, but no focal neurological abnormalities were noted. His initial serum osmolality was 346 mOsm per kilogram. Petechial hemorrhages developed on his second hospital day, and his stools contained occult blood. His platelet and fibrinogen levels were decreasing and further clotting tests confirmed the diagnosis of disseminated intravascular coagulation. Heparin therapy was begun. His neurological status improved slowly, and even 41 days later his affect and intellectual performance were abnormal. At follow-up six months later he seemed back to normal, however. The complications of heat stroke and the use of heparin in this condition are discussed.

Retinal Vascular Lesions in Two Patients With Prolapsed Mitral Valve Leaflets — Woldoff HS (St. Luke’s Hospital, Phoenix, Arizona 85006), Gerber M, Desser KB, Benchimol A — Amer J Ophthal 79:382-385 (Mar) 1975

Two patients, a 48-year-old woman and a 42-year-old woman, presenting with visual complaints were found to have retinal vascular lesions and mid-late systolic clicks. Both patients were thought to have prolapsed mitral valve leaflets, and in one patient this was demonstrated on left ventriculography.

Central Retinal Artery Occlusion — Appen RE (Department of Ophthalmology, University Hospitals, Madison, Wisconsin 53706), Wray SH, Cogan DG — Amer J Ophthal 79:374-381 (Mar) 1975

The average age of onset of central retinal artery (CRA) occlusion in 54 patients was 54.3 years with a range of 17 to 84 years. Of these 54 patients, 57% were men. The right eye was involved in 55% of the patients. Of the 44 patients over 40 years of age, 18% also eventually had a cerebrovascular lesion, but ipsilateral carotid disease was found in only five (11%) of the older patients, and cerebral symptoms developed in only two of these five. Bilateral CRA occlusions occurred in three patients, two of whom had known rheumatic heart disease, the other syphilitic arteritis. Of the 44 older patients, ten had valvular heart disease. Of the ten patients less than 40 years old, seven were men. Only
ABSTRACTS

one of the ten had a subsequent stroke, a complication of a left atrial myxoma. This series seemed to confirm a relationship of CRA occlusion with atherosclerosis and hypertension. Other associated conditions included hyperlipidemia (five patients), syphilis (three patients), diabetes mellitus (three patients), temporal arteritis (two patients), hemoglobinopathies (two patients), systemic lupus erythematosus (one patient), and atrial myxoma (one patient).

AB-2189-75
Angiography of Cerebellar Hemorrhage Secondary to Hypertension — Massie JD (Department of Radiology, University of Tennessee College of Medicine, Memphis, Tennessee 38163), Haussen S, Gerald B — Amer J Roentgenol Rad Ther Nucl Med 123:22-26 (Jan) 1975

Presurgical posterior fossa angiography in each of three hypertensive patients with clinically suspected cerebellar hematomas revealed a cerebellar mass demonstrable by displacements of the contralateral posterior inferior cerebellar artery and its vermian branches, the inferior vermian veins, and branches of the ipsilateral superior cerebellar artery. Hydrocephalus was shown by either angiography or ventriculography in each patient, presumably secondary to compression of the aqueduct. One patient was explored without angiography because of his rapidly deteriorating clinical course. Because of the difficulty in distinguishing cerebellar and pontine hemorrhages clinically, angiography should be performed promptly to select out the surgically treatable cerebellar hematomas. Of five such patients who underwent surgery, two were discharged much improved, one improved initially and then died of a brain stem infarct, and two died within 12 hours of admission. Angiography also may help to find causes of hemorrhages other than hypertension, e.g., arteriovenous malformations, aneurysms, and metastatic lesions. The angiographical findings of a 30-year-old normotensive woman with a cerebellar AVM are also presented.

AB-2190-75
Idiopathic Paroxysmal Ventricular Tachycardia in Infants and Children — Hernandez A (Department of Pediatrics, St. Louis Children's Hospital, St. Louis, Missouri 63110), Strauss A, Kleiger RE, Goldring D — J Pediatr 86:182-188 (Feb) 1975

Idiopathic paroxysmal ventricular tachycardia was demonstrated in seven children, ranging in age from one day to 13 years. The presenting features included syncope with tachycardia (two patients), hypotension with tachycardia (one patient), and irregular pulse (four patients). Lidocaine effectively terminated acute episodes. Orally administered procaine amide and propranolol were effective for long-term treatment. Dynamic ECG monitoring was essential for accurate diagnosis.

AB-2191-75
Sequential Changes in Cerebral Blood Flow and Distribution of Flow Within the Brain During Hemorrhagic Shock — Slater G, Vladeck BC, Bassin R, Brown RS, Shoemaker WC (Department of Surgery, Harbor General Hospital, UCLA School of Medicine, Torrance, California 90509) — Ann Surg 181:1-4 (Jan) 1975

Microspheres labeled with five different isotopes were injected via a left atrial catheter at selected intervals into each of 14 dogs undergoing controlled hemorrhage. The amount of each isotope was analyzed in various regions of each brain. Immediately after the hemorrhage there was a rise in cerebral blood flow (CBF) as a percentage of cardiac output, but a slight decrease in total CBF. In the later hypotensive, hypovolemic stage the total CBF was decreased as was the CBF as a percent of cardiac output. The pattern of flow in various regions of the brain was similar to that of the total CBF.

AB-2192-75

Comparison of static brain scans, conventional angiography, and rapid-sequence scintigraphography was made in six nonsurgically treated patients with subdural hematomas, followed from four to six months. The scintiphotograms were more reliable when the scintillation camera data were stored and analyzed by a digital computer. Although scintigraphography is unlikely to replace conventional angiography for the initial diagnosis of subdural hematoma, it has been shown to be a noninvasive method of following the resolution of the hematoma.

AB-2193-75

In each of eight consecutive patients with a ruptured cerebral aneurysm, a major abnormality on the intravenous radionuclide angiography (cerebral isotope flow study) was demonstrated in both the "arterial" and "capillary" phases if both vasospasm (shown on conventional angiography) and a focal neurological deficit were present, but not if vasospasm without a neurological deficit occurred. This information would seem to be useful in the selection of the optimal time for surgery in such patients, since serial flow studies can demonstrate the return of a normal cerebrovascular flow pattern and help to distinguish ischemia from infarction.

AB-2194-75
Hemifacial Spasm Secondary to Vascular Compression of the Facial Nerve — Neagoy DR, Dohn DF (Department of Neurological Surgery, Cleveland Clinic, Cleveland, Ohio) — Cleveland Clin Quart 41:205-214, 1974

Hemifacial spasm was found to be related to facial nerve distortion by an elongated and ectatic vertebral or basilar artery in 14 patients, all of whom had surgical demonstration of a compressed facial nerve on which neurolysis was performed. Complete relief resulted in 12 cases. At the Cleveland Clinic facial nerve compression by an aberrant vessel in the cerebellopontine angle was found to be the most common cause of hemifacial spasm. Possible mechanisms of hemifacial spasm are discussed, especially the possibility of cross stimulation from afferent to efferent at a point of compression. That sectioning of the nervus intermedius is sometimes curative in patients with hemifacial spasm supports the cross-stimulation theory.
The results of microsurgical procedures in 505 patients with intracranial aneurysms are presented by year from 1967 to July 1974. The operative mortality decreased from 9.8% in 1967 to 1.9% (373 patients) in 1970 through 1974. The cases are discussed in terms of the sites of the aneurysms and the clinical status of the patient by the Botterell grading system. Techniques and equipment also are described.

Acute Hemiplegia of Childhood Associated With Coxsackie A9 Viral Infection — Roden VJ, Cantor HE (Cardinal Glennon Memorial Hospital for Children, St. Louis, Missouri 63104), O'Connor DM, Schmidt RR, Cherry JD — J Pediatr 86:56-58 (Jan) 1975

A 16-month-old girl developed a left hemiparesis over a two-hour period. On examination she was found to ignore objects in her left visual field also. She had had an immunization for mumps, measles, and rubella three weeks earlier. The initial brain scan was normal; the initial CSF revealed 21 lymphocytes and 68 RBCs. Another brain scan eight days later showed a right frontoparietal lesion. A nasal swab and CSF collected eight days after the onset of the illness yielded Coxsackie A9 virus, and subsequent antibody titers for Coxsackie A9 were much higher than for measles, mumps, or rubella. The authors suggest that perhaps a focal vasculitis occurred in the region of her right middle cerebral artery.

Disordered Neurotransmitter Function. Demonstration by Measurement of Norepinephrine and 5-Hydroxytryptamine in CSF of Patients With Recent Cerebral Infarction — Meyer JS (Department of Neurology, Baylor College of Medicine, Houston, Texas 77025), Welch KMA, Okamoto S, Shimazu K — Brain 97:655-664, 1974

Cerebrospinal fluid (CSF) was examined from 3 to 19 days after cerebral infarction in 32 patients for analysis of serotonin concentration (25 patients) and catecholamines (13 patients). Hemispheric blood flow and metabolism were measured in 29 cases and correlated with the CSF measurements. Catecholamine and serotonin levels were highest in the patients with the most severe neurological deficits and decreased with time after the stroke. The patients with severely reduced blood flow had high CSF serotonin levels. Hemispheric oxygen consumption correlated directly with the CSF norepinephrine levels. These data support the idea that abnormal central monoamine metabolism is a pathophysiologica factor in cerebral infarction.


This paper, written in French, compares 77 patients who had carotid artery surgery with 51 patients who were treated medically for cervical carotid artery occlusion or stenosis.

Warfarin Interactions With Chloral Hydrate and Glutethimide — Udall JA (University of California, Irvine, School of Medicine, Irvine, California) — Curr Therap Res 17:67-74 (Jan) 1975


Orbital Phlebography. II. Anatomy of Superior Ophthalmic Vein and Its Tributaries — Brasmar J (Department of Diagnostic Radiology, University Hospital, S-221 85 Lund, Sweden) — Acta Radiol Diag 15:481-496, 1974

Angiology 26 (Jan) 1975

This issue is devoted to hypertension.

The Sick-Sinus Syndrome in Africans — Ikeme AC (WHO Cardiovascular Research Team, University of Ghana Medical School, Accra, Ghana), D'Arbela PG, Somers K — Amer Heart J 89:295-300 (Mar) 1975

Characterized by syncope and bradycardia, this syndrome occurs in middle-aged patients with ischemic heart disease and, in this report, in young individuals also.

Congenital Malformations Associated With the Administration of Oral Anticoagulants During Pregnancy — Pettifor JM (Metabolic and Nutrition Research Unit, Department of Pediatrics, Baragwanath Hospital, Johannesburg, South Africa 1973), Benson R — J Pediatr 86:459-462 (Mar) 1975
ABSTRACTS

The association reported here in three cases should be assessed in large population groups.


Review of this uncommon syndrome which is characterized by syncope.

Some Considerations on Cerebral Vasospasm — Peterson EW, Leblanc R, Searle R, Mandy F (Faculty of Medicine, University of Ottawa, Ottawa, Ontario, Canada) — Amer Heart J 89:124-126 (Jan) 1975

Review of recent work.
Abstracts

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