Abstracts

**AB-1714-74**

**Hemorrhagic Complications of Anticoagulant Therapy** — Coon WW (1405 East Ann Street, Ann Arbor, Michigan 48104), Willis PW III — Arch Int Med 133:386-392 (Mar) 1974

Bleeding was detected during 263 (6.8%) of 3,862 courses of anticoagulant treatment. Four deaths were attributed to anticoagulant-induced hemorrhage. The frequency of bleeding increased with the intensity of treatment as reflected in daily determinations of "prothrombin activity." Other epidemiologic factors possibly associated with an increased risk of bleeding included advanced age, urologic disorders, gynecologic problems, the postpartum state, and the initiation of therapy by administration of large oral doses of anticoagulant. More than one-half of those who developed bleeding had an identifiable lesion that appeared to be responsible for the bleeding. In 32 patients, the responsible lesion was recognized only after bleeding had occurred. Anticoagulant-induced bleeding from the gastrointestinal tract or female pelvic organs warrants a thorough search for an underlying cause.

**AB-1715-74**

**Visual Agnosia-Prosopagnosia: A Clinicopathologic Correlation** — Benson DF (Department of Neurology, Boston Veterans Administration Hospital, Boston, Massachusetts 02130), Segarra J, Albert ML — Arch Neurol 30:307-310 (Apr) 1974

Occlusive vascular disease of the posterior cerebral arteries produced infarction destroying the left medial occipital area, the splenium of the corpus callosum, and the right inferior longitudinal fasciculus of a patient with visual agnosia. Some of the reported neurobehavioral abnormalities (alexia without agraphia, color agnosia, and verbal memory defect) were readily correlated with the observed lesions. Other abnormalities, particularly the visual agnosia and prosopagnosia, are less common, but tentative anatomical correlations can be postulated. The involvement of the nondominant inferior longitudinal fasciculus would appear to be particularly meaningful.

**AB-1716-74**


Nine cases of retropertioneal hemorrhage complicating anticoagulant therapy are reported. Six cases were receiving heparin for myocardial infarction: an incidence of 4.3% of patients on such treatment. All the cases presented with pain, six had neurological involvement and one patient died.

The incidence of this complication is higher than previously noted. Retropertioneal hemorrhage requires a high index of clinical suspicion for early diagnosis and treatment if serious sequelae are to be prevented.

**AB-1717-74**


Conscious subjects undergoing cardiac catheterization and other diagnostic procedures showed a rise in platelet-aggregation response to adenosine diphosphate (ADP) one hour before and during the procedure. The responses returned toward normal one hour afterward. The response to glass beads was decreased one hour before the procedure, but was unchanged in subsequent samples. Plasma-free fatty acid (FFA) levels were increased during the procedure, and one hour afterward, but had returned to normal by the following day. Platelet counts were slightly reduced on the day after the procedure. It is suggested that catecholamines released due to emotional stress may be responsible for the increased platelet responses to ADP and that this could influence the development of thrombosis and atherosclerosis.

**AB-1718-74**

**Brain Permeability of Water** — Raichle ME (Division of Radiation Sciences, Box 8131, Washington University School of Medicine, St. Louis, Missouri 63110), Eichling JO, Grubb RL Jr — Arch Neurol 30:319-321 (Apr) 1974

The equilibration of labeled water (H$_2^18$O) with the exchangeable water pool of brain was examined during a single capillary transit. The labeled water did not equilibrate freely when cerebral blood flow (CBF) exceeded 20 (ml/100 gm) per minute in the rhesus monkey. At normal CBF (~ 50 (ml/100 gm) per minute) only 90% of the injected bolus freely equilibrated with brain. This value progressively declined as CBF increased.

**AB-1719-74**

**Giant Cell Arteritis and Arteriolitis Associated With Amyloid Angiopathy in an Elderly Mongol** — Reid AH (Dundee Psychiatric Services, Strathmartine Hospital, by Dundee DD3 OPG, Scotland), Maloney AFJ — Acta Neuropath (Berlin) 27:131-137, 1974 (Springer-Verlag, publisher)

The case is described of an elderly female mongol (trisomy 21) who in life displayed clinical features of a paranoid psychosis and who, at eventual neuropathological examination, was found to have unusual histological changes in the brain consisting of giant cell arteritis and arteriolitis complicated by amyloid degeneration. The significance of these changes and their relationship to the neuropathological changes of senile and presenile dementia is discussed.

*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 NS6-0933 with Dr. Robert Sickert, Head, Abstract Section, Mayo Clinic, Rochester, Minnesota 55901.
ABSTRACTS

AB-1720-74
Clinical Significance of Basilar Artery Aneurysms — Niensohn DE (Section of Publications, Mayo Clinic, Rochester, Minnesota 55901), Slez RJ, Reagan TJ — Neurology 24:301-305 (Apr) 1974*

In a postmortem review of 50 cases involving basilar artery aneurysms, we found that saccular and fusiform aneurysms have distinct clinicopathologic characteristics. Saccular aneurysms occur more often in younger age groups and in women, and fusiform lesions occur in older groups and in men. The saccular lesion usually is clinically silent until it ruptures, and rupture is the most common cause of death. Fusiform aneurysms generally occur in severely atherosclerotic disease. Although the lesion is generally asymptomatic, it can produce symptoms and signs of vertebrobasilar occlusive disease, or it can rupture (with subarachnoid hemorrhage), or it can present as a mass effect, in that order of likelihood. The dual potential of the fusiform aneurysm to cause symptoms of vertebrobasilar insufficiency and to rupture is illustrated in one case.

AB-1721-74
Subarachnoid Hemorrhage Caused by Rupture of a Small Superficial Artery — Hochberg FH (Neuropathology Laboratory, Massachusetts General Hospital, Boston, Massachusetts 02114), Fisher CM, Roberson GH — Neurology 24:319-321 (Apr) 1974*

A fatal subarachnoid hemorrhage occurred in a patient receiving Coumadin therapy. An arteriogram 11 hours before her death failed to show an aneurysm. At autopsy, however, serial microscopic sections through the region of hemorrhage showed a break in a small pontine artery at the site of a muscularis deficiency. The hemorrhage was attributed to the giving way of the artery in an area of developmental weakness, while the fatal outcome probably was determined by the anticoagulation. This is the first time such a lesion has been recognized, and some heretofore-unexplained hemorrhages may have a similar explanation.

AB-1722-74

Regional cerebral blood flow in the cat was quantitatively measured by Xe133 clearance and mass spectrographic monitoring of argon washout. No statistical difference was observed in the values obtained for regional cerebral blood flow by the two methods. Although the mass spectrometer cannula caused some brain damage, since brain Po2 and Pco2 were monitored simultaneously, significant tissue trauma was detected early. The mass spectrographic technique enables precise measurement of blood flow in any locality, and tissue Po2 and Pco2, can be simultaneously recorded.

AB-1723-74
Delayed Presentation of Carotid Intimal Tear Following Blunt Cricaniocervical Trauma — Crissey MM, Bernstein EF (Department of Surgery, University of California San Diego School of Medicine, La Jolla, California) — Surgery 75:543-549 (Apr) 1974*

Blunt craniocervical trauma may produce carotid artery stenosis and occlusion with delayed and unusual clinical manifestations. This condition is illustrated by two patients with traumatic intimal tears, presenting with transient neurologic deficit or asymptomatic bruises several months or years after injury. Such injuries usually follow cranial trauma which stretches the carotid artery by sudden extension and counter-rotation of the head or by direct blunt trauma to the carotid bifurcation. The hallmark of such blunt carotid artery injury is the delayed onset of symptoms, which usually result from an intimal flap and subsequent embolic phenomena. While the symptoms are generally those of carotid insufficiency, a diagnosis of cervical carotid trauma is seldom made clinically because the entity is easily confused with intracranial injury. Aggressive angiographic evaluation and recent improvements in the safety of carotid artery surgery should improve the otherwise poor prognosis for those patients correctly diagnosed in whom operation is properly timed and performed.

AB-1724-74

The regression of rabbit atherosclerosis by means of a low-fat diet and hyperoxia either alone or in combination with cholestyramine or estrogen was investigated. During the induction period of 14 weeks, moderate to severe atherosclerosis was produced in male New Zealand rabbits by feeding them a high-cholesterol diet. The rabbits were then divided into various treatment groups. During an additional ten-week regression phase, all animals except those in one group were fed a low-fat diet. Serum lipids, which increased considerably during the induction period, were reduced by all treatments but most effectively by a low-fat diet combined with cholestyramine or with hyperoxia plus cholestyramine. There was little evidence for regression of lesions resulting from a low-fat diet alone. Evidence for regression of lesions was most apparent in rabbits treated with a combination of a low-fat diet and hyperoxia with either cholestyramine and/or estrogen. These results suggest a substantial additive beneficial effect of the combined therapy.

AB-1725-74

In nine cases with hemorrhagic complications in the peripheral or central nervous system during continuous Marcumar therapy, there were three in which more or less serious errors had been made by the patient or the doctor which could have been avoided by better explanation and expert diagnosis and therapeutic procedures. Attention is drawn again to the peripheral and central neurological com-
plications in anticoagulant therapy and it is pointed out how they can be prevented, recognized and treated, so that the risk of this different treatment, which cannot be dispensed with in many cases of myocardial infarction, arterial and venous thromboses and mitral stenosis, may be reduced to a minimum.

AB-1726-74

From an accurate analysis of radiographs of cerebral vascular visualizations carried out by means of direct puncture during 1972, the cases with demonstrable injury to the vessel wall due to the puncture were recorded (16.6% and 40.4%). The number of multiple investigations was established at about 50%. Taking as a basis the literature on the damage and consequences following puncture and the advantages of catheter angiography in cerebral vascular diagnosis, the conclusion is drawn that direct puncture is only justifiable in cases of a particular type and that the catheter method is to be preferred for avoiding injury to the walls of the large vessels of the brain and to avoid multiple punctures or multiple investigations.

AB-1727-74

In order to evaluate the existence of cholinergic receptors at pial arteries the vasoactive effect of the parasympathomimetic substance carbachol was tested by microapplication into the perivascular space of single pial arteries. Concentration response curves revealed no change in vascular diameter for 10^-10 to 10^-7 M carbachol. From 10^-9 to 10^-5 M carbachol dilatations were measured with a maximal reaction at 10^-4 M. The carbachol-induced dilatations can be stepwise reduced by ascending perivascular concentrations of atropine thus indicating a competitive antagonism at pial arteries. A cholinergic component influencing pial arterial tone was not found under our experimental conditions since microapplication of atropine (10^-9 to 10^-4 M) did not induce changes in pial arterial diameter. The dilatation at 10^-4 M atropine is believed to be unspecific.

AB-1728-74

A controlled prospective survey of women taking estrogen-progestogen oral contraceptives showed increases in mean systolic and diastolic blood pressure of 14.2 mm Hg and 8.5 mm Hg, respectively, after four years. The largest increases in individual cases were 36 mm Hg systolic and 20 mm Hg diastolic. Blood pressure returned to pretreatment levels within three months after oral contraceptives had been stopped. These changes in blood pressure were unrelated to the progestogenic potencies of the preparations being taken.

AB-1729-74
The Effect of Hypercapnia Upon the Energy Metabolism of the Brain During Arterial Hypoxemia — MacMillan V, Siesjö BK (Brain Research Laboratory, E-blocket, University Hospital, S-221 85 Lund, Sweden) — Scand J Clin Lab Invest 30:237-244, 1972*

In order to evaluate whether hypercapnia affects the energy metabolism of the hypoxic brain, lightly anesthetized rats were maintained for 30 minutes at a PaO2 of close to 28 mm Hg and a Paco2 of close to 65 mm Hg, and compared with normoxic rats maintained either at a normal PaO2 or at a Paco2 of close to 28 mm Hg. The results showed that in the hypoxic rats the energy state of the tissue, as evaluated from the energy charge of the adenine nucleotide system, was unaffected by the added hypercapnia. The hypercapnia decreased the accumulation of lactate during hypoxemia and affected the tissue levels of carbohydrate substrates in a direction suggesting decreased metabolic flux. It is concluded that during hypoxemia, and in the absence of ischemia, carbon dioxide protects rather than disrupts the energy metabolism of the brain.

AB-1730-74
Brain Capillary Permeability to Proteins During Acute Exposure to Hypoxia and to Carbon Monoxide — Parving H-H (Department of Clinical Physiology, Bispebjerg Hospital, Bispebjergbakke 23, DK-2400, Copenhagen NV, Denmark), Ohlsson K — Scand J Clin Lab Invest 30:257-260, 1972*

The effects on brain capillary permeability to proteins of four hours' exposure to hypoxia (10.5% oxygen) or to carbon monoxide (carboxyhemoglobin concentration 38%) were studied in dogs. The cisternal/plasma concentration ratio for albumin and cisternal total protein concentration was obtained by use of M1 human serum albumin. It is concluded that neither hypoxia nor carbon monoxide exposure of an intensity compatible with life has any effects on the protein permeability of the brain capillaries. The investigations showed the cisternal albumin/globulin concentration ratio to be about 0.5 to 0.6.

AB-1731-74
Effect of CO2 on Cerebrovascular Autoregulation in Hyperthermic Dogs — Poorvin DW (Department of Cardiovascular-Renal Pharmacology, Lederle Laboratories, Pearl River, New York), Frankel HM — Amer J Physiol 226:670-674 (Mar) 1974*

Previous work had shown that cerebral blood flow (CBF) response to arterial blood CO2 tension (Paco2) was increased during hyperthermia (Amer J Physiol 223:1041-1043, 1972). Cerebrovascular control during hyperthermia was further explored in the present study by examining the effect of mean arterial blood pressure (MAP) on CBF at different Paco2. CBF was determined in dogs by a 133Xe-desaturation technique at MAPs of 50, 80, and 110 mm Hg with Paco2 values of approximately 20, 40, and 57 torr, respectively.

*Authors' abstract.
ABSTRACTS

Responses at body temperatures ($T_b$) of 37.5 and 41.5°C were compared. As expected, increased $T_b$, increased CBF. MAP did not significantly affect CBF at $T_b$ of 20 and 40 torr (autoregulation) at both $T_b$ values. Autoregulation was not present at $T_b$ of 57 torr. In addition, at the highest $T_b$, the CBF response to MAP was increased at $T_b$, 41.5 compared to 37.5°C. CO$_2$ sensitivity ($\Delta$CBF/\DeltaPaco) during hyperthermia was affected by MAP.

**AB-1732-74**

**Ulcerated Atheroma of the Carotid Artery** — Blaisdell FW (Departments of Surgery and Radiology, San Francisco General Hospital, San Francisco, California 94110), Glickman M, Trunkey DD — Arch Surg 108:491-496 (Apr) 1974*

Embolkism from atherosclerotic plaques of the carotid bifurcation is being recognized as a frequent cause of occlusion of intracranial arteries producing transient ischemic attacks or strokes. Fifty carotid bifurcation lesions were performed in an attempt to establish roentgenographic criteria for ulceration, and judge the accuracy of radiologic diagnosis of ulceration. The preoperative radiologic appearance of the carotid lesion was compared with the actual appearance of the lesion as seen at operation and pathologic examination. Sixteen of the lesions contained small areas of ulceration and 22 contained large ulcers, for an overall incidence of ulceration of 76%. The accuracy of the radiologic diagnosis of ulceration was 86%.

Four criteria were established for radiologic ulceration. These are (1) a penetrating niche; (2) irregularity of the silhouette of the artery; (3) delayed washout of contrast medium in a segment of artery between areas of stenosis; and (4) a well-circumscribed double density of contrast medium superimposed on the artery.

**AB-1733-74**

**Role of Central and Peripheral Adrenergic Mechanisms in Neurogenic Hypertension Produced by Brainstem Lesions in Rat** — Doba N, Reis DJ (Laboratory of Neurobiology, Department of Neurology, Cornell University Medical College, New York, New York 10021) — Circulation Research 34:293-301 (Mar) 1974*

Bilateral lesions of the nucleus tractus solitarius (NTS) in rats result in acute fulminating hypertension (NTS hypertension) as a consequence of central deafferentation of baroreceptors. The hypertension is due to increased peripheral resistance and decreased cardiac output. The hypertension is blocked and cardiac output is increased by phentolamine, trimethaphan (Arfonad), and reserpine but not by propranolol. In the present experiment, systemically administered 6-hydroxydopamine (6-OH-DA) did not alter NTS hypertension if the adrenal glands were intact. Adrenalectomy, however, blocked the lesion-induced rise in blood pressure in 6-OH-DA-treated rats. Intracisternally administered 6-OH-DA (600 µg) lowered the concentration of norepinephrine only in the spinal cord and blocked the development of NTS hypertension. Local injection of 6-OH-DA into the lateral hypothalamus did not affect the hypertension. Injection of 6-OH-DA into the NTS resulted in a mild, transient elevation in blood pressure. The results of these experiments demonstrate that (1) NTS hypertension is due to increased sympathetic neural discharge, (2) during NTS hypertension sufficient adrenomediulary catecholamines are released to produce hypertension when sympathetic terminals are destroyed, (3) central noradrenergic neurons participate in the expression of NTS hypertension, and (4) baroreceptors can inhibit the release of adrenal catecholamines.

**AB-1734-74**

**Cerebral Circulation During General Anesthesia** — Kreuscher H (Institut für Anaesthesiologie der Städtischen Kliniken, D-4500 Osnabrück, Federal Republic of Germany) — Z Neurol 206:85-94, 1974 (Springer-Verlag, publisher)*

Knowledge of the effect of anesthetics and of the importance of artificial ventilation in cerebral blood flow is essential in the choice and administration of anesthetic agents in diagnosis (angiography, ventriculography) and surgery in intracranial lesions. In these situations the expected influence of anesthesia on intracranial pressure and the blood supply in the affected cerebral regions acquire particular importance. Special care has to be taken with administration of the inhalation anesthetic halothane. Halothane should be avoided when space-occupying intracranial lesions are present; instead classic neuroleptanesthesia (NLA) or one of its modifications should be used. The use of hyperventilation to lower the intracranial pressure requires extreme precaution and strict indication, and also continuous monitoring of blood gas tensions and acid-base metabolism.

**AB-1735-74**

**Congestive Cardiac Failure and Intracranial Arteriovenous Communications in Infants and Children** — Hope R, Izuakawa T (Hospital for Sick Children, Toronto, Ontario, Canada) — Aust NZ J Med 3:598-605, 1973*

Fourteen infants and children with intracranial arteriovenous fistulae are presented. They were seen by the Cardiology department at the Hospital for Sick Children over an 18-year period from 1954 to 1972.

Two separate groups were distinguished. Older infants and children tended to present with neurologic problems. Hydrocephalus and seizures were common. Heart murmurs and abnormal electrocardiograms were still frequent in this group. Cardiac failure did not occur. These children had a wide variety of arteriovenous malformations. In contrast, the group of infants presenting in the first week of life had severe cardiac failure without exception. All died despite attempted surgical palliation of the fistula in two cases. Neurological signs were present in some but were overshadowed by the severe cardiac failure. Cyanosis or a history of cyanosis at some stage was present. Cyanosis may be due to several different mechanisms.

Twelve of the 14 children had continuous cranial murmurs. However, only in one case was the diagnosis suspected clinically. The murmurs were usually detected after the diagnosis had been made at catheterization and angiography. Auscultation of 100 unselected neonatal heads by us has shown that the presence of a murmur is rare. The importance of listening for cranial bruits in the newborn child with cardiac failure is re-emphasized.

**AB-1736-74**

**Platelet Coagulant Activities and Hemostasis: A Hypothesis** — Walsh PN (Specialized Center for Throm-
Platelets have recently been shown to participate in reactions with blood coagulation factors at every stage of intrinsic clotting, from contact activation to fibrin formation. Platelets can trigger intrinsic coagulation by two alternative pathways, the first of which involves factors XII and XI and adenosine diphosphate, and the second of which bypasses factor XII, provided XI and collagen are present. Additional evidence indicates that subsequent coagulation reactions occur on the platelet surface, where active clotting factors are protected from inactivation by naturally occurring inhibitors. Based on these observations, an hypothesis is presented in which the events of primary hemostasis (platelet adhesion, aggregation, and release) and blood coagulation are linked. As platelets aggregate to form a hemostatic plug, they provide a protective and catalytic surface for activation of the clotting mechanism and fibrin formation. Localized hemostasis is promoted and circulating blood kept fluid by means of a number of control mechanisms, some of which are mediated by autocatalytic effects of thrombin.

**A B-1737-74**

**Temporary Cortical Blindness Following Angiography**


Temporary cortical blindness as a complication of posterior angiography is reported in 11 patients and compared with 30 similar cases previously reported. Theoretical considerations of etiology implicate transitory alterations of the blood-brain barrier in the striate cortex.

**A B-1738-74**

**Interrelationship Between Blood Pressure and Regional Cerebral Blood Flow in Experimental Intracranial Hypertension**

Shalit MN (Department of Neurosurgery, Hadassah University Hospital, P. O. B. 499, Jerusalem, Israel), Cotev S — *J Neurosurg* 40:594-602 (May) 1974

The interrelationship between systemic blood pressure (BP), regional cerebral blood flow (rCBF), and intracranial pressure (ICP) was investigated in two experimental models of intracranial hypertension in cats. In one group, ICP was raised by the inflation of an extradural balloon; in the other, brain swelling was produced. The effects of raised blood pressure on rCBF and ICP in the two groups differed considerably. In the “brain-swelling” group, elevated BP had no beneficial effects on rCBF. When ICP approached diastolic BP, an increase in BP was followed by a marked increase in ICP and a decrease in rCBF. Therefore, the elevated BP often observed in extreme intracranial hypertension (Cushing response) cannot be regarded as a beneficial, compensatory defense mechanism, but rather as a deleterious phenomenon.

**A B-1739-74**

**Acid-Base Balance and Arterial and CSF Lactate Levels Following Human Head Injury**

King LR, McLaurin RL (Division of Neurosurgery, the University of Cincinnati Medical Center, Cincinnati, Ohio 45229), Knowles HC Jr — *J Neurosurg* 40:617-625 (May) 1974

Sequential arterial and cerebrospinal fluid (CSF) lactate, pH, PCO₂, HCO₃, and PO₂ levels were determined for four days in 17 patients immediately following uncomplicated head injury. Lactate was initially markedly elevated in both fluids and decreased by the third day after injury. There was mild arterial metabolic acidosis and respiratory alkalosis on admission; the alkalosis continued. Arterial Po₂ was below normal at all times. The CSF showed a normal Po₂, and metabolic acidosis related to lactate accumulation. Blood and CSF PCO₂ and HCO₃ levels equilibrated well, probably because of the time factor; CSF and arterial Po₂ levels were not significantly related. The clinical implications of CSF lactic acidosis after head injury are discussed.

**A B-1740-74**

**Chronic Subdural Hematoma. Surgery or Mannitol Treatment**

Gjerris F (Neurosurgical Department G, Bispebjerg Bakke, 2400 NV Copenhagen, Denmark), Schmidt K — *J Neurosurg* 40:639-642 (May) 1974

A controlled clinical trial was planned to compare the effect of mannitol treatment with surgical intervention in chronic subdural hematoma. It was discontinued after the first seven patients showed no response to mannitol therapy. We recommend that operative intervention be considered the treatment of choice.

**A B-1741-74**

**Hypertensive Intracerebral Hematoma: An Investigation of the Initial Hemorrhage and Rebleeding Using Chromium Cr 51-Labeled Erythrocytes**

Herbstein DJ (Saul R. Korey Department of Neurology and Pathology, Albert Einstein College of Medicine, Yeshiva University, Bronx, New York 10461), Schaumburg HH — *Arch Neurol* 30:412-414 (May) 1974

Hypertensive intracerebral hematomas were investigated using chromium Cr 51-labeled erythrocytes. Patients underwent erythrocyte labeling shortly after admission following standard techniques for erythrocyte survival time. At postmortem examination the radioisotopic activity of the primary and secondary (Duret) hemmorhages were determined. In 11 patients with hypertensive hematoma no significant activity was found in the primary hematoma, suggesting that bleeding occurred over a short period of time and there was no rebleeding. Duret hemorrhages present in patients comatose on admission contained no significant activity. The findings in the Duret hemorrhages suggest that patients comatose on arrival sustained these lesions as an almost immediate consequence of the initial primary hemorrhage. In two nonhypertensive patients, intracerebral hematomas secondary to a ruptured berry aneurysm and an arteriovenous malformation contained high levels of radioisotopic activity, suggesting a different pathophysiology of bleeding.

**A B-1742-74**

**Heparinized Vascular Catheters: A Clinical Trial**


Combined pullout angiography and washout thrombectomy (which virtually always reveals thrombus formation on
ABSTRACTS

catheters used for angiocardiology) showed no thrombus formation on those heparinized by the method of Ericksson et al. in a study of 26 patients undergoing angiocardiology. Such catheters may thus be regarded as safe as far as thrombus formation is concerned. It should be observed that the use of heparinized catheters may require a slightly longer compression time because of the lack of thrombotic material which otherwise is stripped off on withdrawal of the catheter thus helping to plug the hole in the vessel wall.

**AB-1743-74**

**Effects of L-Dopa and L-Tryptophan on the Cerebral Blood Flow in the Dog** — Ekström-Jodal B, von Essen C (Department of Neurosurgery, Sahlgren Hospital, S-413 45 Göteborg, Sweden), Häggendal E, Roos B-E — *Acta Neurol Scand* 50:3-10, 1974*

The effect of L-dopa and L-tryptophan on the cerebral blood flow was studied in anesthetized dogs injected intravenously with one or the other of the drugs. Cerebral blood flow was measured with the radioactive gas elimination technique with external γ-registration. After L-dopa there were signs of an increase of the cerebral blood flow followed later by a decrease. The effect of L-tryptophan on the cerebral blood flow in all experiments was a decrease.

**AB-1744-74**

**Effects of Noradrenaline on the Cerebral Blood Flow in the Dog** — Ekström-Jodal B, von Essen C (Department of Neurosurgery, Sahlgren Hospital, S-413 45 Göteborg, Sweden), Häggendal E — *Acta Neurol Scand* 50:11-26, 1974*

The cerebrovascular response to intravenous noradrenaline infusion was studied in anesthetized dogs during different and carefully controlled blood gas and arterial blood pressure conditions, using the radioactive gas elimination technique with external γ-registration. A flow reduction was found at both normocapnia and hypercapnia. Furthermore, in arterial hypoxia, which had induced vasodilatation, a corresponding vasoconstriction was found. The response could be blocked by the α-adrenergic blocking agent phentolamine. Autoregulation of cerebral blood flow was found to function well during the influence of noradrenaline as well as after adrenergic α-receptor blocking by phentolamine.

**AB-1745-74**

**Effects of 5-Hydroxytryptamine on the Cerebral Blood Flow in the Dog** — Ekström-Jodal B, von Essen C (Department of Neurosurgery, Sahlgren Hospital, S-413 45 Göteborg, Sweden), Roos B-E — *Acta Neurol Scand* 50:27-38, 1974*

The cerebrovascular response to intravenously infused 5-hydroxytryptamine was studied in anesthetized dogs with the radioactive inert gas elimination technique with external γ-registration. A strong vasoconstrictory effect was found, which could not be abolished by either methysergide or alpha-blockade. The autoregulatory ability was found to be preserved. Even during arterial hypoxia, which has led to vasodilatation, serotonin constricts the cerebral vessels.

**AB-1746-74**

**Effects of Dopamine on the Cerebral Blood Flow in the Dog** — von Essen C (Department of Neurosurgery, Sahlgren Hospital, S-413 45 Göteborg, Sweden) — *Acta Neurol Scand* 50:39-52, 1974*

The effect of dopamine on the cerebral blood flow was studied in anesthetized dogs. Cerebral blood flow was measured by the radioactive gas elimination technique with external γ-registration. Dopamine was administered by continuous infusion. Dopamine was found to influence the cerebral blood flow in two different ways: first by exerting an α-adrenergic receptor stimulating effect, resulting in a blood flow decrease. This was found in response to very small doses of dopamine and then once again with larger doses. Secondly, dopamine was found to stimulate specific dopamine receptors in the cerebral vessels, resulting in vasodilatation, sometimes with a pronounced flow increase. This occurred mainly in response to medium doses of dopamine. Autoregulation functioned well both during stimulation and blockade of these receptors.

**AB-1747-74**

**Electroencephalographic Seizures During Cardiopulmonary Bypass** — Stockard J, Calanchini P, Bickford R, Billinger T (Departments of Neurosciences and Anesthesiology, University of California, San Diego, and the Department of Neurology, Presbyterian Hospital, San Francisco, California) — *J Neurol Neurosurg Psychiat* 37:181-190 (Feb) 1974*

Eleven cardiac operations are reported in which there was electroencephalographic and/or clinical evidence of seizure activity during cardiopulmonary bypass (CPB). In four patients seizure activity appeared after acute episodes of cerebral ischemia resulting from either hypotension or pump-generated emboli occurring at the beginning of CPB, or from air embolism occurring at the end of CPB when the myocardium was closed and defibrillated. In the remaining seven patients the seizures appeared to result from the synergistic action of a toxic substance in the perfusate with pre-existing or CPB-induced alterations in cerebral physiology.

**AB-1748-74**

**Posterior Fossa Aneurysms Simulating Tumours** — Michael WF (Department of Neurology, St. Bartholomew’s Hospital, and The National Hospital, Queen Square, London, England) — *J Neurol Neurosurg Psychiat* 37:218-223 (Feb) 1974*

Seven cases of aneurysm of the vertebral and basilar arteries, in which the clinical features suggested a diagnosis of posterior fossa tumor, are presented. Their clinical manifestations and the difficulties of diagnosis are discussed. These lesions may mimic cerebellar pontine angle tumors or brain stem gliomas, or, less commonly, the picture is one of a compressive lesion at the foramen magnum. The need for vertebral angiography is emphasized. Exploratory surgery carries a high risk, and is to be avoided.

**AB-1749-74**

**Corticosteroid Therapy of Experimental Hydrocephalus After Intraventricular-Subarachnoid Haemorrhage** — Wilkinson HA (Beth Israel Hospital, Boston, Massachusetts 02215), Wilson RB, Patel PP, Esmaili M — *J Neurol Neurosurg Psychiat* 37:224-229 (Feb) 1974*

Symptomatic hydrocephalus after subarachnoid hemorrhage seems to result both from mechanical obstruc-
tion of arachnoid villi and basilar cisterns and from an inflammatory cellular reaction in the villi. Subarachnoid hemorrhage was induced in rabbits using whole blood injected through an implanted intraventricular needle. Control rabbits receiving intraventricular methylprednisolone acetate but no blood developed ventricular dilatation significantly more often than untreated controls. Eighty-three percent of rabbits with untreated experimental subarachnoid hemorrhage developed moderate to severe hydrocephalus. Intramuscular steroid therapy significantly reduced the incidence of hydrocephalus.

AB-1750-74
A Contribution to the Physiology of the Perilymph. Part II: Cochlear and Cerebral Blood Flow — Schneider E-A (Universitat Ulm, Prittwitzstr. 43, D-7900 Ulm, Germany) — Ann Otol 83:247-253 (Mar-Apr) 1974*

Cerebral blood flow exerts a controlling influence over cochlear blood flow. Cerebral blood flow (CBF) (and with it the cochlear blood flow) can be increased most efficaciously by increasing arterial Pco2. A marked influence on cochlear blood flow after intravenous injection of vasoactive substances is not to be expected.

AB-1751-74
Angiographic Evidence of Coronary Occlusion and Resolution — Kavanagh-Gray D (St. Paul's Hospital, Vancouver 1, B.C.) — Canad Med Assoc J 110:945-946 (Apr 20) 1974*

A case of myocardial infarction with angiographically demonstrated occlusion of the left anterior descending coronary artery is presented. Repeat angiography 18 months later revealed patent coronary arteries despite persistent electrocardiographic infarction pattern. Coronary artery occlusion resulting in infarction may not, therefore, be permanent.

AB-1752-74
Complete Occlusion of Common or Internal Carotid Arteries. Clinical Significance — Dyken ML (Emerson Hall No. 125, Department of Neurology, Indiana University Medical Center, Indianapolis, Indiana 46202), Klatte E, Kolar OJ, Spurgeon C — Arch Neurol 30:343-346 (May) 1974*

Forty-three patients with angiographically demonstrated occlusion of at least one internal or common carotid artery were compared with a sex and age matched control group with less than 60% occlusion of any single artery. The 100% group had a more severe initial insult, but posthospitalization cerebrovascular events were significantly less frequent. Ambulation, language, cerebral blood flow and metabolism, mean arterial blood pressure, mortality, functional independence, and intercurrent illnesses were not substantially different. The results of this study and others indicate that in patients with cerebrovascular disease clinical events are not quantitatively related to the degree of obstruction of the major arteries supplying the brain.

AB-1753-74
Serum Cholesterol Levels in U.S. Males. Their Correlation With Various Kinetic Parameters of Cholesterol Metabolism — Ho K-J, Biss K, Taylor CB (Veterans Administration Hospital, Research Department, Albany, New York 12208) — Arch Path 97:306-315 (May) 1974*

Fifteen healthy, ambulatory, white men, with serum cholesterol levels ranging from 113 to 325 mg/100 ml, were maintained on regular diets containing 300 to 1,250 mg/day of cholesterol. Each subject received cholesterol-4-14C intravenously. Compartmental analysis of disappearance curves of serum cholesterol specific activity showed the existence of two pools with mean sizes of 28 and 49 gm. Analysis of fecal specimens made it possible to calculate the rate of cholesterol absorption (mean, 290 mg/day) and its rate of synthesis (1.125 mg/day). Maximal suppression was 25% and the theoretical maximal absorption was 345 ± 73 mg/day. Since serum cholesterol levels were not correlated with any of these kinetic parameters (excepting turnover rate) it is probable that genetic, dietary, or other factors are more important in determination of any given individual's serum cholesterol level.

AB-1754-74
Atheromatous Emboli Associated With External Cardiac Massage — Schinella RA (Department of Pathology, New York University School of Medicine, New York, New York 10016), Porensky R — Arch Path 97:319-322 (May) 1974*

Two cases of atheromatous emboli associated with external cardiac massage (ECM) were seen. The mechanical action of ECM on a severely atherosclerotic thoracic aorta may be added to the list of other procedures (aortic surgery, aortography, and arteriography) that can dislodge atheromatus emboli from the aorta. No serious clinical sequelae resulted from the emboli.

AB-1755-74
Simulation of Cerebral Death by Succinylcholine Sensitivity — Tyson RN (Auburn General Hospital, Auburn, Washington 98002) — Arch Neurol 30:409-411 (May) 1974*

A patient who received succinylcholine chloride developed the signs of cerebral death as a result of dysfunction of succinylcholine metabolism by the enzyme, pseudocholinesterase. However, the electroencephalogram was only moderately abnormal and the patient recovered fully in eight hours, emphasizing the importance of the EEG in the evaluation of cerebral death.

AB-1756-74
Der Einfluss von Bencyclan auf die regionale Hirndurchblutung bei Kranken mit cerebraler Mangeldurchblutung (Influence of Bencyclan on Regional Cerebral Blood Flow in Patients With Insufficient Cerebral Blood Flow) — Herrschaft H (Oberarzt der Neurologischen Klinik des Krankenhauses Nordwest, D-6000 Frankfurt a.M. Steinbacher Hohl 2-26, Bundesrepublik, Deutschland), Gleim F, Duus P — Klin Wschr 52:293-295 (Mar 15) 1974 (Springer-Verlag, publisher)*

The effect of intravenous continuous drip infusions with Bencyclan (8 mg/min) on regional cerebral blood flow was investigated in 25 adult patients, using the intra-arterial isotope-clearance-method and a ten-detector-equipment. In
nine of 25 patients with cerebrovascular disease, continuous drip infusion of Bencyclan caused a decrease of global and regional cerebral blood flow with reduction of the rCBF values about 11.4 to 24.8%. Sixteen patients showed no statistically significant change of regional cerebral blood flow as compared to the flow values in the resting state.

Disseminated Intravascular Coagulation During Heparin Therapy — Klein HG, Bell WR (Department of Medicine, Division of Hematology, the Johns Hopkins University School of Medicine and Hospital, Baltimore, Maryland) — Ann Int Med 80:477-481 (Apr) 1974*

Two patients receiving intravenous heparin for pulmonary emboli developed disseminated intravascular coagulation during therapy. Both patients were receiving adequate anticoagulation before the onset of this syndrome. Mechanisms that might cause or prolong disseminated intravascular coagulation during heparin therapy are proposed.

Les Anévrismes Intracraniens Multiples. I. Evolution et Orientation actuelle du traitement chirurgical (Multiple Intracranial Aneurysms. I. Problems Due to Small Lesions) — Stroobandt G (Kapucijnenvoer 35, B-3000 Louvain, Belgium), Cornelis G, Thauvoy Ch — Acta Neurol Belgium 73:311-319 (Sept-Oct) 1973*

Very small aneurysms can grow or, even without growing, bleed. However, little is known of the frequency of their pathological role and it is difficult to know when surgery of multiple aneurysms should be carried out. We advise coating such small aneurysms, when they are situated near a bigger aneurysm which is operated on.

Catecholamines in Blood and Myocardial Tissue in Experimental Subarachnoidal Hemorrhage — Boddin M (Laboratory of Human Biochemistry, RUCA, University of Antwerp, Groenenborgerlaan 171, B-2020 Antwerp, Belgium), van Bogaert A, Dierick W — Cardiology 58:229-237, 1973*

The induction of experimental subarachnoidal hemorrhage (ESH) in the dog results in a rise in the adrenaline plasma concentration. The changes in plasma noradrenaline are biphasic: an "early noradrenaline gap" during the first two minutes is followed by a "late noradrenaline peak." It is likely that adrenaline is chiefly concerned with the systemic reactions occurring after ESH, although it can have additional effects at the myocardial level. There is a nonlinear relationship between catecholamine concentration changes in tissue and plasma and the myocardial reaction to ESH. This can be explained by the complex interaction of the different factors regulating the level of the catecholamines in blood and tissues.


In experiments on 15 isolated dog brains, cerebral blood flow could be influenced by short (20 seconds) supramaximal, unilateral electrical stimulation of the vagosympathetic trunk, the trigeminal nerve and the medulla oblongata. The changes in cerebral vascular resistance and cerebral oxygen consumption developed two seconds after onset of the stimulation, reached their peak 30 seconds later and lasted up to three minutes. During sympathetic stimulation cerebral blood flow decreased from 47.2 ml to 42.0 ml/100 gm tissue per minute and cerebral vascular resistance increased about 18%. This constrictor effect was completely blocked by phentolamine. During vagal stimulation no effect could be observed. During trigeminal stimulation cerebral blood flow increased from 44.0 ml to 48.9 ml/100 gm tissue per minute, cerebral vascular resistance decreased about 19%, and cerebral oxygen consumption increased about 12%. Reliable inhibition of this dilating response was not achieved with either pranproanolol or atropine and it is assumed that there are no vasodilator

*Authors' abstract.

Strokey, Vol. 5, September-October 1974
fibers in the trigeminal nerve. During medullary stimulation cerebral blood flow increased from 42.0 ml to 54.7 ml/100 gm tissue per minute, cerebral vascular resistance decreased about 45% and cerebral oxygen consumption increased about 23%. The diminishing effects of propranolol and atropine on this dilating response was not statistically significant. A restricted region in the medulla is presented from which changes in cerebral blood flow produced by electrical stimulation were not associated with changes in the electrical pattern of the brain. Observations that the vascular and functional reactions of the brain can be dissociated point to a role of the medulla in regulating cerebral blood flow, but do not elucidate the mechanism. In general, the results support evidence that a double — metabolic and neurogenic — mechanism is involved in the control of cerebral blood flow. It is suggested that the effects during vasoconstrictive stimulation are completely neurogenic, the effects during trigeminal stimulation mainly metabolic, and the effects during medullary stimulation both metabolic and neurogenic in origin.

**AB-1765-74**

**Inhibition of Platelet Adherence to a Collagen-Coated Surface by Nonsteroidal Antiinflammatory Drugs, Pyrimido-Pyrimidine and Tricyclic Compounds, and Lidocaine** — Cazeneuve J-P, Packham MA (Department of Biochemistry, University of Toronto, Toronto MSS 1A8, Ontario, Canada), Guccione MA, Mustard JF — J Lab Clin Med 83:797-806 (May) 1974*

Studies are reported of the effect of a number of drugs which inhibit the platelet release reaction on the adherence of platelets to a collagen-coated surface. Adherence of washed platelets labeled with 3H-serotonin or 51Cr was measured in Tyrode solution containing albumin and apyrase. Under the conditions used, there was no aggregation and a very little release or loss of platelet constituents. Acetylsalicylic acid (ASA) (1 to 100 μM), phenylbutazone (10 μM), RA 233 (10 to 100 μM), RA 433 (10 μM), VK 744 (10 μM), imipramine (100 μM), promethazine (100 μM), and lidocaine (2 mM) significantly inhibited adherence to collagen. RA 8 (dipyridamole) was less inhibitory than the other RA compounds tested. Imipramine and promethazine also caused platelet lysis. Most studies were of pig platelets although the effects of ASA were obtained with human and rabbit platelets also. ASA was shown to alter the platelets, not the collagen. ASA did not remove platelets already adherent to collagen. The inhibitory effect of these drugs on the platelet release reaction may also cause their inhibition of the adherence of platelets to collagen.

**AB-1766-74**


The incidence of heparin rebound was determined in 12 patients following open-heart surgery, half receiving a high dose of protamine and half a low dose, and in six human volunteers who received protamine based on a protamine titration. In the volunteers the average protamine dose required to neutralize exactly 3 mg per kilogram of heparin was 2.71 mg per kilogram and the average protamine-heparin ratio was 0.9. Only one volunteer, the one with the lowest protamine-heparin ratio, demonstrated heparin rebound. All patients who received the low dose of protamine (average protamine-heparin ratio 0.56) demonstrated heparin rebound within five hours of neutralization. In three cases this was associated with clinical bleeding necessitating the administration of additional protamine. None of the patients receiving the high dose of protamine (average protamine-heparin ratio 1.15) exhibited rebound. Since moderate excesses of protamine needed to produce seizures was 26.8 ± 0.7 mg/kg, which depressed CMRo2 30% before the onset of seizures. During the seizures, CMRo2 increased to 112% of control and CBF increased disproportionately more than the increase in CMRo2. With the termination of seizures, CMRo2 decreased again to pre-seizure level and returned toward control within 90 minutes. These results indicate that a non-seizure-producing dose of lidocaine depresses cerebral respiration, but the effect is reversed by a seizure-producing dose, i.e., that the effects of lidocaine on the brain show a dichotomy, which includes a metabolic component.
have not been shown to produce clinically important anticoagulant effects and relatively small amounts of heparin do have clinically important anticoagulant effects, it appears prudent to give enough protamine both to prevent heparin rebound and to ensure adequate neutralization.

**AB-1757-74**

*Inhibited Platelet Adhesion: A Non-thrombogenic Characteristic of a Heparin-Coated Surface —* Lagergren H, Olson P, Swedenborg J (Surgical Research Laboratory, Thoracic Clinics, Karolinska sjukhuset, Stockholm 60, Sweden) — *Surgery* 75:643-650 (May) 1974*

The thrombogenicity of plastic surfaces with a stable bound heparin layer was tested in dogs. The method for preparing the heparinized surface is described. The accumulation of 51Cr-labeled platelets on specially designed arteriovenous shunts was used as a measure of platelet adhesion. The experiments were made on both fibrinogen-depleted and normal dogs. Nontreated shunts were occluded after a 30-minute test period in both groups of animals. Heparinized shunts remained open and the accumulation of platelets was less than 10% of that on nontreated surfaces. Systemic heparinization did not markedly influence the adhesion of platelets on the shunts and untreated shunts were not kept open unless very large concentrations were used (> 5 I.U. per milliliter of plasma). It is concluded that the heparinized surface is non-thrombogenic, mainly because it prevents platelet adhesion. Systemic heparinization does not have a similar effect.

**AB-1758-74**

*Patency of Aortocoronary Vein Grafts and Serum Triglycerides. Three Year Follow-Up Study —* Allard C (Laboratory of Metabolic Research, Montreal Heart Institute, Montreal 410, Quebec, Canada), Goulet C, Grondin CM, Lesperance J, Bourassa MG — *Amer J Cardiol* 33:679-680 (May) 1974*

Fasting blood lipid levels were determined before operation and one and three years after operation in 36 patients to verify the hypothesis that hypertriglyceridemia plays a role in the fate of aortocoronary vein grafts. Graft patency was evaluated with use of arteriography two weeks, one year and three years after operation. Results of these studies show that patients with hypertriglyceridemia have a higher risk of occlusion or stenosis of vein grafts. Serum cholesterol levels do not appear to affect the fate of the grafts.

**AB-1759-74**

*Zur Diagnose und operativen Therapie der intrazerebralen Massenblutung (The Diagnosis and Operative Treatment of Massive Intracerebral Hemorrhage) —* Beck OJ, Marguth F (Neurochirurgische Klinik der Universität, D-8000 München 2, Beethovenplatz 2-3, Germany) — *Münch Med Wschr* 14:717-722 (Apr 5) 1974*

Of the spontaneous nontraumatic massive hemorrhages in the brain, those due to rupture of the vessels are described more closely. Bleeding into the ganglia of the brain stem and primary bleeding into the cerebral medulla are differentiated. Massive hemorrhages in the region of the ganglia of the brain stem can only be operated on if they have extended into the temporal lobe or into the frontoparietal medulla.

**AB-1760-74**

*Authors' abstract.*

Primary hemorrhages into the cerebral medulla are operable in principle. The following subdivision according to the clinical course is offered: (1) primary persistently unconscious patients; (2) patients in whom signs of rising intracranial pressure increase rapidly within 60 hours; and (3) patients with a protracted course over several days or weeks.

**AB-1761-74**

*Effect of Experimental Coronary Thrombosis Upon Platelet Kinetics —* Moschos CB, Lahiri K, Manskopf G, Oldewurtel HA, Regan TJ (Department of Medicine, College of Medicine and Dentistry of New Jersey, New Jersey Medical School, Newark, New Jersey) — *Thromb Diath Haemorrh* 30:339-346, 1973

Platelet thrombi were induced in coronary arteries of dogs by electric current. Platelet counts subsequently decreased in the coronary sinus (effluent from the infarcted region) over the next 18 to 20 hours. Platelets, tagged with 51Cr, were also found to be sequestered in the spleen, liver, and lungs. The mechanism of these changes is as yet unclear.

**AB-1762-74**

*Oculomotor Palsy With Pupillary Sparing in Subdural Hematoma: Two Cases With Documented Tentorial Herniation —* Keane JR (Department of Neurology, Los Angeles County-University of Southern California Medical Center, Los Angeles, California 90033) — *Mt Sinai J Med* 41:161-165 (Jan-Feb) 1974

Ipsilateral oculomotor nerve palsy with pupillary sparing was observed in each of two patients with subdural hematoma. Angiography revealed tentorial herniation in each patient. The oculomotor palsies resolved completely after the hematomas were evacuated.

**AB-1763-74**


In a series of 48 patients who underwent surgery for aneurysms of the anterior part of the circle of Willis, 75% had a good or excellent result and four died. All the deaths occurred among the first 23 patients. Experience with the use of a surgical microscope, bipolar coagulation, and adapted

*Authors' abstract.*
instruments and clips has produced increasing success in the surgery of intracranial aneurysms.

**AB-1774-74**


Surgical anastomosis of the superficial temporal artery to the middle cerebral artery was accomplished in six patients in this series. Indications included intracranial vascular obstructions, and ancient or multiple cervical vascular obstructions, demonstrated angiographically, coupled with clinical symptoms of transient ischemic attacks. The techniques of Donaghy and Yasargil are reviewed.

**AB-1775-74**

Visual Attention Affects Brain Blood Flow — Bondy SC, Lehman RAW, Purdy JL (Departments of Neurology and Neurosurgery, University of Colorado Medical Center, Denver, Colorado 80220) — Nature 248:440-441 (Mar 29) 1974

Each eye of a chick innervates only the contralateral optic lobe. Partial blenders were placed over the eyes of chicks, so that one eye could look forward only, and the other eye backward only. Grain was placed before the chick so only the forward-looking eye could see it. Relative blood flow measured in the brain of the chick brain revealed a marked increase of flow to the lobe contralateral to the forward-looking eye. If no grain was in the field of vision, this relative increase in flow was not observed.

**AB-1776-74**

The Incidence of ECG Abnormalities in Acute Cerebrovascular Accidents — Hansson L, Larsson O (Medical Department I, Sahlgren's Hospital, University of Göteborg, Göteborg, Sweden) — Acta Med Scand 195:45-47 (Jan-Feb) 1974

Of 17 patients with intracerebral hemorrhage, 16 had prolongation of the Q-T intervals on their electrocardiograms; T and U wave changes were seen in 65% of this group. In four of five patients with subarachnoid hemorrhage, the Q-T intervals were prolonged. Of 36 patients with thromboembolic cerebrovascular disease and eight patients with transient ischemic attacks, only 14% had T or U wave changes in their ECGs; their Q-T intervals varied but were generally only minimally increased.

**AB-1777-74**


Two patients with moyamoya disease are presented; one was a 23-year-old British woman and the other a 49-year-old British man. In addition to angiographical demonstration of the occlusive process air encephalography was done, and in both patients gross cerebral atrophy was observed. The man was later autopsied. Moyamoya disease (syndrome) is discussed.

**AB-1778-74**

The Upper Limit of Autoregulation of Cerebral Blood Flow — On the Pathogenesis of Hypertensive Encephalopathy (Editorial) — Lassen NA (Department of Clinical Physiology, Bispebjerg Hospital, Copenhagen, Denmark), Agnoli A — Scand J Clin Lab Invest 30:113-116 (Oct) 1972

How high blood pressure damages tissue has been discussed for more than a century. Excessive arteriolar constriction (spasm theory) was emphasized by Byrom as he demonstrated that pial arterioles in hypertensive rats were segmentally narrowed and the corresponding cortex was pale. On the other hand Giese showed that colloidal carbon enters the smooth muscle cell layer during angiotensin-induced hypertension always in the zones of dilatation and never in zones of constriction. More recently Häggedal and Johansson demonstrated in cats that during a sudden increase in mean arterial blood pressure patchy extravasation of serum albumin bound with Evans blue dye into brain occurred and that sagittal sinus venous pressure increased. A gradual increase in arterial blood pressure caused no leak of the dye. They suggest that the extravasation results from overdistention of the microcirculation in the brief time preceding autoregulatory vasoconstriction. In another experiment by Häggedal et al. autoregulation was shown to be effective over lesser degrees of hypertension in dogs during hypercapnia. Skinhøj has reported a patient with brain tissue acidosis who despite blood pressures of less than 180 mm Hg developed a clinical picture of hypertensive encephalopathy; yet blood flow was found to be low, apparently reflecting brain edema and decreased function. Others have noted that hypertensive encephalopathy often becomes symptomatic at night when Pco, is elevated. Hypocapnia may be useful, and opiates should be avoided in such patients. Finally the editorialists suggest that in hypertensive encephalopathy the stretched arterioles act as membranes which allow passage of water but not plasma proteins.

**AB-1779-74**

Regional Cerebral Blood Flow and Cerebral Perfusion Pressure in Global Brain Oedema Induced by Water Intoxication — Meinig G (Neurosurgical Clinic, University of Mainz, Langenbeckstrasse 1, D-6500 Mainz, Federal Republic of Germany), Reulen HJ, Magawly Chr — Acta Neurochir 29:1-13, 1973 (Springer-Verlag, publisher)

Brain edema was produced in cats by intravenous infusion of distilled water. Controls were loaded with saline. In cats with moderate brain edema (analyzed by quick freezing the brain in situ with liquid nitrogen, then measuring water content per unit weight) regional cerebral blood flow (rCBF) decreased as tissue water increased, but independent of cerebral perfusion pressure (CPP) (the difference between mean arterial blood pressure and CSF pressure). In severe brain edema regional blood flow decreased to nearly zero, associated with markedly increased CSF pressure and decreased CPP. The decrease in rCBF independent of CPP seemed to be related to decreased capillary diameter and astroglial swelling.

**AB-1780-74**

Patterns of Activation in the Gray Matter of the Dominant Hemisphere During Memorizing and Reasoning. A Study of Regional Cerebral Blood Flow
Regional cerebral blood flow (rCBF) was measured by the intra-arterial 133Xenon injection technique in 17 patients during psychological testing and 31 patients during rest. A test requiring visual activity correlated with increased cortical blood flow in the occipital, temporal-occipital, parietal, and frontal regions. A test requiring auditory attention (digit-span-backward test) led to augmentation of blood flow in anterior frontal, prerolandic, and posterior temporal regions. The rCBF of patients at rest did not show such regional variations.


Thromboelastography was not found to be useful in determining the effect of aspirin on platelet function. Thromboelastograms (TEG) (as described by Hartert, 1948) were performed on blood from patients before and after treatment with a single, 1-gm dose of aspirin. The TEG did not change significantly when platelet-rich plasma was preincubated in vitro with aspirin at doses which inhibited the platelet “release reaction” by collagen.

Mental Activity and Cerebral Blood-Flow — (Editorial) — Lancet 1:440-441 (Mar 16) 1974

Simultaneous measurement of cerebral blood flow over 32 regions of one hemisphere by clearance studies of 133Xenon (administered by carotid injection) has been reported by Ingvar, Risberg, and Lassen since 1965. During different forms of mental activity, e.g., visual or auditory tasks, variations in blood flow patterns have been observed. Ingvar and Franzen have also reported that frontal region blood flow is reduced in chronic schizophrenics. Veall and Mallett have developed an inhalation method of 133Xenon clearance (administered by carotid injection) has been reported by

The Role of the Carotid Body Chemoreceptors and Carotid Sinus Baroreceptors in the Control of Cerebral Blood Vessels — Ponte J, Puvvaj MJ (Department of Physiology, University of Bristol, University Walk, Bristol BS8 1TD, England) — J Physiol 237:315-340 (Mar) 1974

Cerebral blood flow was measured in 17 baboons, in which the right sinus and both aortic nerves had been cut, and in which the left carotid sinus was isolated from the rest of the circulation. Stimulation of the carotid body chemoreceptors caused an increase in cerebral blood flow (CBF); this increase was nearly abolished after the VII cranial nerves were cut intracranially. Regional CBF varied inversely with carotid sinus pressure. When both sinus nerves were cut, the cerebral vascular response to hypoxia was minimal and the response to hypercapnia was significantly reduced. Flow then varied with perfusion pressure. Cerebral blood vessels seem to be reflexly controlled, in part by peripheral arterial receptors, especially with respect to hypoxia.


Regional cerebral blood flow (rCBF) was measured in the brains of cats which had cold-induced injuries to their right frontal lobes. Near the lesion three regions of injury were detected. Where there was local brain edema, rCBF was reduced, inversely proportional to tissue water content. In nonedematous regions either hyperemia or hypoemia was noted. The "luxury perfusion syndrome" occurs only in the nonedematous regions. Reduction of rCBF by 62% in the lesion produced a significant decrease in high energy compounds. Reduced rCBF of 20% in regions distant from the lesion and of 33% in edematous regions near the lesion was associated with increased lactate and lactate/pyruvate ratios, whereas tissue concentrations of ATP, ADP, and phosphocreatine were essentially unchanged.

Surgery in Central Retinal Oclusion — Parker R (20 Collins Street, Melbourne, Vic. 3000 Australia) — Med J Aust 1:49 (Jan 12) 1974

A 73-year-old man with a total central vein occlusion of three weeks' duration had improving vision after surgery by the technique of J. Vasco-Posada. The author also reports successful surgical treatment of central retinal artery occlusion in three patients, each seen within two hours of the onset of symptoms.

Pulsatile Aneurysms of the Retinal Arterial Tree — Shults WT, Swan KC (John E. Weeks Institute of Ophthalmology, University of Oregon Medical School, Portland, Oregon 97201) — Amer J Ophthalm 77:304-309 (Mar) 1974

Of five patients, all women, with aneurysms of the major retinal arteries, three had spontaneously pulsating aneurysms; each of these three patients had significant bleeding from the aneurysms. In the patient who had been

The authors present data which show that the enzymatic effect of thrombin on fibrinogen induces the release of platelet constituents. Heparin does not inhibit this activity. Thrombin-induced platelet aggregability is ADP dependent through two distinct mechanisms: alteration of platelet morphology, and reduction of the net negative surface charge of platelets. The effect of thrombin on platelets is inhibited when aspirin is added to the incubation mixture. The authors suggest that aspirin produces acetylation of thrombin. A possible mechanism for the release reaction is discussed.

Results of 98 Intracranial Aneurysm Operations Performed With the Aid of an Operating Microscope — Guidetti B (Department of Neurosurgery, Rome Medical School, Rome, Italy) — Acta Neurochir 29:65-71, 1973 (Springer-Verlag, publisher)

The results of surgical treatment of 98 intracranial aneurysms is reported, and the advantages of the operating microscope discussed. Of 80 patients in the condition described by Botterell as Grades 1, 2 or 3, 56 had an excellent recovery (pre-aneurysmal status), 15 had a good result, seven a fair result, and two died. Of 12 patients in Grade 4 preoperative condition three died, four had a fair result, and five a good recovery. Grade 5 patients (total of six) had only one survivor (in fair condition). The author thinks that very early surgical treatment of Grades 4 and 5 patients would yield the best results.


Atherosclerosis was induced in 95 thyroid-suppressed mongrel dogs fed a high cholesterol diet from 3½ to 26 months. Coronary atherosclerosis resulted in 60 of the dogs, and myocardial infarction occurred in four of these. Cerebral atherosclerosis was studied in 37 dogs. The carotid arteries had segmental mural changes. In 84% of the 37 dogs atherosclerosis was apparent in the circle of Willis with severe lesions in 57%. Atherosclerosis affected the abdominal aorta more frequently than the thoracic aorta. Regional susceptibility of arteries to atherosclerosis seems to vary. This canine model produced atherosclerotic lesions similar in incidence, distribution, and morphology to those found in man.

Prevention of Thrombosis With Agents Which Reduce Platelet Adhesiveness — Justice C, Papavangelou E, Edwards WS (Department of Surgery, University of New Mexico School of Medicine, Albuquerque, New Mexico) — Amer Surg 40:186-189 (Mar) 1974

The effects of Dextran 70, diprydamole, aspirin, and Pluronic F68 on arterial thrombosis induced in the femoral arteries of dogs by intimecctomy were compared. All these drugs are known to reduce platelet adhesiveness, but whereas Dextran and aspirin prevented thrombosis in 95% of 20 arteries, respectively, diprydamole did so in only four of 20 arteries and Pluronic F68 in none of 20 arteries tested. The mechanism of these drugs needs further elucidation.


Vascular Channels in the Auditory Ossicles in Man — Anson BJ (Department of Otolaryngology and Maxillofacial Surgery, College of Medicine, the University of Iowa, Iowa City, Iowa), Winch TR — Ann Otol 83:142-158 (Mar-Apr) 1974


Selected papers of particular interest to neurosurgeons and neurologists, which were presented at the June, 1973, International Symposium of Cerebral Circulation and Metabolism in Philadelphia, are summarized and discussed.
Abstracts

Stroke. 1974;5:662-674
doi: 10.1161/01.STR.5.5.662
Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0039-2499. Online ISSN: 1524-4628

The online version of this article, along with updated information and services, is located on the World Wide Web at:
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