Neurological Diseases and Stroke through contract number PH-43-933 with Dr. Robert Siekert, Head, Abstract Section, Mayo Clinic, Rochester, Minnesota 55901.

**A B-1533-74**

Cerebral Protection by Thiopental During Hypoxia — Michenfelder JD, Theye RA (Department of Anesthesiology, Mayo Clinic and Mayo Foundation, Rochester, Minnesota 55901) — Anesthesiology 39:510-517 (Nov) 1973

The effects of thiopental on rates of cerebral ATP depletion and lactate accumulation in dogs anesthetized with N₂O during two different circumstances of impaired oxygen delivery were examined. In ten dogs, five with and five without prior thiopental (15 mg per kg), acute hemorrhagic shock (mean arterial pressure 25 to 30 mm Hg) was produced and maintained for nine minutes. The EEG remained active in all these dogs. In the dogs given thiopental, cerebral ATP was sustained at a significantly higher level and cerebral lactate accumulation was significantly less in the initial five to seven minutes of hypotension. In another ten dogs, five with and five without prior thiopental (15 mg per kg), PaO₂ was decreased abruptly to zero and hypoxia, progressing rapidly to anoxia (PaO₂ < 5 mm Hg), was maintained for nine minutes. After three minutes, the EEG was flat in all dogs, but activity persisted for a significantly longer period (35 seconds) in dogs given thiopental. The rates of ATP depletion and lactate accumulation were greater than with hypotension and were not significantly altered by thiopental. It is concluded that in the circumstance of hypoxia with continued cerebral function (active EEG), thiopental does afford some cerebral protection; in the absence of function (flat EEG), no protection is apparent. The authors suggest that anesthetics such as thiopental diminish energy requirements of the brain only by reducing its function and hence can provide cerebral protection only when the extent of hypoxia is insufficient to abolish function.

**A B-1534-74**

Hypoxia and the Arterial Surface. Changes in the Linear Folds of the Intima Under Scanning Electron Microscopy — Boatman JB (Biomedical Sciences Division, Battelle's Columbus Laboratories, Columbus, Ohio 43201), Carter SD — Arch Environ Health 27:360-363 (Dec) 1973

Adult rabbits were exposed to reduced oxygen environments (12% to 14%) for 72 hours by dilution of room air with compressed nitrogen. Aortic surfaces were examined by scanning electron microscopy. Control animals were similarly processed at normal levels of oxygen. Patterns of linear folds running in the direction of blood flow were observed in control animals, with endothelial cells tightly attached to the underlying internal elastic membrane. Hypoxic arterial surfaces showed grossly distorted linear folds, with swollen and convoluted endothelial surfaces which obscured the spaces between the folds while preserving the plicate organization. These changes resemble the reported effects of moderate carbon monoxide exposure. Accumulation of subendothelial fluid appeared to channel the length of the fold, and to present a swollen endothelial surface susceptible to injury by the pulsatile blood flow.

**A B-1535-74**


The results of treatment of transient focal cerebral ischemic attacks (TIA) with anticoagulants in a community were studied by means of the actuarial method of analysis. There was no difference in survival between treated and untreated patients. There was significantly less risk of stroke in treated patients than in untreated ones; however, most of the difference was determined by the end of the first month following the first TIA. The largest proportion of strokes occurred among all patients, especially among untreated patients, in the first few months after the first episode of TIA.

**A B-1536-74**

Thromboatherosclerosis in Normolipemic Rabbits. A Result of Continued Endothelial Damage — Moore S (Department of Pathology, Jewish General Hospital, Montreal, Quebec, Canada) — Lab Invest 29:478-487, 1973

Based on the concept of Duguid that atherosclerosis is the end result of organization of mural thrombi, there have been many attempts to reproduce the disease by damage to the inner lining of the aorta or large arteries. These have employed an injury at a fixed point in time, followed by observation of the lesion produced. In a model of experimental microembolism in rabbits, in which a catheter was placed in the aorta for weeks or months, two types of lesion were observed. At the upper tip of the catheter or at sites of angulation, where repeated or continuous wall contact was likely, raised atherosclerotic, lipid-rich plaques developed in from two to six months. In areas where the catheter had become incorporated into the wall, or in areas where lesser contact was probable, slightly elevated "fibrous" or "peary" plaques were seen. These were negative for lipid stains. From two days lipid, mainly intracellular, was seen in the thrombi. At two to three weeks slight intimal thickenings contained either many lipid-filled cells or nonlipid macrophages, with much intercellular fluid. These are similar to fatty streaks and edematous plaques, respectively. At two months the raised lesions showed a central pool of lipid, partly birefringent. The amount of birefringent lipid increased steadily thereafter. Thus, the full spectrum of human atherosclerotic lesions was produced. Electron microscopy of the early and late lesions conforms to descriptions of lesions in human atherosclerosis. The

*Authors' abstract.

These abstracts were assembled for publication by the Neurological Information Network of the National Institute of Neurological Diseases and Stroke through contract number PH-43-66-933 with Dr. Robert Siekert, Head, Abstract Section, Mayo Clinic, Rochester, Minnesota 55901.
results were consistent in showing lipid in raised thrombus-covered, i.e., nonreendothelialized lesions. Nonraised, endotheleialized lesions did not show lipid after two months. The findings suggest strongly that atherosclerosis occurs in relation to endothelial injury. If the injury is continuous or repeated, progressive disease characterized by a central lipid pool and overlying thrombus results.

AB-1537-74
Carotid-Subclavian Bypass Grafts for Subclavian Artery Disease — Williams CL (522 South 16th Street, Fort Smith, Arkansas 72901), Woods LP, Clemmons EE — Amer J Surg 126:807-809 (Dec) 1973*

Carotid-subclavian bypass grafts have proved to be the procedure of choice in the treatment of symptomatic subclavian artery occlusion in our experience. Operative technic utilizing internal shunts during application of a carotid graft and the concept of separate graft application to the carotid and subclavian arteries with subsequent anastomosis to the graft segment have eliminated neurological and vascular complications of this procedure.

AB-1538-74

The relationship between Poo, Pao, local blood flow, and the activity of individual chemoreceptor fiber units of the cat's carotid body was studied during changes in the arterial oxygen partial pressure and the arterial systemic blood pressure. The following results were obtained:

1. In the normal physiological range Poo follows Pao almost linearly.
2. The curves of neuronal activity depending on Pao or Poo have different shapes.
3. Hypoxia and hyperoxia change the relationship between Pao and Poo, as well as the relationship to the neuronal activity. When returning to normal conditions, the initial relationship is re-established.
4. Considerable changes in local flow do not change local tissue P02, and do not influence the neuronal activity.

AB-1539-74
Thrombogenicity of Guide Wires — McCarty RJ (Cardiology Service, William Beaumont General Hospital, Box 70023, El Paso, Texas 79920), Glasser SP — Amer J Cardiol 32:943-946 (Dec) 1973*

A Teflon-coated guide wire used to facilitate passage through the aortic valve during retrograde left ventricular catheterization caused cerebral emboli in three patients. Increased thrombogenicity of Teflon-coated wires and steel guide wires was found in a subsequent study in ten mongrel dogs. Teflon-coated wires should be used only with caution, and preferably only briefly in the descending aorta or in conjunction with systemic heparinization.

*Authors' abstract.

AB-1540-74
Hirabasisarterienveränderungen bei Marfan-Syndrom und Idiopathischer Media-Nekrose (Morphology of Cerebral Arteries in Marfan's Syndrome and Medianecrosis Idiopathica) — Gerhard L (Pathologisches Institut der Universität, D-4000 Düsseldorf, Moorrenstrasse 5, Bundesrepublik Deutschland), Schmitz-Bauer G — Acta Neuropath (Berlin) 26:179-184, 1973 (Springer-Verlag, publisher)*

Degenerative processes of the tunica media are reported with increasing frequency among the causes of a dissecting aneurysm in the wall of large arteries. The underlying process is supposed to be a necrosis or degeneration of elastic tissue and smooth muscle cells, occurring either in idiopathic necrosis of the media (Gsell-Erdheim) or in systemic disorders as Marfan's syndrome, pseudoxanthoma elasticum, Ehlers-Danlos syndrome and homocystinuria. Neurological symptoms in these conditions are attributed to disturbances of general circulation but not to involvement of cerebral arteries.

The findings in three young patients are reported (one patient with Marfan's syndrome, two patients with medianecrosis of large arteries) exhibiting the characteristic histological changes in the media of the cerebral arteries, too. Possible connections between such degenerative diseases of the tunica media and the origin of fusiform aneurysms or the "megadolicho-basilaris syndrome" of cerebral arteries are suggested.

AB-1541-74
Postoperative Angiography and the "Slipped" Clip — Drake CG (University Hospital, 339 Windermere Road, London J2, Ontario, Canada), Allcock JM — J Neurosurg 39:683-689 (Dec) 1973*

After intracranial surgery for an aneurysm, postoperative angiography should be routine. This may demonstrate lesions such as arterial spasm and hematoma, and also may show, sometimes quite unexpectedly, that the sac has not been completely obliterated. A clip or ligature may be merely misplaced, not be closed tightly enough, slip, or include the parent artery. In our series of 329 patients who underwent postoperative angiography, contrast filling of a significant part of the sac still occurred in 43 (13%); at least 12 of these rebled. Further intracranial surgery was carried out in 18, with satisfactory obliteration of the sac in 16. An incompletely obliterated aneurysm should be reoperated on as soon as possible. The risk involved at this time is minimal and far less than the possibility of another catastrophic hemorrhage.

AB-1542-74
Effectiveness of Microsurgery for Intracranial Aneurysms. Postoperative Angiographic Study of 50 Cases — Hollin SA (Department of Neurological Surgery, Mount Sinai Hospital, New York, New York 10029), Decker RE — J Neurosurg 39:690-693 (Dec) 1973*

The authors report postoperative angiographic results in a series of 50 patients who had undergone microsurgery for intracranial aneurysms. The aneurysm body and fundus were obliterated in every case. The neck was visualized postoperatively in three cases, or 6%; in one of these, later follow-up angiography demonstrated subsequent aneurysm occlusion. No postoperative reblooding occurred. The incidence of postoperative occlusion of the parent vessel was...
Evidence of Preservation of Aerobic Cerebral Metabolism During Halothane-Induced Hypotension — Yashon D (Room N-911, 410 West Tenth Avenue, Columbus, Ohio 43210), Stone W, Magnes A, Hunt WE, Hamelberg W — J Neurosurg 39:712-717 (Dec) 1973*

The effect of halothane-induced profound systemic arterial hypotension on brain ischemia was evaluated by comparison with hypotension caused by oligemia and trimethaphan as well as nonhypotensive controls. Mean cerebral tissue lactate concentrations after halothane-induced hypotension at 5, 30, and 60 minutes were 4.34, 5.92, and 7.48 mM per kilogram. There was no significant difference between halothane and control animals during the experimental period. At 30 and 60 minutes, both oligemic and trimethaphan groups were higher than the control and halothane series. Definite protection from cerebral ischemia is provided by halothane during induced hypotension. Exact mechanisms of protection conveyed by halothane are unclear, but are probably not related to relative increased blood flow since cerebral vasodilation is maximal in these low blood-pressure ranges irrespective of etiology.

Circulatory Disturbance of the Venous System During Experimental Intracranial Hypertension — Yada K, Nakagawa Y (Department of Neurosurgery, Hokkaido University Hospital, Kita-14, Nishi-5, Sapporo, Japan), Tsuru M — J Neurosurg 39:723-729 (Dec) 1973*

The venous drainage system during increased intracranial pressure (ICP) was studied in dogs. The ICP was gradually increased to the level of the systemic blood pressure while related arterial and venous pressures were monitored. The blood flow through the parasagittal intradural venous channels (lateral lacuna) was also measured to test the collapsibility of these vessels. The cortical venous pressure was constantly 50 to 200 mm H2O higher than the ICP regardless of the degree of elevation, while the sagittal sinus pressure remained at 50 to 75 mm H2O unless the central venous pressure was elevated by respiratory disturbance. Flow through the lateral lacuna decreased as the ICP was increased. The authors conclude that the low pressure in the sinus and the consistency of the walls of the lateral lacuna allow gradual stenosis of the lacuna during increased ICP.

The Reversal of Experimental Vasospasm by Dibutryl-3', 5'-Adenosine Monophosphate — Peterson EW (Neurological Surgery, 1081 Carling Avenue, Suite 701, Ottawa, Ontario K1Y 4G2, Canada), Searle R, Mandy FF, Leblanc R — J Neurosurg 39:730-734 (Dec) 1973*

Topical dibutryl cyclic adenosine monophosphate (AMP) was used to reverse experimental cerebral vasospasm of the basilar artery in the cat. The combination of dibutryl cyclic AMP and theophylline caused prolonged dilatation of the basilar artery. Dibutryl cyclic AMP seems to be specific as a topical vasodilator, which may be useful in the postoperative management of subarachnoid hemorrhage.

Benzalkonium-Heparin-Coated Angiographic Catheters. Experience with 563 Patients — Hawkins IF Jr (Department of Radiology, University of Florida College of Medicine, Gainesville, Florida 32601), Kelley MJ — Radiology 109:589-591 (Dec) 1973*

Benzalkonium-heparin-coated catheters were used in 563 patients undergoing visceral, cardiothoracic, and neuroangiographic procedures. No thromboembolic complications occurred. Equivocal clot formation was observed at "pullout" arteriography in 4 of 100 cases. Hematoma formation at the arterial puncture site was not a problem. It is suggested that heparin-coated catheters are a safe and simple means of reducing the incidence of angiographically related thromboembolism.

Phlebographic Analysis of the Incidence of Thrombosis in Hemiplegia — Cope C (Division of Radiology, Albert Einstein Medical Center, Philadelphia, Pennsylvania 19141), Reyes TM, Siversky NJ — Radiology 109:581-584 (Dec) 1973*

A phlebographic survey of 150 patients with chronic hemiplegia entering a hospital for rehabilitation revealed a 33% incidence of acute phlebothrombosis in the hemiplegic leg, almost a third of which was clinically undiagnosable at the bedside. The veins of the nonhemiplegic leg remained relatively free of disease. Leg edema and calf muscle tenderness were not reliable signs of thrombosis. The incidence of pulmonary embolism was low at 2.8%, probably because of prompt anticoagulation. Prior to rehabilitation of stroke patients, bilateral phlebography is recommended as a means of detecting "silent" phlebothrombosis.

Arteriographic Diagnosis of Subtemporal Subdural Hematoma — Glickman MG (Department of Radiology, University of California School of Medicine, San Francisco, California), McNamara TO, Margolis MT — Radiology 109:607-615 (Dec) 1973*

Over a 30-month period, subtemporal subdural hematoma was diagnosed arteriographically and verified surgically in 14 patients. It is not a rare lesion and usually occurs in the anterior portion of the middle fossa. When carotid angiography is performed, the submentovertical projection is added to standard views of trauma patients with a suspected middle fossa mass. Routine projections will not demonstrate most subtemporal subdural hematomas, because of the anatomical features of the fossa. When intratemporal injury and subtemporal subdural hematoma occur together, arteriography facilitates accurate diagnosis of both lesions as well as an understanding of their relative proportions.

Arteriovenous Malformations of the Spinal Cord in Childhood — Sutton T (Department of Diagnostic Medicine, Gainesville, Florida 32601), Kelley MJ — J Neurosurg 39:723-729 (Dec) 1973*
ABSTRACTS

Radiology, Montreal Children’s Hospital, Montreal 108, Quebec, Canada), Murray PJ, Alexander WJ, Blundell JE — Radiology 109:621-622 (Dec) 1973*

The authors describe a boy in whom an arteriovenous malformation of the spinal cord presented as progressive spastic paraparesis. Emphasis is placed on early recognition before irreversible cord damage occurs. Clinical awareness should lead to a complete radiological investigation, including plain radiographs of the spine, myelography, and angiography.

AB-1550-74
Effect of Carotid Ligation on Cerebral Blood Flow in Baboons. 1. Response to Altered Arterial Pco2 — Sengupta D, Harper M (Wellcome Surgical Research Institute, Garculo Estate, Beardsden Road, Glasgow G61 1QH, Scotland), Jennett B — J Neurol Neurosurg Psychiat 36:736-741 (Oct) 1973*

Measurements of cerebral blood flow (CBF) were made in anesthetized baboons before and after ipsilateral carotid artery ligation and also after bilateral carotid ligation. Results showed that at normocapnia (Paco2 38 to 39 mm Hg) there was little change in cerebral blood flow on ipsilateral carotid ligation, but when both carotid arteries were tied the blood flow to the brain fell significantly. At hypercapnia (Paco2 58 to 60 mm Hg) the CBF/CO2 gradient fell significantly on ipsilateral carotid ligation; on bilateral carotid ligation there was only minimal rise in cerebral blood flow in response to the rise in Paco2. At hypocapnia (Paco2 20 to 21 mm Hg) the gradients of fall in the CBF were similar before and after ipsilateral carotid ligation; after bilateral carotid ligation there was minimal change in the CBF in response to the fall in the Paco2. It is suggested that, although cerebral blood flow may be normal after ipsilateral carotid ligation, the circulatory reserve of the brain is not sufficient to meet physiological challenges. This may be the reason for the development of delayed neurological complications after carotid artery ligation.

AB-1551-74
Cerebrovascular Response to Intracarotid Injection of Serotonin Before and After Middle Cerebral Artery Occlusion — Welch KMA, Hashi K, Meyer JS (Department of Neurology, Baylor College of Medicine, Houston, Texas 77025) — J Neurol Neurosurg Psychiat 36:724-735 (Oct) 1973*

The effect of intracarotid injection of serotonin (5-HT) on internal carotid artery blood flow and oxygen availability (O2a) of the cerebral cortex was studied in ten baboons. Vasoconstriction occurred in the vascular bed of the territory supplied by the injected artery. After one middle cerebral artery was occluded the vasoconstrictor effect of 5-HT was more pronounced, particularly in the nonischemic hemisphere. The capacity of the cerebral vessels to provide collateral blood flow was reduced in both ischemic and nonischemic areas of brain. As a result of focal cerebral ischemia, 5-HT may accumulate in the brain and contribute to the progression of infarction.

AB-1552-74
Binasal Hemianopia — O’Connell JEA, Du Boulay

*Authors’ abstract.

AB-1553-74
Relationships Between Medullary Depressor Region and Central Vasopressor Pathways — Snyder DW, Gebber GL (Department of Pharmacology, Michigan State University, East Lansing, Michigan 48824) — Amer J Physiol 225:1129-1137 (Nov) 1973*

Vasopressor outflow from the brain to the external carotid postganglionic sympathetic nerve of the cat is organized into two pathways. Postganglionic potentials evoked from the first pathway are characterized by their long-onset latencies (>50 msec) and receptivity to blockade upon baroreceptor reflex activation. Postganglionic potentials elicited from the second pathway are not inhibited by baroreceptor reflex activation and have shorter onset latencies. The present study describes the effects of stimulation of the medullary depressor region on the sympathetic nerve responses evoked from both pressor pathways. Depressor region stimulation inhibited long-latency potentials evoked from midbrain, medullary, and descending spinal components of the first pressor pathway. In contrast, sympathetic nerve responses elicited from descending spinal components of the second pressor pathway were not inhibited by depressor region stimulation. These effects of depressor region stimulation were mimicked by baroreceptor reflex activation. However, unlike baroreceptor reflex activation, stimulation of many depressor sites inhibited the short-latency responses evoked from midbrain and medullary components of the second pressor pathway. The results demonstrate the existence of two distinct sympathoinhibitory systems which can be activated from the depressor region of the medial medulla. The first mimics the baroreceptor reflexes, acting at a spinal level to inhibit transmission in the pressor pathway mediating the long-latency postganglionic responses. The second, a nonbaroreceptor reflex system, acts at a supraspinal level to inhibit transmission in the pressor pathway mediating the short-latency sympathetic nerve responses.

AB-1554-74
Sympathetic Unit Responses to Stimulation of Cat Medulla — Taylor DG, Gebber GL (Department of Pharmacology, Michigan State University, East Lansing, Michigan 48824) — Amer J Physiol 225:1138-1146 (Nov) 1973*

This study describes some of the relationships between the medullary vasomotor regions and single preganglionic sympathetic neurons. Extracellular microelectrode recordings of unit discharges were made from the cat thoracic spinal cord. Preganglionic neurons were identified antidromically by stimulation of the cervical sympathetic nerve. Individual units exhibited two response patterns to stimulation of the
medullary pressor region. The first unitary response pattern was characterized by its (1) short and relatively fixed onset latency, (2) high following frequency, and (3) inability to be blocked by baroreceptor reflex activation and stimulation of the medullary depressor region. The second response pattern was characterized by its (1) longer and variable onset latency, (2) low following frequency, and (3) receptivity to blockade by baroreceptor reflex activation and depressor region stimulation. The first response pattern was elicited primarily from pressor sites in nucleus reticularis ventralis. The second response pattern was evoked from pressor sites distributed diffusely throughout the medullary pressor region. Evidence is presented which suggests that the unitary response patterns monitor the activation of two different systems of vasopressor pathways.

ABSTRACTS

AB 1555-74
Experimental Induction of Atheroarteriosclerosis by the Synergy of Allergic Injury to Arteries and Lipid-Rich Diet. II. Effect of Repeatedly Injected Foreign Protein in Rabbits Fed a Lipid-Rich, Cholesterol-Poor Diet — Minick CR (Department of Pathology, New York Hospital-Cornell Medical Center, New York, New York 10021), Murphy GE — Amer J Path 73:265-300 (Nov) 1973*

Rabbits fed a lipid-rich, cholesterol-poor diet and given concomitant injections of foreign protein, over a period as long as 17 months, developed in their coronary arteries both (a) proliferative fibromuscular intimal thickening closely resembling the diffuse intimal thickening that commonly occurs in coronary arteries of man, and (b) fatty proliferative fibromuscular intimal thickening that closely resembles coronary atherosclerosis in man. In contrast, rabbits of another group that were concurrently fed the same diet for as long as 22 months without injections of foreign protein developed changes in arteries of their hearts that resemble neither coronary atherosclerosis nor diffuse intimal thickening in man.

AB 1556-74
Experimental Induction of Atheroarteriosclerosis by the Synergy of Allergic Injury to Arteries and Lipid-Rich Diet. III. The Role of Earlier Acquired Fibromuscular Intimal Thickening in the Pathogenesis of Later Developing Atherosclerosis — Hardin NJ, Minick CR (Department of Pathology, New York Hospital-Cornell Medical Center, New York, New York 10021), Murphy GE — Amer J Path 73:301-327 (Nov) 1973*

Clinicopathologic evidence suggests that diffuse intimal thickening, a type of arteriosclerosis without manifest lipid deposit, may predispose to later developing atherosclerosis in man. This hypothesis was tested in the following experiments. Injury to coronary arteries of rabbits was induced by immunologic means, and arterial lesions were allowed to heal for many weeks. One group of animals was then sacrificed, and in their coronary arteries were found numerous fibromuscular intimal lesions closely resembling diffuse intimal thickening in man. The remaining rabbits were fed a cholesterol-supplemented diet for 80 days and then sacrificed. Fibromuscular intimal lesions of coronary arteries were found in these rabbits also. However, approximately two-thirds of these lesions were found to contain lipid, and many closely resembled coronary atherosclerosis in man. Further analysis of the data indicates that the atherosclerotic lesions in the rabbits evolved from immunologically induced fibromuscular intimal lesions which later and preferentially accumulated lipid in the presence of hypercholesterolemia. Results of these experiments suggest that in man fibromuscular intimal lesions, and in particular diffuse intimal thickening, acquired earlier in life can later accumulate lipid preferentially and thus reduplicate to atherosclerosis.

AB 1557-74
Thrombogenesis of the Rabbit Arterial Plaque. An Electron Microscopic Study — Stemerman MB (Division of Hematology, Department of Medicine, Montefiore Hospital and Medical Center, Albert Einstein College of Medicine, Bronx, New York 10467) — Amer J Path 73:7-26 (Oct) 1973*

Rabbit arteries, de-endothelialized with an intravascular balloon catheter and allowed to heal for four weeks, showed intimal changes that were similar to the preatherosclerotic fibromusculoelastic plaques of man. Reinjury of the healed vessels by balloon catheter produced marked quantitative and qualitative alterations of hemostasis, as compared to that in previously uninjured vessels. The most apparent modification of thrombogenesis ten minutes after injury to the plaque was a large increase in the size of the thrombotic deposits. Features of this exaggerated response were the major participation of fibrin in thrombus formation and greater platelet accumulation. Some platelets and fibrin strands appeared to penetrate into and beneath the neointima. By three hours, these deposits had diminished in size, although the hemostatic mass remained larger in the doubly injured vessels.

AB 1558-74
Vasomotor Tone in the Aged — Gorgy AN, David SB, Friedman SA (Department of Medicine, Coney Island Hospital, Brooklyn, New York 11235) — Arch Neurol 29:439-440 (Dec) 1973*

Using a room kept at a constant temperature, vasomotor tone was evaluated in a series of elderly subjects. Although partial defects in vasoconstriction were found in some, 78% had normal reactions to body cooling and heating. None had orthostatic hypotension. Vasomotor reflexes tend to be well maintained with aging.

AB 1559-74
Brain Mitochondrial Function After Ischemia and Hypoxia. I. Ischemia Induced by Increased Intracranial Pressure — Schutz H, Silverstein PR, Vapalahti M, Bruce DA, Mela L, Langht TW (Division of Neurosurgery, Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania 19104) — Arch Neurol 29:408-416 (Dec) 1973*

The effect of "compression ischemia" on brain mitochondrial activity was examined in 61 rabbits. We found that (1) the respiratory control ratio was significantly decreased only after 30 and 40 minutes of compression ischemia due to a decrease in state 3 and an increase in state 4 respiration; (2) heavy uncoupling of respiration occurred only after 40 minutes of compression ischemia; (3) uncoupler-activated adenosine triphosphatase (ATPase) was not impaired even after 40 minutes of ischemia, but spontaneous ATPase activity increased significantly; (4) secondary deterioration of
ABSTRACTS

mitochondrial function after circulatory recovery did not oc-
cur even with severe hypercapnia and hypocapnia in the
recovery period as long as the cerebral perfusion pressure
was maintained.

The findings suggest that alterations in constituents of the
cell other than the mitochondria are responsible for irrever-
sible brain damage following brief periods of total cerebral
ischemia.

AB-1560-74
Brain Mitochondrial Function After Ischemia and
Hypoxia. II. Normotensive Systemic Hypoxemia —
Schut H, Silverstein PR, Vapalahti M, Bruce DA, Mela L,
Langfitt TW (Division of Neurosurgery, Hospital of the
University of Pennsylvania, Philadelphia, Pennsylvania
19104) — Arch Neurol 29:417-419 (Dec) 1973*

Respiratory function of rabbit brain mitochondria was
well maintained after 37 minutes of severe systemic, nor-
motensive hypoxemia. Respiratory control ratios and some
state 3 rates were above normal, suggesting “tighter” cou-
pling and lack of respiratory inhibition at cerebral venous
oxygen tensions as low as 8 mm Hg and arterial oxygen ten-
sions as low as 11 mm Hg. These findings agree with those of
MacMillan and Siesjo, who found no change in the energy
charge or nicotinamide adenine nucleotide dehydrogenase:
nicotinamide adenine dinucleotide ratio after profound
hypoxemia. Conventional concepts of brain tissue oxygena-
tion are challenged by these findings. In addition, evidence
supports the experiments of Eklof and Siesjo which show
that cerebral venous oxygen tensions are inaccurate in defin-
ing tissue oxygenation at low perfusion pressures. Brain
mitochondria were “loosely” coupled and inhibited under
hypotensive and hypoxic conditions.

AB-1561-74
Coupling of Results of Cerebral Blood Flow and Static
Brain Studies — Spencer RP, Aponte LJ (Yale University
School of Medicine, New Haven, Connecticut) — J Nucl
Med 15:32-33 (Jan) 1974*

The relationship between cerebral dynamic studies and
static brain imaging was evaluated in 200 consecutive
patient examinations. The results indicated that the two
studies are not independent but are coupled.

AB-1562-74
Human Intracranial Atherosclerosis. An Ultrastruc-
tural Study of Atheromatous Plaques — Hoff HF
(Departments of Neurology and Pathology, Baylor College
of Medicine, Houston, Texas) — Virchows Arch (Path

Morphology of atheromatous plaques from human in-
tracranial arteries was examined by light and electron
microscopy. Overall morphology of lesions did not differ
from those reported for other arterial beds. In the presence
of an intact elastic membrane, lipid cores were localized
only to the intima and covered with a fibromuscular cap.
Lipid-filled cells at the periphery resembled smooth muscle
cells or blood monocytes, but within the atheromatous core
took the form of macrophages filled with lipid crystals and
variable-density lipid droplets. Calcium crystallized
spherules were localized to the surface of translucent lipid
crystals which themselves were seen to coalesce with large
amorphous lipid droplets. This study together with previous
studies on cerebral arteries suggest that fatty streak lesions
may undergo transformation to atheromatous plaques.
Similarly in structure of atherosclerotic plaques between
cerebral and other arterial beds suggests that documented
differences in susceptibility to atheroma of various vascular
beds in relation to age cannot be resolved by morphological
studies alone.

AB-1563-74
Computer Assisted Tomography of the Head. An
Early Evaluation — Baker HL Jr (Department of
Diagnostic Roentgenology, Mayo Clinic and Mayo Founda-
tion, Rochester, Minnesota 55901), Campbell JK, Houser
OW, Reese DF, Sheedy PF, Holman CB, Kurland RL —
Mayo Clin Proc 49:17-27 (Jan) 1974*

Computer assisted tomography (CAT) of the head, an
innovative radiological technique, has been used for the first
time in this country in a series of 500 patients who un-
derwent 529 procedures. The diagnoses made with the aid of
CAT were of three main categories: normal (190 patients),
enlargement of spaces containing cerebrospinal fluid (107),
and difference in density of tissue, as compared with the sur-
rounding brain, indicating a parenchymal lesion (193). Den-
sity changes were produced by various lesions, particularly
neoplasms, infarcts, and hemorrhages. Initial interpretation
of the 529 examinations resulted in 10 false-negative
diagnoses, 3 false-positive diagnoses, and 5 incorrect
diagnoses. The results obtained from the use of CAT
presage a major impact on neuroradiological methods and
diagnoses; there will, however, be a period in which the
radiologist and clinician acquaint themselves with the un-
familiar mode of data presentation.

AB-1564-74
Monoamine Neurotransmitters and the
Pathophysiology of Stroke and Central Nervous
System Trauma — Wurtman RJ (Professor of Endocrin-
ology and Metabolism, Massachusetts Institute of Technol-
y, Cambridge, Massachusetts 02139), Zervas NT — J
Neurosurg 40:34-36 (Jan) 1974*

The authors, at the invitation of the Editorial Board, have
outlined their general interpretation of the role of
monoamine neurotransmitters following injury to the cen-
tral nervous system. Their work on experimental stroke is
discussed, and its relevance to spinal cord injuries accom-
panied by comparable hemorrhage and ischemia involving
neurons is implied.

AB-1565-74
Ischaemic Cerebrovascular Disease in Young Adults. 1.
Smoking Habits, Use of Oral Contraceptives,
Relative Weight, Blood Pressure and Electrocar-
diographic Findings — Fogelholm R (Department of
Neurology, University of Helsinki, Haartmaninkatu 4,
Helsinki 29, Finland), Aho K — Acta Neurol Scand 49:415-
427, 1973*

Various characteristics of 128 men and 85 women, less
than 50 years old and suffering from ischemic cerebrovascular
disease, were analyzed. Cigarette smoking was 1.5 times as common in men and three times as common in women as in an average Finnish population of the same
age. The prevalence of the use of oral contraceptives at the
time of the cerebrovascular accident was 2.5 times as high as for women of childbearing age in South Finland. The average relative weight of men and women did not differ from the "ideal weight" of the Finnish population, but overweight persons (more than 110% of the ideal weight) were twice as numerous as underweight persons (less than 90% of the ideal weight). Hypertension was in men, about 2.5 times and in women, 1.5 times as frequent as in a large Finnish population study but these prevalences must be regarded as underestimates because hospitalization tends to results of a population study for men in the 40 to 49 year age group Q-waves were encountered 7.5 times as frequently of a population study for men in the 40 to 49 year age left R-waves twice as frequently. It seems that cigarette smoking, use of oral contraceptives, hypertension and electrocardiographic abnormalities are associated with increased risk of cerebrovascular disease in young persons. The role of overweight is obscure.

AB-1566-74
Ischaemic Cerebrovascular Disease in Young Adults. 2. Serum Cholesterol and Triglyceride Values — Fogelholm R (Department of Neurology, University of Helsinki, Haartmaninkatu 4, Helsinki 29, Finland), Aho K — Acta Neurol Scand 49:428-433, 1973* The material analyzed consisted of 213 patients younger than 50 years of age who were suffering from ischaemic cerebrovascular disease. Serum cholesterol values were measured in 202 patients (95% of all cases) and triglycerides were measured in 181 patients (85% of all cases), and the values then were compared with those of a Finnish population study. There was no difference in cholesterol values between the patients and the population. The triglyceride values of men aged 40 to 49 years and of women aged 30 to 39 and 40 to 49 years suffering from ischaemic cerebrovascular disease were significantly higher than those obtained from the population study. Thus, it seems unlikely that cholesterol values have any association with ischaemic stroke occurring before the age of 50 years, whereas the high triglyceride values may be associated with an increased risk of ischemic cerebrovascular disease at a relatively young age.

AB-1567-74
Cryptogenic Cerebral Embolism In Women Taking Oral Contraceptives — Enzell K, Lindemalm G (Department of Neurology, Sodermalmhuset, S-10064 Stockholm, Sweden) — Brit Med J 4:507-512 (Dec 1) 1973* "Fourteen women taking oral contraceptives were admitted during a five-year period because of acute cerebrovascular lesions. A diagnosis of major cerebral embolism was established in four of them. No source of embolism was found, and thorough investigation failed to reveal any predisposing illness. Cerebral embolism was a probable diagnosis in several of the remaining ten patients. A comparison was made with the strokes occurring in women not taking contraceptive pills in corresponding age groups.

*Authors' abstract.

AB-1568-74
A Study of the Variable Response of Human Platelets to Collagen: Relation to Aspirin-Induced Inhibition of Aggregation — Green D, Dunne B, Schmid FR, Rossi EC (Sections of Hematology and Arthritis-Connective Tissue Diseases, Department of Medicine, Northwestern University-McGaw Medical Center, Chicago, Illinois 60611), Louis G — Amer J Clin Path 60:920-926 (Dec) 1973* Soluble collagen was extracted from human skin. The solutions of this collagen were storage-stable, and, in some samples of platelet-rich plasma, induced aggregation when diluted up to 1,000-fold. An examination of platelet aggregation in 20 normal subjects revealed a broad range of platelet responsiveness to collagen, as defined by the least collagen concentration needed to initiate platelet aggregation. The inhibitory effects of acetylsalicylic acid (ASA) were evaluated both in vitro and in vivo. There was a direct correlation between the collagen concentration needed to demonstrate ASA inhibition of platelet aggregation and initial platelet sensitivity to collagen. ASA inhibition was obscured if too-large collagen concentrations were used to study the aggregation of collagen-sensitive platelets. The quantitative relationships between collagen, ASA, and platelets have an important bearing on the estimation of ASA as a platelet anti-aggregating agent.

AB-1569-74
Thrombosis and Oral Contraceptives: Possible Predisposition — Åstedt B, Isacson S, Nilsson IM (Coagulation Laboratory, Department of Gynaecology and Surgery, University of Lund, Allmanna Sjukhuset, Malmö, Sweden), Pandolfi M — Brit Med J 4:631-634 (Dec 15) 1973* The coagulation factors and components of the fibrinolytic system were examined in 31 women with a previous history of phlebographically verified thrombosis during the use of oral contraceptives of the combined type. Special attention was given to the histochemically determined fibrinolytic activator content of the wall of biopsy specimens of superficial veins. None of the patients was taking contraceptives at the time of the investigation. Pathological changes, particularly in the fibrinolytic defense system, were found in most of the patients. They may be regarded as predisposed to thrombosis, and one might wonder whether these patients would sooner or later have had their thrombosis even if they had not used contraceptives. The concentration of antithrombin III was normal, indicating that this test is of no value for detecting patients predisposed to thrombosis, who should preferably not take oral contraceptives.

AB-1570-74
Quantitative Determination of Hydrolysis Products of Phospholipids in the Ischaemic Rat Brain — Gercen G (Institut f. Organische Chemie und Biochemie der Universität, D-2000 Hamburg 13, Papendamm 6, Federal Republic of Germany), Brüning C — Pflügers Arch 344:207-215, 1973 (Springer-Verlag, publisher)* Glycerylphosphoryl- and phosphoryl derivatives of choline, ethanolamine, serine and inositol, as well as glycerol were determined in rat brain following various periods of ischemia. The phosphate esters were separated by two-dimensional thin-layer chromatography and quanti-
titiated by phosphate determination. Free glycerol was analyzed enzymatically.

The concentrations of phosphate esters, ranging between 0.016 and 0.087 μmoles/gm wet weight in normal brain tissue, increased to levels of 0.189 to 0.327 μmoles/gm wet weight after one hour of ischemia.

Glycerol, undetectable in normal brain, reached a concentration of 1.3 μmoles/gm wet weight after one hour; glycerol formation slowed down within the second hour, and from two to eight hours steadily rose to 5.4 μmoles/gm wet weight.

Based on the amount of intermediates and glycerol formed the rate of phospholipid catabolism during ischemia at normothermia was calculated. The metabolites indicated hydrolysis of phospholipids via two pathways catalyzed either by phospholipases A₁ and A₂ (EC 3.1.1.4), lysosphospholipase (EC 3.1.1.5), and glycerophosphoryl choline diesterase (EC 3.1.4.2), or by phospholipase C (EC 3.1.4.3) and tissue lipases (EC 3.1.1.3).

**AB-1571-74**

_Evidence for Regional Differences in the Effect of Beta-Adrenergic Stimulation on Cerebral Blood Flow_ — Aubineau P-F, Seylaz J, Sercombe R, Mamo H (E.R.A. CN. France)

This paper reports on two cases of acoustic neurinoma, bilateral in one of the cases; the first patient exhibited an intraparenchymatous hemorrhage and the second a cerebellar hemorrhage. A description is given of the lesions at the level of the bulbopontine reticular formation, which are considered to be due to compression. Cerebral atherosclerosis lesions also were present in the first case and compression caused by central neurinomas in the second. The authors discuss a possible relationship between lesions of the reticular formation and the occurrence of cerebral vascular accidents, the evidence being based on neurophysiologic data, certain findings in the course of interventions on the brain stem, and anatomoclinical studies.

**AB-1575-74**

_Microcirculatory Responses to Central Neural Stimulation in the Rat_ — Gootman PM, Baez S, Feldman SM (Departments of Physiology and Anesthesiology, Albert Einstein College of Medicine, Bronx, 10461, and Depart-
Canine Cerebrovascular Response to Nitroglycerin, Acetylcholine, 5-Hydroxytryptamine, and Angiotensin — Lowe RF (Department of Physiology, Tulane University School of Medicine, New Orleans, Louisiana 70112), Gilhooe DD, Fitzpatrick JH Jr — Amer J Physiol 225:1333-1338 (Dec) 1973*

The cerebral vascular actions of acetylcholine, nitroglycerin, angiotensin, and 5-hydroxytryptamine were examined in 13 isolated canine brains. Since individual brains were perfused at a constant rate of flow, changes in perfusion pressure following intracarotid injection of these compounds reflected changes in cerebral vascular resistance (CVR). The magnitude of the change in vascular resistance observed after injection of a specific quantity of vasodilator was proportional to the CVR just prior to injection. Covariance was utilized to correct experimental observations made with all drugs to an initial CVR of 2.00 mm Hg per milliliter per minute per 100 gm, and the resulting corrected values were used to construct dose-response curves. The covariant calculated for the vasoconstrictors was very small, indicating that the magnitude of these observed changes in CVR was unrelated to the initial CVR. Injection of acetylcholine or nitroglycerin caused the perfusion pressure to decrease, whereas injection of angiotensin or 5-hydroxytryptamine caused the perfusion pressure to increase. In this preparation 5-hydroxytryptamine was a considerably more effective constrictor of cerebral vascular smooth muscle than was angiotensin. Although cerebral vascular smooth muscle responded to these vasoactive compounds in a manner similar to that of most other vascular smooth muscle, the magnitude of the response was less in the cerebral vascular bed.

Delayed Intraspinal Hemorrhage After Dorsal Column Stimulation for Pain — Grillo PJ (Department of Surgery [Neurosurgery], Cornell University Medical College, Room F636, New York, New York), Yu HC, Patterson RH Jr — Arch Neurol 30:105-106 (Jan) 1974*

A dorsal column stimulator was implanted in the subarachnoid space of a 44-year-old white woman suffering from chronic low back pain with radiation into both lower limbs. This device was used for six months with complete relief of pain, and then pain spontaneously remitted. Eighteen months after implantation, neck pain and a right hemiplegia suddenly developed. At surgery a hematoma compressing the spinal cord was found beneath the electrode. Improvement in neurological function followed evacuation of the hematoma.

The “Hot Stroke.” A Clinical, Radioisotopic, Angiographic Correlation of Increased Relative Perfusion to the Area of Cerebral Infarction — Yarnell P (Division of Neurology, Denver General Hospital, Denver, Colorado 80204), Burdick D, Sanders B — Arch Neurol 30:65-69 (Jan) 1974*

Thirteen patients with cerebral infarction showed increased relative blood perfusion to the infarcted hemisphere when studied by gamma camera, intravenous sodium pertechnetate Tc 99m flow and static techniques. The temporal evolution of the relative increased flow was correlated with the static study uptake and the angiogram. The “hot stroke” phenomenon as seen with these methods was most often associated with embolic rather than atherosclerotic-thrombotic infarction. The differential diagnosis of increased flow to an area of increased static uptake is discussed.

The Mechanism of Cerebral Vasodilation by Halothane — Smith AL (Department of Anesthesia, University of California, San Francisco, California 94122) — Anesthesiology 39:581-587 (Dec) 1973*

The moment-to-moment responses of cerebral blood flow (CBF), cerebral oxygen consumption (CMRO2), and cerebral arteriovenous oxygen content difference [(A-V)O2] following a step (sudden) increase in arterial halothane content from 1.29 ± 0.14 (mean ± SE) to 3.77 ± 0.21 vol % were studied in nine dogs. CBF increased from 52.8 ± 9.0 to 94.3 ± 17.1 ml/100 gm per minute during the five-minute period following the halothane step-up, then declined to 87.4 ± 14.8 ml/100 gm per minute by the eighth minute. CMRO2 decreased from 3.37 ± 0.44 to 2.35 ± 0.28 ml/100 gm per minute. Changes in CMRO2 paralleled changes in brain halothane content. (A-V)O2 declined from 7.03 ± 0.68 to 3.30 ± 0.45 ml/100 gm per minute with the same time course as the decline of cerebral venous halothane content. If halothane acted principally as a direct dilator of cerebral vessels, CBF should have increased with the same rapid time course that arterial halothane content followed. The good correlations of (A-V)O2 and CMRO2 with halothane concentration, and the poor correlation of CBF with changes in...
arterial halothane content, suggest that if direct cerebral vasodilation occurs with halothane, it is modest in intensity and is modified by metabolic effects. Alterations in CMBt and control of (A-V)O₂ are probably more important than direct effects on vascular smooth muscle in determining CBF during halothane anesthesia.

AB-1580-74
Infarction of Spinal Cord and Medulla Oblongata Caused by Fibrocartilaginous Emboli. Report of Case — Kepes JJ (Department of Pathology, University of Kansas Medical Center, Kansas City, Kansas 66103), Reynard JD — Virchows Arch (Path Anat) 361:185-193, 1973 (Springer-Verlag, publisher)*

A fatal case of fibrocartilaginous embolization with massive infarction of the upper spinal cord and lower medulla oblongata is reported. Cartilage from intervertebral disks is believed to cause such emboli, probably first by intrusion into vertebral bodies (Schmorl’s nodes) followed by retrograde venous transport from the bone marrow to the spinal veins. This route can be outlined by injecting India ink in the cancellous bone of vertebral bodies. Access of the emboli to arteries can be explained by postulating the existence of arteriovenous shunts in the normal spinal vasculature or by trauma-induced communications between the vascular beds. In our case, the seventh reported in the literature, the majority of occluding cartilaginous emboli were in small arteries and arterioles and the resulting infarcts were of the ischemic rather than the hemorrhagic type.

AB-1581-74
Subdural Hematoma: Is It or Is It Not Acute? — Gilday DL (Division of Nuclear Medicine, Hospital for Sick Children, Toronto 2, Ontario, Canada), Wortzman G, Reid M — Radiology 110:141-145 (Jan) 1974*

Evaluation of the angiographical appearance of subdural hematomas in 100 patients resulted in a new descriptive category, the “transitional.” Each subdural hematoma was classified as chronic if a membrane was found at surgery; otherwise, it was considered acute. Utilizing this three-category classification (transitional, crescentic and convex lens), we halved our false-positive diagnoses of acute subdural hematomas, achieving much greater accuracy than reliance on clinical estimate of the age alone. The transitional shape appears to occur as the subdural hematoma is forming membranes or as the subdural fluid is resorbed from a chronic lesion.

AB-1582-74
Computerized Axial Tomography With the EMI Scanner — New PFJ (Department of Radiology, Massachusetts General Hospital, Boston, Massachusetts 02114), Scott WR, Schnur JA, Davis KR, Taveras JM — Radiology 110:109-123 (Jan) 1974*

The results of 300 computerized axial tomographic (CT scanning) examinations are reviewed. This new technique involves the use of an EMI brain scanner. The patient’s head is placed in a “cap” which projects into a water-containing box, and the head is scanned with a slit x-ray beam. A completed study consists of 28,000 absorption values which are analyzed by density. Certain physical properties of normal cerebral tissue and many pathological lesions, including gliomas, meningiomas, metastatic neoplasms, cranio-phyargyiniomas, pituitary adenomas, and others, can be evaluated. The accuracy of CT scanning is exceptional. It is anticipated that this safe noninvasive method will decrease the use of such techniques as cerebral angiography and pneumography.
A B-1586-74
Surgical Treatment of Extracranial Carotid Aneurysms With Excision and Arterial Restoration — Hardin CA (Department of Surgery, University of Kansas Medical Center, Kansas City, Kansas) — Vasc Surg 7:247-252 (Sept-Oct) 1973

Surgical repair of eight extracranial carotid aneurysms is discussed. An end-to-end anastomosis was accomplished in six patients, Dacron prostheses were needed in the other two patients, and an internal shunt was required in one of the latter two cases. All patients had pain and a mass when they presented, and all had arteriographical documentation of the lesion. Internal carotid artery back-pressures were helpful in determining the degree of intracranial collateral circulation. Another 36 previously reported cases are mentioned.

A B-1587-74
Aortocervical, Internal Carotid and Vertebral Angiography in Total Cerebral Infarction — Jørgensen EO (Departments of Medicine B and Neuroradiology, Rigshospitalet, 2100 Copenhagen, Denmark) — Acta Radiol (Diagn) 14:369-378 (July) 1973

Angiography in ten patients with total cerebral infarction (six after trauma, one after intracranial hemorrhage, one after cerebral emboli, and two after cardiorespiratory arrest) revealed significant systemic blood pressure depression after aortic and carotid injections of contrast media, but not after vertebral arteriography. The decreased blood pressure may give spurious information regarding cerebral venous filling; thus, vertebral angiography would be preferable in the determination of complete cerebral circulatory arrest.

A B-1588-74
Is the Area Postrema a Control Centre of Blood Pressure? — Ylitalo P, Karppanen H, Paasonen MK (Department of Pharmacology, University of Helsinki, SF-00170 Helsinki 17, Finland) — Nature 274:58-59 (Jan 4) 1974

The area postrema was ablated in normotensive and spontaneously hypertensive rats; a sham operation was done on controls. One week after the procedure the blood pressure was increased in the area-postrema-ablated group; this hypertension persisted at least five weeks. Stress situations increased the blood pressure even more in the ablated group.

A B-1589-74
Valueur du test calorique et de l'électronystagmographie dans le diagnostic du coma dépassé (Value of Caloric Test and Electronystagmography in the Diagnosis of Cerebral Death) — Ouaknine G (Services de Neuro-chirurgie et d'Oto-rhino-laryngologie, Centre Médical H. Sheba, Tel Hashomer, Israel), Kosary LZ, Ziv M — Neurochir (Paris) 19:407-414 (July-Aug) 1973

All of 20 patients with clinical signs of brain death had isoelectric (flat) electronystagmometric tracings, even after caloric stimulation.

A B-1590-74
Inhibition of Platelet Aggregation and of Experimental Thrombosis by Sudoxicam — Constantine JW (Department of Pharmacology, Pfizer, Inc., Groton, Connecticut 06340), Purcell IM — J Pharmaco Exp Ther 187:653-665, 1973

Sudoxicam, a nonsteroid drug with anti-inflammatory activity, was shown to inhibit aggregation of platelets induced by collagen, but not by ADP. For human blood, it suppressed collagen-induced release of ADP from platelets. After a single 50 mg oral dose, platelet aggregability was decreased for at least 24 hours in humans. Platelet responses returned to normal 48 to 144 hours after treatment was stopped. No effect on whole blood platelet count was observed. Results of tests of sudoxicam on rabbit, dog, and human platelets are discussed and comparisons with the effects of aspirin are mentioned.

A B-1591-74
Influence of Arvin on the Flow Properties of Human Blood — Ehrl AM (Department of Internal Medicine, University of Frankfurt a.M., Germany) — Biorheology 10:453-456 (Sept) 1973

Arvin, a purified fraction of the venom of the Malayan pit viper, was given intravenously to 12 patients with peripheral arteriosclerosis. By 24 hours after arvin therapy was begun, the plasma fibrinogen level was almost unmeasurably low. Moreover, the viscosity of the blood was decreased, as was the aggregability of the red cells. No change in the shape or flexibility of the erythrocytes was noted.

A B-1592-74

A capsule with a rubber diaphragm in which a Doppler ultrasonic blood flow detector was incorporated was used to measure systolic blood pressure in the supra-orbital arteries of normal, hypertensive, and arteriosclerotic patients. The readings were repeatable and, in normal subjects, were about 53% of the brachial systolic pressures. The ratio of supra-orbital pressure to brachial pressure was less in the arteriosclerotic patients. The authors suggest that this is a useful and simple measurement for detecting occlusive carotid disease.

A B-1593-74

With continuous EEG monitoring during cardio-pulmonary bypass, open heart surgery was performed on 100 patients. Neurologically, deficits after surgery were correlated with these EEGs. A significant association of operative hypotension and postoperative neurological
ABSTRACTS

Deficits was observed. Of the 50 deaths, nearly half were considered to be related to brain injuries. Brain lesions were demonstrable in 80% of the autopsied cases.

AB-1594-74
Giant Cell Arteritis: The Need for Prolonged Treatment — Beavers DG, Harpur JE, Turk KAD (The Secretary, Medical Academic Unit, Chelmsford and Essex Hospital, London Road, Chelmsford, England) — J Chron Dis 26:571-584 (Sept) 1973

Of 44 clinically diagnosed cases of giant cell arteritis, followed for an average of 30 months, 36 had positive biopsies, six had negative or atypical biopsies, and two had no biopsies. Of the 34 biopsy-proven cases treated with steroids, a total of 30 relapses occurred, 26 of which while on steroid therapy. Another 18 asymptomatic elevations of erythrocyte sedimentation rate were reported also. The first relapse occurred on an average of 10.4 months after therapy had been started and often was unrelated to changes in steroid dosage. The authors concluded that it is unwise to stop steroids within six months or even a year, and in some patients therapy may need to continue for several years. Some complications of steroid therapy in this predominantly elderly group of patients are discussed. Because of the morbidity from the treatment, histological confirmation of the diagnosis is deemed essential.

AB-1595-74
Disturbance of the Visual Fields in Cerebral Vascular Malformations — Lusins J, Pinner JA, Weinberger J (Departments of Neurology and Neuroradiology, Mount Sinai School of Medicine of the City University of New York, New York 10029) — Mt Sinai J Med 40:806-811 (Nov-Dec) 1973

Four patients with visual field defects and angiographically demonstrable vascular malformations are presented and discussed. Three had homonymous hemianopia. The fourth patient had a bitemporal field defect plus a left central and nasal field loss associated with an enlarged sella turcica and a vascular malformation in the region of the third ventricle.

AB-1596-74

The systolic and diastolic blood pressures of black and white populations were studied in relation to living conditions in Detroit. Census tracts were classified as "high stress" or "low stress" on the basis of such variables as median income, education, crime rates, marital stability, and frequency of changing residences. Blood pressures were adjusted with regard to age, weight, etc. The mean adjusted blood pressure of black males in high stress environments was the highest and that of "low-stress" white females the lowest. The diastolic mean differences between high-stress black males and low-stress black males was 3.1 mm Hg and a similar comparison of black females, 2.9 mm Hg. In comparison, an earlier United States Public Health Service survey had shown a mean diastolic difference between black males and white males to be 4.4 mm Hg and between black and white females to be 5.7 mm Hg. The epidemiological implications are discussed.

AB-1597-74
Cerebrospinal Fluid Oxygen Tension in Newborn Infants — Rothman SJ (Montreal Children's Hospital, Montreal, Quebec H3H 1P3, Canada), Stern L — Neurology 23:1292-1296 (Dec) 1973

The oxygen tensions of cerebrospinal fluid from 11 neonates classified clinically as neurologically abnormal were compared to similar specimens from eight normal neonates. The PCsfO2 from the abnormal group had a mean of 51.0 compared to 32.6 for the controls. The arterial oxygen tensions also were compared with the mean Pao2 from the normals being 78.1 compared to 69.9 for the abnormal neonates. The PCsfO2 to Pao2 ratio for the controls was 0.410 compared to 0.681 for the study group. This significantly different PCsfO2/Pao2 index in spontaneously breathing newborns may be helpful in identifying infants at risk of developing central nervous system problems.

AB-1598-74
Cholinergic Innervation of Choroid Plexus in Rabbits and Cats — Edvinsson L, Nielsen KC, Owman C (Department of Histology, University of Lund, and Neurosurgical Clinic A, University Hospital of Lund, Lund, Sweden) — Brain Res 63:500-503, 1973

The choroid plexuses of normal cats and rabbits were compared with those in which the superior cervical sympathetic ganglia had been excised one week before sacrifice. Numerous acetylcholinesterase-containing nerve fibers were demonstrated in both groups of choroid plexuses, whereas all adrenergic nerves disappeared in those from the animals in which the cervical ganglia had been excised. The nerves containing the acetylcholinesterase thus seem to be a separate cholinergic nerve supply and not adrenergic nerves containing acetylcholinesterase.

AB-1599-74
Are Brain Vessels Innervated Also by Central (Non-Sympathetic) Adrenergic Neurons? — Edvinsson L, Lindvall M, Nielsen KC, Owman C (Department of Histology, University of Lund, and Neurosurgical Clinic A, University Hospital of Lund, Lund, Sweden) — Brain Res 63:496-499, 1973

Using the Falck-Hillarp histofluorescence technique, the authors demonstrated that the sympathetic nerve supply to the pial arteries of rat brains disappeared on the side in which the superior cervical ganglion had been excised two months previously. Cell bodies containing noradrenaline were demonstrated also in the locus coeruleus, from which varicose nerve terminals spread in all directions of the brain stem. Central adrenergic fibers were shown to be more delicate and less intensely fluorescent than the sympathetic fibers from the cervical sympathetic ganglia. It was not established whether or not these central fibers actually ended on blood vessel walls.

AB-1600-74
Simultaneous Fluorescein Angiography of Both Irides — Jensen VA (Department of Ophthalmology, Arthur Komm.
Simultaneous fluorescein angiography of both irides by two synchronized cameras is described. In normal subjects the fluorescent data appeared at the pupillary margins with a maximum time difference of 1.2 seconds. In four patients who had angiographical documentation of unilateral carotid stenosis, the fluorescein was significantly diminished and delayed in the iris on the side of the stenosis. However, when digital compression of one carotid of a normal subject was performed, the diminished fluorescein uptake occurred in the iris of the contralateral side, in agreement with the phenomenon of transneural depression previously reported.

The incidence of stroke and heart disease was similar in three groups of patients with essential hypertension divided by plasma renin levels (20 patients below 7 Skinner units per milliliter, 19 patients between 7 and 14 units, and 20 patients greater than 14 units). Other risk factors for cardiovascular disease were similar in the three groups. This retrospective study is contrasted with previous reports which supported the hypothesis that low renin plasma levels protect hypertensive patients against stroke and heart disease. The authors conclude that large-scale prospective studies are needed.

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Angiography of both carotid arteries and one vertebral artery demonstrated complete basilar artery occlusion in eight patients, six of whom have survived from three months to five years. Another patient, who died within 24 hours of presentation, had only bilateral carotid studies to demonstrate the basilar artery occlusion. All nine patients had at some time had hemiparesis; eight had had speech and visual problems; seven had had vertigo or dizziness; however, in only two patients had bilateral artery occlusion been suspected before angiography. The most frequent site of occlusion was just distal to the origins of the posterior inferior cerebellar arteries. Those patients with good collateral blood flow had the best prognoses.

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ABSTRACTS

**AB-1601-74**

Are Patients With Essential Hypertension and Low Renin Protected Against Stroke and Heart Attack? — Stroobandt R, Fagard R, Amery AKPC (University Hospital St. Rafael, Kapucijnenvoer 35, B-3000 Leuven, Belgium) — *Amer Heart J* 86:781-787 (Dec) 1973

The incidence of stroke and heart disease was similar in three groups of patients with essential hypertension divided by plasma renin levels (20 patients below 7 Skinner units per milliliter, 19 patients between 7 and 14 units, and 20 patients greater than 14 units). Other risk factors for cardiovascular disease were similar in the three groups. This retrospective study is contrasted with previous reports which supported the hypothesis that low renin plasma levels protect hypertensive patients against stroke and heart disease. The authors conclude that large-scale prospective studies are needed.

**AB-1602-74**

Angiographic Implications in Diagnosis and Prognosis of Basilar Artery Occlusion — Moscow NP (Department of Radiology, University of California School of Medicine, San Francisco, California 94143), Newton TH — *Amer J Roentgen* 119:597-604 (Nov) 1973

Angiography of both carotid arteries and one vertebral artery demonstrated complete basilar artery occlusion in eight patients, six of whom have survived from three months to five years. Another patient, who died within 24 hours of presentation, had only bilateral carotid studies to demonstrate the basilar artery occlusion. All nine patients had at some time had hemiparesis; eight had had speech and visual problems; seven had had vertigo or dizziness; however, in only two patients had bilateral artery occlusion been suspected before angiography. The most frequent site of occlusion was just distal to the origins of the posterior inferior cerebellar arteries. Those patients with good collateral blood flow had the best prognoses.

**AB-1603-74**

Angiographic Approach to the Difficult Aortic Arch: A New Technique for Transfemoral Cerebral Angiography in the Aged — Simons CR (Department of Radiology, Loma Linda University School of Medicine, Loma Linda, California 92354), Tsao EC, Thompson JR — *Amer J Roentgen* 119:605-612 (Nov) 1973

A new (long open-loop) catheter was used in 213 (615) cerebral angiograms on patients with presbyaortas or less accessible left common carotid arteries. Femoral or axillary approaches were used with a 97% overall success rate and minimal complications.

**AB-1604-74**

Thrombus Formation During Direct Percutaneous Cerebral Angiography — Wallace S (Department of Diagnostic Radiology, University of Texas M. D. Anderson Hospital and Tumor Institute, Houston Texas Medical Center, Houston, Texas 77025), Anderson JH, Gianturco C — *Amer J Roentgen* 119:613-618 (Nov) 1973

Thrombus formation within 15 minutes was demonstrated around puncture needles inserted (in vivo) into mongrel dogs. No significant difference in thrombogenicity between stainless steel and teflon needles was noted. Coating the needles with benzalkonium chloride-heparin compound or systemic heparinization (coagulation time 1.5 to 3 times normal) seemed to prevent thrombi formation.

**AB-1605-74**

Subconjunctival Hemorrhage as a Complication of Ophthalmodynamometry in an Anticoagulated Patient — Browne TR (Department of Neurology, Massachusetts General Hospital, Boston, Massachusetts 02114), Wray SH — *Amer J Ophthal* 76:981-983 (Dec) 1973

A 71-year-old woman with hyperthyroidism but no exophthalmos was started on heparin therapy for suspected carotid artery disease. Ophthalmodynamometry was performed five minutes after a dose of intravenous heparin. A significantly lower retinal artery pressure was found in the left eye. About 15 minutes later subconjunctival hemorrhage was observed in the left eye at the region where the footplate of the ophthalmodynamometer had been placed. Over the following 30 minutes the hemorrhage extended subconjunctivally, and an ecchymosis also developed in the eyelid. No other symptoms were noted. After one dose of heparin was withheld, therapy was restarted without further bleeding; the hemorrhage resolved in about three weeks.

**AB-1606-74**

Significance of Ulcerated Lesions of the Carotid Arteries — Atik M, Dein IO, Wolsfon NJ (Departments of Surgery, Neurology and Radiology, University of Louisville School of Medicine, and the V. A. Hospital, Louisville, Kentucky) — *Amer Surg* 39:681-687 (Dec) 1973

Of 53 patients who underwent carotid endarterectomy procedures, 15 were found to have ulcerated lesions, demonstrable by angiography, and confirmed at surgery. All had neurological symptoms despite varying degrees of carotid stenosis. Of these 15 patients with ulcerated carotid lesions, seven became asymptomatic, six improved, and two became worse after surgery (follow-up from three months to six years).

**AB-1607-74**


The Electroencephalogram as an Aid in Revealing Intracranial Arteriovenous Malformations — Waltimo O (Department of Neurology, University of Helsinki, Haartmanninkatu 4, Helsinki 29, Finland), Bergström L — *Acta Neurol Scand* 49:502-510, 1973

Results of brain scanning and EEG recordings on a series of patients with angiographically proved intracranial arteriovenous malformations (AVM) are reported in these
two papers. First discussed are Tc 99m pertechnetate scans of which 76% (32 of 42 patients) were positive. In 43% of the cases “tails,” attached to the positive portion of the scan, were apparent; they correlated with feeding vessels or the angiograms. The scan was least sensitive in detection of posterior fossa and temporobasal lesions.

The second paper reports EEG findings on 58 patients with AVMs; 40% had focal abnormalities, 26% had generalized changes, and 34% were normal. The size of the AVM did not correlate with the degree of EEG abnormality. Parietal and temporal AVMs gave the highest frequency of focal EEG changes.

Half of the patients with AVMs but negative scans had EEG abnormalities. Of the patients with AVMs and positive scans, 38% had normal EEGs.

ITEMS OF INTEREST


Oral Contraceptives and Risks of Thromboembolism (correspondence) — Tuerck DG (Center for International Business, Los Angeles, California), Bilas RA, Comer TP — New Eng J Med 289:1423-1424 (Dec 27) 1973

Abstracts

Stroke. 1974;5:406-419
doi: 10.1161/01.STR.5.3.406

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