Abstracts

AB-738-72
Catecholamines and 5-Hydroxytryptamine in the Carotid Body in Vascular, Respiratory, and Other Diseases—Steele RH, Hinterberger H (Senior Research Officer, Division of Clinical Chemistry, Prince Henry Hospital, Little Bay, N.S.W. 2036, Australia)—J Lab Clin Med 80:63-70 (July) 1972*

The content of catecholamines and 5-hydroxytryptamine was estimated fluorometrically in 76 pairs of human carotid bodies obtained at autopsy and correlated with the terminal illness of the patients. Dopamine was uniformly the most abundant amine (64% of total amines). It occurred in significantly higher concentration in eight normotensive patients dying of cerebrovascular disease than in other subjects. 5-Hydroxytryptamine, the second most abundant amine (18.8% of total amines), equalled the level of dopamine in patients with renal and idiopathic hypertension. The pattern of amine distribution did not differ significantly in patients dying in respiratory failure when compared with other disease groups. However, the weight of the carotid body was increased in patients with abnormally high cardiac weight.

AB-739-72
The Results of Proximal Anterior Cerebral Artery Occlusion for Anterior Communicating Aneurysms—Hugenholtz H, Morley TP (Neurosurgical Office, Eleventh Floor, Norman Urguhart Wing, Toronto General Hospital, Toronto 2, Ontario, Canada)—J Neurosurg 37:65-70 (July) 1972*

A three-year to ten-year follow-up of a selected group of 23 patients treated for ruptured anterior communicating aneurysms by proximal clipping of one anterior cerebral artery has been evaluated. There was no instance of recurrent hemorrhage. The operation carried a relatively low morbidity and mortality (13%). Early and late results are compared. The importance of adequate preoperative angiography, the minimal complications, and the advantages of the procedure are discussed.

AB-740-72
Histochemical Studies in the Zone of Ischemia Following Middle Cerebral Artery Occlusion in Cats—MacDonald VD, Sundt TM Jr, Winkellman RK (Section of Publications, Mayo Clinic, Rochester, Minnesota 55901)—J Neurosurg 37:45-54 (July) 1972*

Representative enzymes in brain were studied by histochemical techniques at intervals varying between six hours and eight weeks after permanent middle cerebral artery occlusion in 18 cats. Unequivocal enzyme changes did not develop until 12 hours after occlusion, and no specific enzyme system was demonstrated to fail prior to others. That the ischemia of the first six hours is reversible in the cat was further substantiated by histological studies in a separate group of animals subjected to temporary middle cerebral artery occlusion for six hours. This study demonstrated progressive axonal changes, after the period of reversibility, bordering the core area of ischemia and resembling neural tissue reaction to injury in the spinal cord. Correlation of this study with previous biochemical determinations suggests that a self-induced and self-perpetuated toxicity might explain, in part, progressive changes in ischemic areas.

AB-741-72
Regional Cerebral Blood Flow Studies in Subarachnoid Hemorrhage—Heilbrun MP (University of Utah Medical Center, Division of Neurosurgery, Room 3B320, Salt Lake City, Utah 84112), Olesen J, Lassen NA—J Neurosurg 37:36-44 (July) 1972*

Regional cerebral blood flow (rCBF) studies using the intra-arterial 133Xenon method were performed on ten patients with subarachnoid hemorrhage. Both preoperative and postoperative studies showed evidence of decreased flow in the entire hemisphere studied, and, in addition, evidence of focal ischemia, focal hyperemia, focal vasoparalysis, and often global impairment of autoregulation. The degree of flow abnormalities correlated well with the clinical grading of the neurological deficit. It is suggested that analysis of the state of autoregulation might be useful in determining the time for surgical intervention and that rCBF studies are important in defining the effects of drugs used to counteract the ischemic effects of spasm.

AB-742-72
Hyperoxia of Cerebral Venous Blood and Cisternal Cerebrospinal Fluid Following Arterial Air Embolism—Simms NM (Department of Neurosurgery, University of Minnesota, B-590 Mayo Building, Minneapolis, Minnesota 55455), Long DM, Matthews JH, Chou SN—J Neurosurg 37:30-35 (July) 1972*

Oxygen tension and acid-base parameters of cerebral venous blood and cisternal cerebrospinal fluid, as well as of femoral arterial blood, were studied in 14 dogs following injection of varying amounts of room air into the right vertebral artery. Acute elevations in oxygen tension were demonstrated in both cerebral venous blood and CSF, whereas hypoxemia occurred concomitantly in systemic arterial blood. Postembolic increases in carbon dioxide tension with reciprocal diminutions in pH were evident in all sampling sites. The pathophysiological bases for these air-induced alterations are discussed.

*Authors’ abstract.
AB-743-72
Upper Gastrointestinal Bleeding as a Complication of Intracranial Disease—Karch SB (2729 Elmwood Avenue, Berkeley, California 94705)—J Neurosurg 37:27-29 (July) 1972*

Review of 2,206 consecutive necropsies showed evidence of hemorrhagic ulceration of the upper gastrointestinal tract in 7.2%. The incidence in patients dying from intracranial disorders was found to be twice that of those dying from all other causes (12.5% versus 6.0%). The distribution of lesions within the two groups was also different in that esophageal ulceration was more common in the neurological group (p < 0.001), while duodenal ulcers were more common in the non-neurological group (p < 0.001).

AB-744-72
L'hématome épidural spinal spontané, complication rare de la thérapeutique anticoagulante (Spontaneous Spinal Epidural Haematoma, A Rare Complication of the Anticoagulant Treatment)—Telerman-Toppe N (Département de Neurologie, Clinique Médicale, Hôpital Brugmann, B-1020 Brussels, Belgium), Moerman C, Noterman J—Acta Neurol (Belgica) 72:118-129 (Mar-Apr) 1972*

The authors report a case of spontaneous spinal epidural hematoma under anticoagulant therapy.

Prognosis remains very poor but can be considerably improved by early diagnosis and surgical treatment.

AB-745-72
L'Obstruction de l'artère cérébrale moyenne chez le sujet jeune. Réflexions étiologiques à propos de 9 cas (Obstruction of the Middle Cerebral Artery in Young Subjects. Remarks on Its Etiology, Concerning 9 Cases)—Shako A (Clinique Neurochirurgicale de l'Université libre de Bruxelles, B-1000, Brussels, Belgium), Brihaye J, Retif J—Acta Neurol (Belgica) 72:109-117 (Mar-Apr) 1972*

Obstruction of the middle cerebral artery is not rare among young subjects.

When examination does not demonstrate a precise etiology, the diagnosis of dissecting aneurysm must be considered. This lesion, that we have often observed in the basilar artery of the young subject, has been previously described in 20 cases in the sylvian artery. All our personal cases are still alive.

AB-746-72
Studies on the Carotid Body and the Carotid Sinus. Effects on the Heart by Electrical Stimulation of the Carotid Sinus Wall—Itoh K (Department of Cardiovasology, Surugadai Nihon University Hospital, Tokyo, Japan)—Jap Heart J 13:136-149 (Mar) 1972*

Previously, the fine structure of the carotid body, the experimental sclerosis of the carotid sinus wall, circulatory effects of carotid occlusion and adrenergic blocking agents effects for the carotid baroreceptor were studied in this clinic. This time, circulatory changes due to carotid sinus reflex by electrical stimulation (square wave; 8 v, 20-50 cps) of the carotid sinus wall in situ canine carotid artery were investigated.

(1) Systolic arterial blood pressure was lowered by 33.7 mm Hg from average 143 mm Hg. Diastolic arterial pressure was decreased by 21.0 mm Hg from the level of 74.8 mm Hg. P-value was less than 0.001. Coronary blood flow was also decreased 5.5 ml/min from average mean flow 30.4 ml/min (P less than 0.001). Coronary resistance was decreased 0.27 mm Hg/ml/min from average 3.22 mm Hg/ml/min (P less than 0.001). Cardiac output was decreased significantly. Left intracardiac pressure was reduced by 8.9 mm Hg (P less than 0.01). Its max dp/dt was decreased (P less than 0.01). The dp/dt/IAT was reduced by 0.06 (percent change, 18.18%) from average 0.35. The change of the left ventricular tension measured by the strain gauge arch was insignificant. The R-R and P-R intervals were slightly prolonged in the second lead of the electrocardiogram (P less than 0.001). The myocardial oxygen consumption was significantly decreased. Arterial blood catecholamine was apt to decrease.

(2) After the administration of propranolol (0.2 mg/kg), carotid sinus reflex by the electrical stimulation did not cause the changes of intracardiac pressure and max dp/dt but those of arterial blood pressure and coronary blood flow. Cervical vagotomy inhibited these changes.

(3) It should be noted here that these decreases of cardiac work, myocardial oxygen requirement and diastolic coronary resistance are effective for the angina pectoris through the adrenergic and the cholinergic nerves with catecholamine change.

AB-747-72

From the findings at entry examination and the data obtained in the ten years of follow-up experience, the following conclusion is reached.

(1) The mortality from cerebral thrombosis and myocardial infarction has been significantly higher in Ushibuka men than in Tanushimaru men. The increase of sum of skinfold thickness due to remarkable reduction of physical activity and prevalence of high blood pressure seemed to influence the high mortality from cerebral thrombosis and myocardial infarction.

(2) The higher trend of cerebral hemorrhage in the men with hypertension at Tanushimaru appeared to be influenced by the low serum protein concentration with A-G ratio abnormalities due to low dietary protein and by the higher elevation of blood pressure after exercise.

*Authors' abstract.

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AB-748-72
The Rate of Oxygen Turnover in Cerebrospinal Fluid—Ravin MB (Associate Professor of Anesthesiology, University of Florida College of Medicine, Gainesville, Florida 32601)—Anesthesiology 37:59-63 (July) 1972*

The changes in $P_{O_2}$, $P_{CO_2}$, and cisternal CSF $P_{O_2}$ were followed in eight goats after abruptly changing the $F_{CO_2}$ from 1.0 to 0.21 during a period of constant hyperventilation ($P_{ACO_2} 30$ torr). The half times ($t_{1/2}$) for oxygen content in the arterial, venous, and cisternal compartments were 0.57, 1.01, and 3.60 minutes, respectively; the oxygen stores of the CSF were shown to be extremely labile and limited in nature.

AB-749-72
Effects of Cyclopropane on Canine Cerebral Blood Flow and Metabolism: Modification by Catecholamine Suppression—Michenfelder JD (Associate Professor of Anesthesiology, Mayo Clinic, Rochester, Minnesota 55901), Thye RA—Anesthesiology 37:32-39 (July) 1972*

The effects of 5, 13, 20, and 30% cyclopropane, alone and with either reserpine or spinal anesthesia, on cerebral blood flow (CBF) and metabolic rate for oxygen ($CMR_{O_2}$) were investigated in three groups of nine dogs each. With cyclopropane alone, CBF increased abruptly in eight of nine dogs as the concentration was increased, while $CMR_{O_2}$ changed insignificantly. After pretreatment with reserpine, CBF decreased significantly with 13% cyclopropane, but at higher concentrations increased abruptly in four of nine dogs. $CMR_{O_2}$ decreased with 13% cyclopropane and remained decreased at the higher concentrations. During spinal anesthesia, CBF and $CMR_{O_2}$ decreased significantly with increases in cyclopropane. In a single dog, during spinal anesthesia and 20% cyclopropane, CBF and $CMR_{O_2}$ increased during intravenous infusions of both epinephrine (0.1 and 0.25 $\mu g/kg/min$) and norepinephrine (0.25 $\mu g/kg/min$). The authors conclude that the unusual and variable effects of increasing concentrations of cyclopropane on CBF and $CMR_{O_2}$ are secondary to the increases in circulating catecholamine levels resulting from the sympathoadrenal stimulatory effects of this anesthetic.

AB-750-72
Serum Cholesterol Levels of Mexican and Wisconsin School Children—Golubjatnikov R (University of Wisconsin Center for Health Sciences, Madison, Wisconsin 53706), Paskey T, Inhorn SL—Amer J Epidem 96:36-39 (July) 1972*

Serum cholesterol levels of a random sample of 209 Mexican and 328 Wisconsin school children were determined. The mean serum cholesterol level of the five to 14-year-old Mexicans was 99.9 mg/100 ml. In contrast, the mean cholesterol level of comparable Wisconsin pupils was approximately twice as high (186.5 mg/100 ml). The findings suggest that the cholesterol levels characteristic of these two populations have been developed by elementary school age as there were no appreciable differences in mean serum cholesterol levels between the five to nine and the ten to 14-year-olds in either study population.

AB-751-72
Cerebellar Hematomas Caused by Angiomas in Children—Erenberg G (Pediatric Neurology, Montefiore Hospital and Medical Center, Bronx, New York 10467), Rubin R, Shulman K—J Neurol Neurosurg Psychiat 35:304-310 (June) 1972*

Spontaneous cerebellar hematomas in previously well children are most often caused by hemorrhage from small angiomas. Eight such cases in children 12 years of age or younger have been reported previously. Their clinical course was usually not as acute as the course most commonly seen in adults, and four of the children survived after evacuation of the hematoma. Two additional cases are presented. Both children were admitted in a comatose state, but survived after surgical intervention. Cerebellar hematomas in children seem to have a better prognosis than in adults and should be considered in the evaluation of children with subarachnoid hemorrhage or the rapid onset of coma. Even if admitted in extremis, recovery is possible after prompt diagnosis and surgical evacuation of the hematoma.

AB-752-72
Extradural Haemorrhage—A Hazard of Ventricular Drainage—Sengupta RP, Hankinson J (Department of Neurosurgery, Regional Neurological Centre, Newcastle General Hospital, Newcastle upon Tyne)—J Neurol Neurosurg Psychiat 35:297-303 (June) 1972*

Three cases of extradural hematoma during ventricular drainage are reported and the relevant literature has been reviewed. Etiology, diagnosis, and management are discussed. Defective blood clotting is mentioned as a possible precipitating factor.

AB-753-72

Changes in cerebral blood flow during incremental increases of intracranial pressure produced by infusion of fluid into the cisterna magna were studied in anesthetized baboons. Cerebral blood flow remained constant at intracranial pressure levels up to approximately 50 mm Hg. At intracranial pressure levels between 50 to 96 mm Hg a marked increase in cerebral blood flow occurred, associated with the development of systemic hypertension and changes in cerebrovascular resistance. Further increases of intracranial pressure led to a progressive fall in cerebral blood flow. Prior section of the cervical cord prevented both the increase in cerebral blood flow and the systemic hypertension. Alteration of cerebral perfusion pressure by bleeding during the hyperemia in a further group of animals suggested that autoregulation was at least partially

*Authors' abstract.
preserved during this phase. After maximum hyperemia had occurred, however, autoregulation appeared to be lost. The clinical implications of these findings are discussed.

AB-754-72  
Cardiovascular Responses to Various Pulsatile Pressures in the Carotid Sinus—Schmidt RM, Kumada M, Sagawa K (Department of Biomedical Engineering, Schools of Engineering and Medicine, and Department of Surgery, School of Medicine, Case Western Reserve University, Cleveland, Ohio 44106)—Amer J Physiol 223:1-7 (July) 1972*

To extend the knowledge of the carotid sinus reflex, we forced the isolated sinuses of anesthetized dogs with sinusoidal (pulsatile) pressures using multiple combinations of mean level, amplitude, and frequency of pulsation. The reflex responses of mean arterial pressure, cardiac output, and total peripheral resistance were analyzed at mean sinus pressures of 75, 100, 125, and 150 mm Hg, frequencies of 1, 2, 3, and 4 Hz, and peak-to-peak amplitudes of 25, 50, and 75 mm Hg. Increasing the amplitude of pulsation from 25 to 75 mm Hg while holding the frequency at 2 Hz caused moderate and proportional reductions in arterial pressure, cardiac output, and total peripheral resistance, except when the pulsatile pressure was superimposed on mean sinus pressure of 150 mm Hg. In contrast, increasing the frequency of pulsation from 1 to 4 Hz with a fixed amplitude of 50 mm Hg evoked significant responses only after vagotomy at the mean intrasinus pressure of 75 mm Hg. An example of use of the quantitative data gained by this study is discussed in relation to evaluation of the role that the reflex system plays in maintaining mean arterial pressure after a 20% hemorrhage. We conclude from the above findings that variations of pulse pressure and particularly of heart rate in the physiological range have relatively little reflex effect compared with that of the change in mean intrasinus pressure.

AB-755-72  
Cardiac Monitoring of the Acute Stroke Patient—Reinstein L, Gracey JG (Cardiologist, York Hospital, York, Pennsylvania), Klime JA, Buskirk CV—Arch Phys Med Rehab 53:311-314 (July) 1972*

A comparison was made of the incidence of cardiac arrhythmias and of the 30-day mortality among acute stroke patients in the six months prior to the opening of a monitored stroke unit and during the first six months of the operation of the unit. No significant differences were found between the two groups in age, sex, specific type of stroke, and incidence of associated disease. Both groups had a high incidence of pre-existing cardiac disease (74% and 69%). In 135 monitored patients the incidence of arrhythmias was 61% compared to 41% in the 136 nonmonitored patients; this difference was statistically significant (p < 0.01). However, the difference in 30-day mortality between the two groups (25% and 34%) was not significant. It was concluded that continuous cardiac monitoring of acute stroke patients significantly increased the detection of cardiac arrhythmias, but there was no improvement in the 30-day mortality.

AB-756-72  
Hirndurchblutung und cerebroler Stoffwechsel bei Kranken mit chronischer Niereninsuffizienz (Cerebral Blood Flow and Cerebral Metabolism in Patients with Chronic Renal Insufficiency)—Gottstein U (Chefarzt der Medizinischen Klinik des Bürgerspital Frankfurt/Main, Nibelungenallee 37-41, Deutschland), Held K, Sedlmeyer J, Steiner K, Haberland KU, Berghoff W—Klin Wschr 50:594-602 (June 15) 1972 (Springer-Verlag, publisher)*

1. In 24 patients with chronic renal insufficiency and uremia (chronic glomerulonephritis and pyelonephritis) cerebral blood flow (CBF) was measured quantitatively by the nitrous oxide method, and cerebral metabolism analyzed with specific enzymatic techniques.

2. At urea-N values of 142 mg-% and arterial pH of 7.31, CBF was slightly elevated (63 ml/100 g.min), while cerebral oxygen uptake (CMRO₂) (2.77 ml/100 g.min) and cerebral glucose uptake (CMRgluc) (3.75 mg/100 g.min) were markedly reduced. The glucose-oxygen quotient (glucose A-V difference minus lactate and pyruvate A-V difference divided by oxygen A-V difference) declined to 1.13. Cerebral supply of lactate and pyruvate from the brain to cerebral venous blood did not differ significantly from normal values, whereas the respiratory quotient (RQ) of 0.89 was lower than normal.

3. By classifying the values into two groups, namely acidotic (pH < 7.35) and non-acidotic (pH > 7.35), different results were obtained:
   (a) In 15 patients with acidotic renal insufficiency, CBF was markedly elevated (69.0 ml/100 g.min). There was a significant negative correlation between pH and CBF: The lower the pH, the higher was the CBF.
   (b) In nine patients with nonacidotic renal insufficiency, CBF was normal (52.9 ml/100 g.min), while again CMRO₂ (2.96 ml/100 g.min) and CMRgluc (3.33 mg/100 g.min) were significantly reduced (0.98).

4. There exists a significant positive correlation between pH and CMRO₂ and CMRgluc: The lower the pH the lower were CMRO₂ and CMRgluc.

5. Treatment of uremia resulting in a reduction of urea-N and increase of pH improved CMRO₂ and CMRgluc and normalized the glucose-oxygen quotient.

6. While a correlation was found between the mental state (clear, clouded sensory, precoma and coma) and CMRO₂ and CMRgluc, no correlation with CBF was observed.

7. Uremic encephalopathy is caused by acidotic-toxic depression of cerebral metabolism, while cerebral blood flow is not reduced.

*Authors’ abstract.
**ABSTRACTS**

**AB-757-72**

**Localisation of Free Fatty Acids Taken Up by Human Platelets**—Hoak JC, Spector AA, Fry GL, Barnes BC (Section of Hematology, Departments of Medicine and Biochemistry, University of Iowa College of Medicine, Iowa City, Iowa)—*Blood* 40:16-22 (July) 1972*

Human platelets take up and metabolize long-chain free fatty acids (FFA). Experiments in which platelets were loaded with \(^{14}\)C-palmitate, homogenized, and then fractionated indicated large amounts of membrane-bound FFA. In other studies, platelet membrane fractions took up FFA from incubation media containing albumin-bound FFA. These findings suggested that a large portion of the platelet FFA uptake might be associated with the platelet surface. Autoradiography with electron microscopy using \(^{3}\)H-palmitate-labeled platelets provided additional evidence that much of the newly incorporated FFA was associated with the platelet surface.

**AB-758-72**

**Thromboembolic Complications During Anticoagulant Therapy**—Coon WW (Department of Surgery, University of Michigan Medical Center, Ann Arbor, Michigan 48104), Willis PW III—*Arch Surg* 105:209-212 (Aug) 1972*

Patients who developed thromboembolic complications when they received anticoagulant therapy were compared with control patients who did not develop the same symptoms, but were matched for other epidemiological variables. The controls had more days of heparin sodium therapy and received higher doses of the drug. They also received anticoagulant treatment orally for more days while their prothrombin rates were below 30% and 25%, but these differences were not statistically significant. These data in combination with other studies, which show that anticoagulants administered orally probably reach their maximum antithrombotic effectiveness after the first week of administration, support the recommendation that every patient with thromboembolic disease on anticoagulant therapy should receive heparin therapy concurrently with anticoagulant therapy, administered orally, for at least seven to ten days.

**AB-759-72**

**Use of the Doppler Ultrasonic Flowmeter During Arterial Vascular Surgery**—Keitzer WF (Department of Surgery, University of Missouri Medical Center, Columbia, Missouri 65201), Lichti EL, Brossart FA, De Weese MS—*Arch Surg* 105:308-312 (Aug) 1972*

Ninety-three patients underwent vascular procedures with intraoperative monitoring of blood flow by the ultrasonic flowmeter; eight (8.6%) of these patients required 14 (13.1%) reoperations. There was one death in this group (1.1%). Forty-nine other patients did not have the benefit of this adjunct during operation; 15 (30.6%) of these required 31 (38.7%) reoperations. Nine patients died in the latter group (18.4%).

Based on an analysis of 142 patients subjected to vascular operations with and without the use of the Doppler ultrasonic flowmeter at operation, our data indicate that the reoperation and death rates were significantly reduced in those patients on whom intraoperative flow studies were performed.

**AB-760-72**

**The Effect of Glucose on the Platelet Response to Release-Inducing Stimuli**—Kinlough-Rathbone RL (Department of Pathology, McMaster University, Hamilton, Ontario, Canada), Packham MA, Mustard JF—*J Lab Clin Med* 80:247-255 (Aug) 1972*

Washed platelets suspended in Tyrode's solution free of glucose lose their sensitivity to thrombin- or collagen-induced platelet aggregation (rabbit and pig) or to antigen-antibody complex-induced platelet aggregation (pig). Glucose added to the suspending fluid restores platelet sensitivity: Mannose, galactose, and fructose have little effect. Antimycin inhibits the ability of glucose to restore the sensitivity of the platelets to thrombin, even after prolonged incubation with the glucose, indicating that oxidative phosphorylation is important in this process. Lack of glucose in the suspending medium inhibits the release of adenine nucleotides. The release reaction can be restored, after the thrombin has been inhibited by TAME (tosyl arginine methyl ester), by adding glucose to the suspending medium. This indicates that there are at least two steps in the thrombin-induced release of platelet constituents: The initial reaction of thrombin with the platelet membrane, and the sequence of events leading to the release of granule contents; the latter requires a source of energy.

**AB-761-72**

**Heparin Protection for the Brain During Carotid-Artery Reconstruction**—Kenyon JR (St. Mary's Hospital, London W.2, England), Thomas ABW, Goodwin DP—*Lancet* 2:153-154 (July 22) 1972*

In a consecutive series of 34 operations on 31 patients referred with stenosing lesions of the internal carotid artery, heparin (3 mg per kg body-weight) administered systemically and regionally was the only method of cerebral protection during arterial occlusion, which varied between seven and 30.5 minutes (mean 15.3 minutes). Ten patients (32%) had more than one lesion. There were no deaths and no immediate neurological sequelae. Two patients had transient ischemic attacks two and five days after operation, but these resolved completely within 24 hours and were attributed to technical causes.

**AB-762-72**

**Effect of Increased Intravascular Pressure on the Blood-Brain Barrier to Protein in Dogs**—Häggendal E, Johansson B (Department of Neurology, Sahlgren Hospital, Göteborg, Sweden)—*Acta Neurol Scand* 48:271-275, 1972*

In a previous study it was suggested that the cerebral vascular permeability dysfunction occurring in acute arterial hypertension was caused by the increased intraluminal pressure. The aim of the present experiments was to study further this effect on the blood-brain barrier. To rule out any ischemic influence cerebral
vasodilatation was brought about by papaverine injection or CO₂ inhalation and the cerebral blood flow measured and shown to be above normal before the blood pressure rise was induced. A sudden elevation of the systemic blood pressure still resulted in increased cerebral permeability indicated by Evans blue extravasation. In one cat it was shown that an extremely rapid intracarotid autotransfusion resulted in a marked increase in the cerebral venous pressure and small areas of Evans blue extravasation. Our results support the hypothesis that the permeability changes were caused by the increased intraluminal pressure.

AB-763-72
Concomitant Intravital and Postmortem Demonstration of Experimental Damage to the Blood-Brain Barrier—Johansson B (Department of Neurology, Sahlgrenska sjukhuset, S-413 45 Göteborg, Sweden), Steinwall O—Acta Neurol Scand 48:276-281, 1972*

In three series of rabbits with unilateral chemical or air injury to the blood-brain barrier (BBB), each animal was given one damage-indicating tracer intravitaly (intravenously), another tracer postmortally (by perfusion soon after bleeding). The two tracers, fluorescein isothiocyanate and Evans blue, respectively, were both protein-bound and fairly comparable as regards permeability characteristics. By visualization of whole brain and slices in daylight and ultraviolet light, the extravasation of the two tracers was grossly estimated. Their detailed distribution—each or in mixture—could be studied by fluorescence microscopy in thin section where these tracers fluoresce brightly in contrasting colors. In two of the three series (B and C) the barrier-damaged areas were fairly similarly demarcated by both tracers, grossly as well as microscopically, although inequalities in their detailed distribution could be observed. In series A differences in staining were evident, particularly at direct visualization. The comparatively short interval between the barrier injury and exsanguination in this first series may imply a more dynamic situation, accentuating unavoidable changes of the vascular perfusability after death. Our conclusion, based on the findings in the experiments with a probably more stable perfusion situation, is that the "supravital" demonstration of BBB damage satisfactorily corresponds to the intravital staining pattern.

AB-764-72
On the Pathophysiology of the Increased Cerebrovascular Permeability in Acute Arterial Hypertension in Cats—Häggendal E, Johansson B (Department of Neurology, Sahlgren Hospital, Göteborg, Sweden)—Acta Neurol Scand 48:265-270, 1972*

Hypertension was induced by intravenous injection of Aramine in cats, either abruptly or stepwise. Evans blue was used as a tracer for observations on the permeability of the cerebral vessels. In the cats with abrupt pressure increase extravasation of Evans blue occurred in the brains indicating increased permeability to proteins. It is suggested that the permeability changes are due to a mechanical distention of the vessel wall caused by the sudden increase of the intraluminal pressure.

AB-765-72
Fibrinolysis and Haemostasis—Castaldi PA (Haematology Department, Austin Hospital, Heidelberg, 3084, Australia), Gorman JJ—Aust N Z J Med 2:113-117 (May) 1972*

Platelet function has been examined in humans during periods of enhanced fibrinolysis induced by streptokinase or occurring spontaneously. The degree of lytic activity has been assessed by thrombin times, fibrinogen levels and measurement of fibrin degradation products in the serum. The bleeding time was usually normal although there was a tendency for prolongation during the course of prolonged lysis or in the presence of profound hypofibrinogenemia. Platelet adhesiveness to glass beads and aggregation with adenosine diphosphate and collagen were usually normal even in the presence of markedly elevated levels of degradation products. Platelet aggregation with thrombin was impaired and the abnormality could be corrected by increasing thrombin concentrations. The results suggest that the major hemostatic defect during enhanced lysis results from the antithrombin action of degradation products and that there is little decrease in platelet aggregation as long as fibrinogen levels are not excessively reduced.

AB-766-72

The purpose of our studies was to learn whether hypertension and diabetes mellitus in men and women between 60 and 69 years of age cause a narrowing of the lumen of the anterior descending branch of the left coronary artery and whether further factors inherent in the artery might influence the degree of arteriosclerosis. In 15 men and 15 women between 60 and 69 years of age with hypertension or diabetes mellitus, or without either, we made 360 cross-sections of the artery, measured the percentage narrowing of the lumen, and statistically analyzed the 1,440 measurements with an electronic computer and variance-analysis. The following results seemed especially interesting:

1. Men and women between 60 and 69 years of age with hypertension or diabetes show the same degree of arteriosclerotic narrowing of the lumen as do those without hypertension or diabetes. These illnesses do not significantly affect the lumen size.
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2. In men there proved to be a correlation between sex and degree of narrowing of the coronary artery. Perhaps the correlation is related to the fact the material studied from the men was nonhomogeneous.

3. The region along the course of the vessel influences the narrowing of the lumen only in women, not in men.

4. The position of the atherosclerotic plaque as regards a vascular branch shows a significant correlation with the narrowing of the lumen in women but not in men.

5. "Repetition of measurements" shows in men and women a significant effect on the narrowing of the lumen.

6. It is recommended that the model presented be applied to similar studies.

AB-767-72
Alteration of the Course of Hypertension in the Spontaneously Hypertensive Rat—Freis ED, Ragan D, Pillsbury H III, Mathews M (Veterans Administration Hospital, Washington, D. C. 20422)—Circulation Research 31: 1-7 (July) 1972*

The blood pressure of spontaneously hypertensive rats was controlled at low normotensive levels, using antihypertensive drugs for a six-month period beginning when the rats were three months of age. Treatment was then withdrawn and the rats observed for an additional four months, until they were 13 months of age. Treatment with antihypertensive drugs arrested the progression of the hypertension and the secondary pathology for the duration of the treatment period. Following withdrawal of drugs the blood pressure did not rise to the level of the controls of a similar age, but rather it returned to the level that existed before treatment began and then progressed at the same rate that the controls exhibited when they were three to seven months of age. Pathological changes were found only in controls. These results indicate that, although the tendency toward hypertension is inherited, its rate of development depends on environmental factors. The hypertension can be arrested by chemotherapeutic interventions and can be aggravated by excessive salt.

The hypertension appears to be a progressive time-dependent process but is independent of biological processes associated with aging per se. Finally, control of blood pressure prevents end-organ damage.

AB-768-72
Complications of Axillary Arteriotomies. An Analysis of 1,762 Consecutive Studies—Molnar W, Paul DJ (Department of Radiology, Ohio State University College of Medicine, Columbus, Ohio)—Radiology 104:269-276 (Aug) 1972*

An analysis of complications in 1,762 consecutive percutaneous axillary arteriotomies is presented. Thirty-seven complications occurred (33 local, two cardiovascular, and two affecting the central nervous system). Seven of nine major complications were related to hematomas which compressed the brachial plexus or part of it. Four of seven patients fully recovered following surgical decompression. Thrombectomy was required in only one case. It is stressed that permanent nerve damage as a complication of axillary arteriotomy can be prevented through early detection and surgical management.

AB-769-72
Alterations in Cerebrospinal Fluid Flow Dynamics in Cerebrovascular Occlusive Disease Demonstrated by Radionuclide Cisternography—Alazraki NP (Divisions of Nuclear Medicine and Neuroradiology, Department of Radiology, University of California School of Medicine, San Diego, California 92103), Halpern SE, Janon EA, Lit-tenberg RL, Hurwitz SR, Ashburn WL—Radiology 104:419-420 (Aug) 1972*

Sixteen patients with cerebrovascular occlusive disease were studied with radionuclide cisternography, brain gamma camera imaging, and radionuclide cerebral angiography. Alterations in cerebrospinal fluid flow dynamics were seen in nine patients. Considerable further investigation is needed to establish a better understanding of cerebrovascular occlusive disease and the role of the alterations of cerebrospinal fluid dynamics in the natural history of the disease.

AB-770-72
Platelet Survival in Patients with a Beall Valve. Relation to Low Incidence of Thromboembolism—Weily HS, Steele PP, Genton E (University of Colorado Medical Center, Denver, Colorado 80220)—Amer J Cardiol 30:229-231 (Aug) 1972*

Recent investigations demonstrating short platelet survival time in patients with prosthetic heart valves have suggested that platelets contribute to thromboembolism in this group. New prostheses have proved less thrombogenic than those previously employed, but platelet survival studies in patients with these valves are lacking. In this study, the Beall mitral prosthesis, known to be infrequently associated with thromboembolism, was used as a model, and platelet survival time and its relation to hemolysis, thrombosis and the surface area of the disc were determined in nine patients. Platelet survival time was normal in six of nine patients, and mean survival time (6.5 ± 0.29 days) did not differ significantly from normal (6.73 ± 0.21 days; P > 0.50). Platelet survival time was inversely related to increasing disc surface area but did not correlate with the presence or degree of hemolysis. The fact that platelet abnormalities were not demonstrable in patients with Beall valves may explain the low incidence of thromboembolism in this group. New prostheses may be useful for determining the thrombogenic potential of valvular prostheses and for evaluating newer prosthetic materials and designs.

AB-771-72
Diagnosis of Extrudural Hematoma by Brain Scan—Jain KK (Department of Neurosurgery, Lions Gate Hospital, Suite 303, North Vancouver, B. C.), Schober B—Canad Med Assoc J 107:218-219 (Aug 5) 1972*

Brain scanning has made possible the recognition of extradural hematoma resulting from head injury in
three patients who had no lateralizing neurological signs. We recommend that, when time permits, scanning be considered as a preliminary step in diagnostic studies after head injury.

AB-772-72

In ventriculo-cisternal perfusion experiments performed in mechanically ventilated cats maintained under nitrous oxide anesthesia, the bicarbonate concentration of the ventricular perfusion fluid was decreased (from 21 to 4 mmol/l) or increased (from 21 to 84 mmol/l) during time intervals ranging from 45 to 120 min. The blood flow was measured in the caudate nucleus with two different methods: in a first series of experiments the temperature difference was continuously measured between a heated thermojunction and a reference junction, both devices being placed symmetrically in the right and left caudate nucleus (heat clearance method), while in a second series of experiments, the local blood flow was estimated from the rate of clearance of 133Xenon injected into microamounts (8-10 μl) into the caudate nucleus. A decrease in the bicarbonate concentration of the ventricular perfusion fluid increased the blood flow in the caudate nucleus, estimated by both methods, while an increase in the bicarbonate concentration produced the opposite effect. The same alterations in the bicarbonate concentration of the ventricular perfusion fluid produced no detectable change in the hemispheric cerebral blood flow, measured by the clearance of 133Xenon injected into the carotid system.

Finally, the bicarbonate concentration was independently altered in one of the lateral ventricles during bilateral ventricular perfusions, and changes in the blood flow distribution were studied in the caudate nuclei with a particle distribution method (85Sr or 141Ce labeled carbonized microspheres injected into the left heart ventricle). A ventricular perfusion, asymmetric with respect to the bicarbonate concentration, induced an uneven distribution of the microspheres and hence of the local blood flow between both caudate nuclei. The results of the present experiments clearly argue in favor of a local influence of tissue pH on the blood flow in paraventricular gray matter.

AB-773-72
Degranulation of Discoid Platelets—White JG (Department of Pediatrics, University of Minnesota Medical Center, Mayo Memorial Building, Box 284, Minneapolis, Minnesota 55455), Estensen RD—Amer J Path 68:289-302 (Aug) 1972*

Platelet degranulation is a characteristic feature of platelet response to aggregating agents, but the mechanism and route by which secretory organelles are transferred to plasma are still uncertain. In the present study, human platelets were incubated with cytochalasin B, an agent which stabilizes discoid shape, and trypsin, which is known to cause release reaction and degranulation. Platelets treated in this manner retained their disc form, but were nearly devoid of granules and dense bodies. Electron-dense tracers indicated that degranulation was accomplished by fusion of secretory organelles with channels of the open canalicul system. The degranulated discoid platelet appears to survive exposure to cytochalasin B and trypsin and may prove to be a useful model for in vivo and in vitro experimental studies.

AB-774-72
Follow-up Observation of Aortitis Syndrome—Morooka S, Ito I, Yamaguchi H, Takeda T, Saito Y (Second Department of Internal Medicine, Faculty of Medicine, University of Tokyo, Tokyo, Japan)—Jap Heart J 13:201-213 (May) 1972*

Follow-up observations have been made on 64 cases of aortitis syndrome for an average period of 6.6 years (three months to 15 years). Thirteen cases died during the observation period. The survival rate at the end of the tenth observation year was estimated to be 62%. Main causes of death were congestive heart failure and cerebrovascular accident. The prognosis depended mainly upon the grade of hypertension. The daily life of patients was more or less limited in 49% but improved slightly in the course. Symptoms and signs of active inflammatory process have been improved by steroid hormones. In some cases, long-term treatment with a small dose of steroid hormone was required for several years.

AB-775-72

The adhesivity and aggregation of thrombocytes was increased, the clotting time of whole blood in siliconized test tubes was shortened and the euglobulin clot lysis time test was prolonged in arteriosclerotic patients who were studied and compared to healthy subjects. These data support the concept of hypercoagulability with the formation of micro-thrombi on the vessel wall ("incrustation") as an important factor in the pathogenesis of arteriosclerosis. Parallel to these changes in the clotting system and in the fibrinolytic system, arteriosclerotic patients had an elevated level of the plasma colamin-cephalin-fraction. In vitro studies suggest that colamin-cephalin induces hypercoagulability mainly by activation of the contact system of coagulation.
ABSTRACTS

AB-776-72
Penetrating Injuries of the Parapharyngeal Space—Shanon E (Department of Otolaryngology, Ichilov Hospital, Tel Aviv, Israel), Cohn D, Streiffer M, Rapoport Y—Arch Otolaryng 96:256-259 (Sept) 1972*

Lacerations of the palate are common in children, who tend to hold pointed objects in their mouth. Uneventful healing occurs in the majority, but on rare occasions grave consequences develop. In two children observed during the past year thrombosis of the internal carotid artery supervened. One child died; the autopsy findings are described. The second child probably developed a localized mural thrombus of the internal carotid artery and survived following extraction of an unusual foreign body.

AB-777-72
AMP Inhibition of Reactions of ADP with Washed Platelets from Humans and Rabbits—Packham MA, Guccione MA, Perry DW, Kinlough-Rathbone RL, Mustard JF (Department of Pathology, McMaster University Medical Centre, Hamilton, Canada)—Amer J Physiol 223:419-424 (Aug) 1972*

The inhibitory effects of AMP, 2-methylthio-5'-AMP, and adenosine on several reactions of ADP with suspensions of washed platelets from humans and rabbits were studied. These suspensions aggregate upon the addition of low concentrations of ADP (1-2 μM). The AMP was treated with adenosine deaminase to remove traces of adenosine; degradation of AMP to adenosine did not occur appreciably in these suspensions. At concentrations as low as 80 μM, AMP strongly inhibited ADP-induced aggregation; the extent of inhibition depended on the concentration of ADP used. Both 2-methylthio-AMP and adenosine were more inhibitory than AMP. In high concentrations, all the substances inhibited the ADP-induced shape change of human platelets, but with human platelets, adenosine was more inhibitory than AMP. At 830 μM, AMP inhibited the conversion of ADP-14C to ATP-14C by rabbit platelets (a reaction catalyzed by nucleoside diphosphokinase on the membrane); 2-methylthio-AMP was less inhibitory than AMP; adenosine was not inhibitory. The other nucleoside monophosphates, IMP, UMP, CMP, and CMP, had little inhibitory effect on any of these reactions with ADP, when tested at the same concentrations as AMP. The ADP-induced increase in 14CO2 production from glucose-6-14C by rabbit platelets was also inhibited by AMP (1-5 mM). Thus, AMP is a specific inhibitor of a number of reactions of ADP with platelets, although the concentrations required are high. Because of its structural similarity to ADP, it seems likely that AMP competes with ADP for receptor sites on the platelet membrane.

*Authors’ abstract.

AB-778-72
Transaxillary Selective Four-Vessel Arteriography—Westcott JL, Taylor PT (Department of Radiology, Hartford Hospital, Hartford, Connecticut)—Radiology 104:277-281 (Aug) 1972*

The axillary artery approach to four-vessel arteriography is described, and the advantage of this method in elderly patients with tortuosity of the aorta and great vessels is emphasized. The method has enabled satisfactory visualization of the extracranial cerebral circulation in more than 90% of the 239 patients studied. Complications, though infrequent, included thrombosis, hematoma, brachial plexus injury, convulsions, and transient neurological changes. Complications at the puncture site can be minimized by application of adequate pressure at the entry point when the catheter is withdrawn.

AB-779-72
Temporary Alteration of Cerebrovascular Permeability to Plasma Protein During Drug-Induced Seizures—Lorenzo AV (Children's Hospital Medical Center, Neurology Research, Boston, Massachusetts 02115), Shirahige I, Liang M, Barlow CF—Amer J Physiol 223:268-277 (Aug) 1972*

The blood-brain barrier normally restricts the entry of plasma proteins into the central nervous system. Regional increases in the penetration of albumin-125I into brain were observed in paralyzed, artificially respired animals convulsed for 5, 15, 30, and 60 min with pentylenetetrazol. In the thalamus, the increase was directly proportional to duration of the seizure and did not appear to be dependent on blood flow or vasodilatation but to an enhanced vascular permeability. A cholinergic mechanism may be implicated as pretreatment with methantheline, a cholinergic antagonist, significantly reduced the permeability change. The alteration in vascular permeability was reversible, as indicated by the rapid decline in thalamic albumin-125I activity minutes after seizure arrest. While metabolic degradation of albumin-125I in brain accounted for an appreciable portion of the decline, the evidence suggested that a significant amount of the albumin-125I returned to blood.

AB-780-72
Surgically Treated Traumatic Subdural Hematomas—Jamieson KG (Ladhope, 131 Wickham Terrace, Brisbane, 4000, Australia), Yelland JDN—J Neurosurg 37:137-149 (Aug) 1972*

The authors analyze 553 cases of surgically treated traumatic subdural hematomas. Simple subdural hematomas, subdural hematomas associated with cerebral lacerations, and subdural fluid collections are identified as three separate types. Age, sex, mechanism and cause of injury, rate of presentation, operative procedures, and outcome are discussed to illustrate differing pathogenesis, clinical course, and treatment.

AB-781-72
Repeated Measurements of Cerebral Blood-Flow During Intracranial Surgery—Wilkins DG, Griffith HB (Department of Neurological Surgery, Frenchay Hospital, Bristol BS16 1LE), Cummins BH, Greenbaum R, Zorab JSM, Staddon GE—Lancet 2:402-403 (Aug 26) 1972*

A method is presented for the repeated measurement of cerebral blood-flow coupled with cerebral angiography during intracranial operations. The technique
involves cannulation of the common carotid artery via the superficial temporal artery and intracarotid injection of a bolus of Xenon-133. The cerebral washout curve is detected by an external scintillation counter. Normally the initial slope index of mean cerebral blood-flow is calculated, but gray and white matter flows also may be obtained. The method is being applied in the direct surgery of cerebral-artery aneurysms, where the results assist in the management of the patient.

AB-782-72

In 25 experiments isolated canine brains perfused with blood from donor dogs were subjected to complete ischemias of 1, 5, 10, 20 and 30 min. The perfusion of the brain was performed from the internal maxillary arteries. The perfusion pressure was recorded in the circle of Willis. Cerebral blood flow and venous O2-saturation were monitored continuously. Arterial P02, FCO2 and pH as well as brain temperature were kept constant. The EEG before complete ischemia was not pathologically altered and the cerebral vasculature showed autoregulatory behavior. The mean O2-availability was 8.1 ± 1.4 ml/100 g • min and the mean O2-consumption was 3.4 ± 0.4 ml/100 g • min.

1. All ischemias were followed by an increase of O2-availability due to reactive hyperemia. The excess O2-availability was correlated to the duration of complete cerebral ischemia.

2. After the five and ten minute ischemias a significant increase of cerebral O2-consumption was found which lasted up to the fourth minute of reperfusion.

3. After the prolonged ischemias there was no longer any correlation between the O2-availability and the O2-consumption of the brain.

AB-783-72
Pathogenesis and Evolution of Periventricular Leukomalacia in Infancy—DeReuck J, Chattha AS, Richardson EP Jr (Neuropathology Laboratory, Massachusetts General Hospital, Boston, Massachusetts 02114)—Arch Neurol 27:229-236 (Sept) 1972

A survey of postmortem material related to cerebral injury at birth disclosed 13 cases of periventricular leukomalacia. Six patients survived for three months or longer; one reached adulthood. Our observations suggest that the lesions are infarcts located in the periventricular arterial end zones, between the ventriculopetal and ventriculofugal branches of deep penetrating arteries. They apparently are due to episodes of impaired circulatory perfusion during the first weeks of life. In children who survive the neonatal period, these infarcts appear as cavitations or as bands of gliosis in the periventricular regions, with extreme thinning of the white matter and secondary enlargement of the lateral ventricles. Whereas the clinical manifestations in the neonatal period are not distinctive, severe mental retardation and extensive neurological deficits appear in children who survive after the first few months of life.

AB-784-72
Ultrafiltration of Lipoproteins through a Synthetic Membrane. Implications for the Filtration Theory of Atherosclerosis—Colton CK, Friedman S, Wilson DE, Lees RS (Clinical Research Center and Departments of Chemical Engineering and Nutrition and Food Science, Massachusetts Institute of Technology, Cambridge, Massachusetts 02142)—J Clin Invest 51:2472-2481 (Sept) 1972*

To investigate the interaction of lipoproteins with semipermeable membranes, solutions of low density lipoproteins (LDL), very low density lipoproteins (VLDL), mixtures of the two, and diluted, normal, and hyperlipemic serum were ultrafiltered through a synthetic membrane (500 A nominal pore diameter) using a stirred laboratory ultrafiltration cell. The pressure dependence of ultrafiltrate flux showed that a concentrated layer of lipoproteins was built up at the membrane surface (concentration polarization) and that VLDL was more subject to polarization than LDL. This phenomenon controlled the observed lipoprotein transport behavior. Whereas true membrane rejection (the fraction of the solute on the membrane surface which does not pass through the membrane) was greater than 0.95 for both LDL and VLDL, observed solute rejection varied from nearly 0 to 1.0, depending upon experimental conditions.

If concentration polarization occurs in the arterial system, these results suggest that lipoprotein transport into arterial wall may be influenced not only by arterial blood pressure and the properties of the arterial wall, but also by local hemodynamic conditions and by the relative as well as absolute magnitudes of LDL and VLDL concentration.

AB-785-72
Effect In Vitro on Platelet Function of Two Compounds Developed from the Pyrimido-Pyrimidines—Slater SD, Turpie AGG, Douglas AS, McNicol GP (University Department of Medicine, Royal Infirmary, Glasgow)—J Clin Path 25:427-432 (May) 1972*

VK 774 and VK 744, two new compounds developed from the pyrimido-pyrimidines, have been found to be powerful inhibitors of platelet function tested in vitro. They inhibit adenosine diphosphate (ADP)-induced platelet aggregation, and the release of platelet factor 3 by kaolin, and VK 774 also reduces platelet adhesive-ness and inhibits platelet aggregation ('snowstorm' effect) in the Chandler tube system. Although measured percentage whole blood clot retraction was uninfluenced by these drugs the clot produced with VK 774 was friable and soft. VK 774 appears to be the most powerful of these compounds reported so far, being active in some test systems at 10^-8M, and, if the results of toxicity testing are satisfactory, it should be an important agent for therapeutic trial.

*Authors' abstract.
AB-786-72
The Cellular Pathology of Experimental Hypertension. VI. Alterations in Retinal Vasculature—Giacomelli F (Department of Pathology, Laboratory of Experimental Pathology, New York Medical College, New York, New York 10029), Juechter KB, Wiener J—Amer J Path 68:81-96 (July) 1972*

The ultrastructure of retinal arterial vessels from rats with severe renal hypertension has been studied. The permeability of retinal vessels has also been examined by means of vascular labeling technics utilizing horseradish peroxidase and microperoxidase as tracer substances. Small retinal arteries and arterioles exhibit foci of smooth muscle necrosis characterized initially by fragmentation of medial smooth muscle cells, and subsequently by loss of myofilaments and release of free vesicles, vacuoles and other cytoplasmic organelles extracellularly. Evidence for increased permeability is observed occasionally in retinal capillaries and less frequently in arteries and arterioles. The enzymatic tracers penetrate the tight junction of the endothelial cells and are found in the basement membranes adjacent to endothelial and smooth muscle cells, as well as in expanded extracellular spaces around the capillaries. The alterations in the ultrastructure and permeability of retinal vessels in experimental hypertension have been compared with that of visceral and cerebral cortical vessels.

AB-787-72
Effect of Peripheral Resistance on Carotid Blood Flow After Carotid-Subclavian Bypass—Cook CH, Stemmer EA (5901 East Seventh Street, Long Beach, California 90801), Connolly JE—Arch Surg 105:9-13 (July) 1972*

Carotid-to-subclavian bypass grafts are frequently employed to treat the subclavian steal syndrome. This laboratory study evaluated the effects on carotid blood flow of varying vascular resistance in the carotid and axillary arteries. In the presence of a functioning carotid-axillary bypass graft, distal carotid blood flow decreased whenever resistance to flow in the distal carotid artery was increased or when resistance in the axillary artery was decreased.

These observations explain the mechanism responsible for the occasional failure of a patient to improve following carotid-subclavian bypass grafting. As shown by these experiments, distal obstruction in the carotid artery can result in stealing of blood from the cerebral circulation by carotid-to-subclavian bypass. These studies indicate that obstructing lesions of the carotid artery must be repaired at the time of carotid-subclavian bypass.

AB-788-72
Extraluminal Carotid Endarterectomy—Bradham GB, Bradham RR (80 Barre Street, Charleston, South Carolina 29401)—Arch Surg 105:123-124 (July) 1972*

Twenty-five patients have undergone carotid endarterectomy by extraluminal dissection of the plaque. An incision is made into the media of the common and internal carotid arteries onto, but not through, the plaque to be excised. The plaque can then be dissected from the carotid bifurcation prior to entrance into the lumen of the carotid artery. The advantages of this procedure are less occlusion time, increased ease of dissection, and facilitation of complete removal of the plaque.

AB-789-72
Polybrene Neutralisation as a Rapid Means of Monitoring Blood Heparin Levels—Grann VR, Homewood K, Golden W (Stamford Hospital, Stamford, Connecticut)—Amer J Clin Path 58:26-32 (July) 1972*

Polybrene neutralization is a rapid and accurate test for determining and following heparin anticoagulation. The method and five studies are described. In addition to its simplicity, this test offers the added advantage of following heparin therapy at high concentrations in the blood and in patients receiving Warfarin anticoagulants. It also permits quantification of dosage of protamine when neutralization with heparin is necessary.

AB-790-72
Steroid Therapy of Brain Edema. Ineffectiveness in Experimental Cerebral Microembolism—Siegel BA (510 South Kingshighway Boulevard, St. Louis, Missouri 63110), Studer RK, Potchen EJ—Arch Neurol 27:209-212 (Sept) 1972*

Ischemic brain injury was produced in rats by the intracarotid injection of microspheres. During a 72-hour period of study, large doses of dexamethasone did not favorably affect survival, severity of brain edema, brain electrolyte shifts, or alterations in cerebral red blood cell, albumin, and pertechnetate spaces. The role of steroid therapy in cerebral infarction requires critical clinical appraisal.

AB-791-72

Revascularization of the external carotid arteries was carried out in three patients in whom the common carotid arteries were occluded. Symptoms of cerebrovascular insufficiency were lessened during follow-up periods ranging from 20 to 42 months. This procedure may be of benefit to patients in whom revascularization of the internal carotid artery is not possible.

AB-792-72
Pressures in the Pial Arterial Microcirculation of the Cat During Changes in Systemic Arterial Blood Pressure—Stromberg DD, Fox JR (Microcirculation Laboratory, Department of Physiology and Biophysics, University of Washington School of Medicine, Seattle, Washington 98195)—Circulation Research 31:229-239 (Aug) 1972*

Dynamic arterial blood pressures were recorded by micropuncture of 99 cortical surface arteries and arterioles in cats anesthetized with pentobarbital or
ABSTRACTS

**AB-793-72**

Idiopathic Orthostatic Hypotension Treated with Levodopa and MAO Inhibitor: A Preliminary Report—Sharpe J, Marquez-Julio A, Ashby P (Division of Neurology, Toronto Western Hospital, Toronto 2B, Ontario, Canada)—*Canad Med Assoc J* 107:296-300 (Aug 19) 1972*

The clinical and pathophysiological features of a case of idiopathic orthostatic hypotension (Shy-Drager syndrome) are presented. Recent reports on the pathological findings in this condition indicate that there may be a defect in catecholamine synthesis in the pigmented brain stem nuclei and sympathetic ganglia similar to that in idiopathic parkinsonism. On this basis a new form of therapy using levodopa combined with MAO inhibition is derived. The results of a trial of this therapy, which produced improvements in both the hypotension and in the extrapyramidal features of the disease, are reported.

**AB-794-72**

Bypass Anomaly of the Vertebral Artery Associated with Cerebral Aneurysm and Arteriovenous Malformation—Mizukami M, Tomita T (Department of Neurosurgery, Keio University School of Medicine, 35 Shinanomachi, Shinjuku-ku, Tokyo, Japan), Mine T, Mihara H—*J Neurosurg* 37:204-209 (Aug) 1972*

In a series of 1,107 patients with cerebrovascular disease studied by four-vessel angiography, the authors have found ten cases of a bypass anomaly of the vertebral artery. Six of the cases also had cerebral aneurysms, and two cerebral arteriovenous malformations. The authors discuss the possible origins for this relationship.

**AB-795-72**

Disturbances of the Serum Electrolytes After Surgery of Intracranial Arterial Aneurysms—Landolt AM (Neurosurgical Clinic, Kantonsspital, Rämistrasse 100, Zürich, Switzerland), Yasargil MG, Krabenbühl H—*J Neurosurg* 37:210-218 (Aug) 1972*

Of 126 patients operated on for aneurysms of the anterior circle of Willis (petriolical microsurgical approach), 44% showed electrolyte disturbances in the postoperative period in spite of excellent clinical results. The majority of cases (26% of the total) presented mild sodium-potassium shifts with no evidence of clinical effects; this type of electrolyte shift was not a complication but a normal consequence of surgery. Patients with preexistent brain damage (7%) showed a tendency for severe sodium-potassium shift and had a bad prognosis. Ten cases showed hyperelectrolytemias (mostly hypernatremias) caused by the following disorders: diabetes insipidus (5), disturbance of thirst center (2), inappropriate antidiuretic hormone (ADH) secretion (1), and 6 patients suffered from various other electrolyte disturbances. The influence of the aneurysm localization is discussed.

**AB-796-72**

Successful Evacuation of Acute Pontine Hematoma. Case Report—Murphy MG (Division of Neurological Surgery, Washington University School of Medicine, St. Louis, Missouri 63110)—*J Neurosurg* 37:224-225 (Aug) 1972*

A patient with acute onset of signs and symptoms pointing to a left pontine lesion is described. Rapid decompensation prompted prompt contrast studies; air injection demonstrated hydrocephalus and a mass arising from the floor of the fourth ventricle. Twenty hours after the onset of symptoms, operative evacuation of a pontine hematoma which had ruptured into the fourth ventricle produced a good result. The patient returned to a limited employment situation.

**AB-797-72**

Experimental Arteriosclerosis in Dogs. Evaluation of Anatomopathological Findings—Robertson AL Jr, Butkus A, Ehrhart LA, Lewis LA (Cleveland Clinic Foundation, Cleveland, Ohio 44106)—*Atherosclerosis* 15:307-325 (May-June) 1972*

Young adult dogs fed a cholesterol-supplemented semi-synthetic diet containing hydrogenated coconut oil without thiouracil for periods of 16 weeks to 16 months were studied in order to identify early vascular lesions as well as overt arteriosclerosis. In 16 weeks, ultrastructural medial cell changes were present in the abdominal aorta of all animals, while the same diet without cholesterol supplement failed to induce lesions.

Arteriosclerotic lesions in the long-term study were characterized by extensive intracellular and extracellular lipid deposits in smooth muscle cells of the arterial media and, to much less extent, of the intimal lining. These changes were usually more severe in small peripheral arteries than in the thoracic aorta or the coronary vessels. Although segmental stenotic lesions

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*Authors' abstract.*
ABSTRACTS

were common in severely involved vessels, thrombosis and infarction were not usual complications of advanced arterial disease.

AB-798-72
Plasma Proteins, Oxygen Transport and Atherosclerosis—Chisolm GM (Department of Chemical Engineering, University of Virginia, Charlottesville, Virginia), Gainer JL, Stoner GE, Gainer JV Jr—Atherosclerosis 15:327-343 (May-June) 1972*

In summary, we have presented evidence to support the hypoxic theory for the formation of atherosclerosis. More importantly, though, we have presented the following etiology for such hypoxia:

(1) Oxygen transport is affected by plasma protein concentrations and in most humans probably decreases with age;

(2) The result of hypoxia at the aortic lining is a degeneration of surface features which results in increased cellular permeability; and

(3) The interior structure of the vessel is further disorganized due to the influx of lipids and other plasmatic matter. This in turn accelerates oxygen demand and augments hypoxia.

These ideas concerning the effects of proteins on oxygen transport, as well as the importance of the diffusion resistance of blood plasma, provide strong indications of a comprehensive mechanism for the occurrence of atherosclerosis and other vascular changes associated with aging.

AB-799-72
The Measurement of Platelet Aggregation in Small Blood Samples—Gordon JL, Gresham GA (Department of Pathology, University of Cambridge, Cambridge, Great Britain—Atherosclerosis 15:383-386 (May-June) 1972*

A simple method is described for measuring platelet aggregation rapidly and objectively in 0.5 ml samples of whole blood. Aggregation is induced by adenosine diphosphate, 5-hydroxytryptamine, connective tissue extract or glass beads. The samples are mixed at 37°, and the unaggregated platelets in the supernatant are counted after adding an equal volume of Eagle's medium to each sample. Concentration-dependent aggregation responses are obtained, and the reproducibility of tests performed several days or weeks apart on the same subject is satisfactory. This technique is being used for long-term studies on man and laboratory animals.

AB-800-72

The effects of and the interaction between local perivascular variation in potassium and bicarbonate concentration on the diameter of pial arteries were studied in cats by the microapplication technique. At 11 mEq/liter of bicarbonate, a direct correlation existed between vascular diameter and K+ concentrations between 0 and 10 mEq/liter. At K+ concentrations between 10 and 20 mEq/liter, no further increase in vascular diameter was observed. At a K+ concentration of 5 mEq/liter, an inverse relationship existed between pial arterial diameter and perivascular bicarbonate concentrations between 0 and 22 mEq/liter. At K+ concentrations of 0 and 10 mEq/liter, the pial arterial diameter was determined strongly by the K+ concentration and was only slightly, if at all, influenced by bicarbonate concentrations between 5 and 22 mEq/liter. At lower bicarbonate concentrations the local acidity induced a marked vasodilation. The results indicate that the diameter of pial arterioles in cats is affected by periarteriolar concentrations of K+ and H+; the degree of the vasoreaction induced by H+ is modulated by K+.

AB-801-72

The influence of norepinephrine on the diameter of single pial arteries and arterioles was investigated by adding the drug to the perivascular space with micropipettes. The mock spinal fluid solution in which the norepinephrine was dissolved contained 0, 11, or 22 mEq/liter of bicarbonate. These concentrations of bicarbonate were by themselves found to dilate, cause no change, and constrict the pial vessels, respectively. Concentration-response curves with 11 mEq/liter of bicarbonate over the concentration range of 5 x 10^{-4} to 5 mmoles/liter of norepinephrine showed significant constriction at 5 x 10^{-2} mmoles/liter and maximal constriction (40% of diameter) at 2.5 mmoles/liter. In bicarbonate-free solution, the slope of the concentration-response curves was less, and at 22 mEq/liter of bicarbonate norepinephrine had no effect. The pial arteries seemed to be less sensitive than the mesenteric and the cremasteric arteries to norepinephrine. The present data demonstrate the existence of norepinephrine receptors on the pial arterial smooth muscle cells, which satisfies the major requirement for the possible existence of a sympathetic control of cerebral blood flow.

AB-802-72
Unresponsiveness of Pial Precapillary Vessels to Catecholamines and Sympathetic Nerve Stimulation—Raper AJ, Kontos HA, Wei EP, Patterson JL Jr (Department of Medicine, Medical College of Virginia, Health Sciences Division, Virginia Commonwealth University, Richmond, Virginia 23219)—Circulation Research 31:257-266 (Aug) 1972*

A systematic analysis of the possible existence of neurogenic control of precapillary pial vessels was made in three species (cat, dog, and rabbit). In all of these animals, pial vessels failed to respond to externally applied isoproterenol or norepinephrine in high concentrations (up to 100 μg/ml), although the vessels did dilate in response to externally applied histamine.
Adrenergic nerve endings on the pial vessels were demonstrated by fluorescent histochemical techniques specific for catecholamines. However, in the absence of changes in arterial blood pressure and arterial blood carbon dioxide tension, pial precapillary vessels showed no change in caliper in response to stimulation of the ipsilateral superior cervical ganglion. These results show that pial precapillary vessels are not subject to vasoconstriction probably because they lack sufficient receptors for the catecholamine neurotransmitter.

AB-804-72
Neurogenic Hypercholesterolemia. II: Relationship to Endocrine Function—Friedman M, Byers SO, Elek S (University of Southern California School of Medicine, Los Angeles, California 90024)—Amer J Physiol 223: 473-479 (Aug 1972)*

Selective bilateral injury of the ventromedial nuclei, fornices, and the medial portion of the lateral hypothalamic areas in the rat produces a chronic hypercholesterolemia. This chronic neurogenic hypercholesterolemia was found to be independent of any change in the functions of the thyroid, adrenal, testes, or pituitary and also not due to derangement in pancreatic discharge of insulin. Thus this type of hypercholesterolemia appears in the presence or absence of the thyroid, adrenal, or pituitary glands, the testicles, and pancreatic beta cells. It also occurs as readily in female as in male rats after hypothalamic injury. The hypercholesterolemia also appears or continues regardless of the administration of excess TSH, l-thyroxine, thyroid extract, ACTH, prolactin, (bovine) growth hormone, testosterone, or a combination of growth hormone, thyroid extract, ACTH hormone, and testosterone. The hypothalamic lesion does alter the number and staining characteristics of the acidophilic and beta cells of the pituitary and also frequently but not invariably causes slight atrophy of the follicular epithelium of the thyroid gland.

AB-806-72
Modification of Cerebral Vasoconstriction with Hyperventilation in Normal Man by Thymoxamine—Corbett JL (Department of Neurology, Churchill Hospital, Oxford OX3 7LJ), Debarge O, Frankel H—Lancet 2:461-463 (Sept 2) 1972*

Cortical perfusion-rates were measured with a Xenon-133 inhalation technique in 17 patients with physiologically complete spinal-cord transection. Twelve patients were tetraplegic, with lesions in the cervical spinal cord above the sympathetic nervous outflow, and five were control, with lesions complete below T3-4. When the patients developed hypocapnea by voluntary overbreathing, the cortical perfusion-rate of the controls fell normally but that of the patients with cervical-cord lesions remained unchanged. In these subjects arterial hypertension induced by reflex activity in the isolated spinal cord was accompanied by a slight fall in cortical perfusion-rate, and hypercapnea produced a substantial rise, indicating that the cerebral blood vessels were capable of constriction and dilatation. These observations are compatible with the view that the cerebral vasocostriction which normally accompanies hyperventilation is dependent on supraspinal control through a pathway in the cervical spinal cord and the sympathetic outflow above T2.
intracranial vessels, and it is now suggested that the vascular receptors are largely alpha-adrenergic.

AB-807-72

The relationship of relative weight and of skinfold thickness to the five-year incidence (632 cases) of coronary heart disease was examined in men aged 40 through 59 years at entry to the study: 2,442 U. S. railroad men; 2,439 men in northern Europe; and 6,519 men in southern Europe. Disregarding other variables, an excessive incidence of coronary heart disease was associated with overweight and obesity in the U.S. and southern Europe but not in northern Europe. There were 163 cases of death or definite infarction; this incidence was not significantly related to any of the measures of relative weight or obesity in any sample. Multivariate analysis of the data showed that no measure of relative weight or obesity made a significant contribution to future coronary heart disease, when the factors of age, blood pressure, serum cholesterol, and smoking were comparable. Essentially identical results were found with different multivariate methods.

AB-808-72
Effect of Aspirin on Postoperative Venous Thrombosis—Report of the Steering Committee of a Trial Sponsored by the Medical Research Council (Professor W. J. H. Butterfield, University of Nottingham, Nottingham NG7 2RD)—Lancet 2:441-444 (Sept 2) 1972*

In a double-blind randomized trial of the effect of aspirin in postoperative deep venous thrombosis, 303 patients, aged over 27, who were admitted to four hospitals for elective surgery received either 600 mg aspirin or a placebo during the 24 hours preceding operation and on the first five postoperative mornings. Deep venous thrombosis (D.V.T.) was diagnosed by the 125 I-fibrinogen uptake test, which showed no significant difference between the treated and placebo groups. D.V.T. was commoner in older patients and after the longer operations.

AB-809-72
The Effect of Intracarotid Epinephrine, Norepinephrine, and Angiotensin on the Regional Cerebral Blood Flow in Man—Olesen J (Department of Neurology, The New York Hospital, Box 443, New York, New York 10021)—Neurology 22:978-987 (Sept) 1972

Cerebral blood flow was measured in 35 small regions of a hemisphere by the 133 Xe intra-arterial injection method in nonanesthetized man. There was no change in cerebral blood flow following separate intracarotid injection of epinephrine, norepinephrine, and angiotensin. An increase in cerebral vascular resistance was concluded to be secondary to blood pressure changes rather than a direct effect on cerebral vessels. The drugs may be used to test cerebral autoregulation, a procedure of clinical value. Previous literature suggests the arteries at the surface of the brain are under autonomic control, whereas the intracerebral arterioles are responsible for the metabolic control of the cerebral circulation. Norepinephrine, even under adverse conditions such as high PaCO₂, has no effect on cerebral circulation.

AB-810-72

Nineteen patients with spinal cord arteriovenous fistulas were symptomatic and were treated by ligation of the feeding vessels. Twelve of the patients had preoperative thoracic arteriogram to determine origin and size of the feeding vessels. Follow-up evaluation up to 31 years revealed significant improvement in seven patients in which one or two large radicular vessels were ligated. Partial ligation of large feeding vessels or complete ligation of multiple small feeding vessels failed to produce improvement in the remaining 12 patients. Proper management of arteriovenous aneurysms of the spinal cord depends on accurate preoperative arteriographical identification of the origin and size of feeding vessels. Transthoracic or extradural ligation is the recommended treatment when one or more large radicular vessels are present.

AB-811-72
Neuropathology of Systemic Circulatory Arrest in Adult Monkeys—Miller JR, Myers RE (Laboratory of Perinatal Physiology, National Institutes of Health, Bethesda, Maryland 20014)—Neurology 22:888-904 (Sept) 1972

Circulatory arrest in Rhesus monkeys results in several patterns of brain injury. When arrest occurred for greater than 12 to 14 minutes, damage was centered in the brain stem, the spinal cord, and the Purkinje cell layer of the cerebellum, with the globus pallidus and substantia nigra affected in a few instances. Significant arterial hypotension occurs in the postarrest period in a proportion of the animals undergoing circulatory arrest. In this group in which the arrest was prolonged greater than 12 to 14 minutes, brain stem injury was prominent. In human beings sustaining short (four to five minutes) episodes of circulatory arrest, previously unrecognized and untreated postarrest hypotension appears to account for the hemispheric brain injury seen in this group. The postarrest hypotension appears to be a more significant factor producing brain damage than the primary circulatory arrest.

AB-812-72

Two cases of subdural hematomas in children with hydrocephalus are reported. Brain scan with 99mTc
revealed an abnormal uptake in the shape of a “doughnut.” Previous reports of the “doughnut” sign have been explained as indicative of central necrosis, hemorrhage, or cyst formation in some intracerebral lesions. Concentration of the isotope in the thickened, peripheral membrane may explain the presence of the “doughnut” sign in patients with chronic subdural hematoma.

AB-813-72


Heme oxygenase is an enzyme responsible for the conversion of hemoglobin-heme to bilirubin. In the present study this enzyme was identified in the arachnoid, choroid plexus, and cerebral cortex of rats. In these animals a subarachnoid hemorrhage was simulated by injecting heme or blood into the subarachnoid space. Heme oxidase activity increased four times in the arachnoid membrane and choroid plexus when compared to saline-injected control animals.

AB-814-72

Radioisotopic Study of Arteriovenous Anomalies—Handa J, Handa H, Torizuka K, Hamamoto K, Kousaka T (Department of Neurosurgery and Radiology and the Central Clinical Radioisotope Division, Kyoto University Medical School and Hospital, Kyoto, Japan)—Amer J Roentgen 115:751-759 (Aug) 1972

Seventeen cases of cerebral arteriovenous malformations and racemose angiomas of the scalp were detected by TcO4- sequential scintigraphy of the brain. The earliest phase of the studies was best for delineating the focus, the detection rate decreasing with the passage of time after administration of the TcO4-. Circulatory dynamics may be analyzed by utilizing the data-store/ playback permitting determination of local cerebral blood flow and transit time. The size of the AVM may be estimated by I131 macroaggregated albumin brain scintigraphy.

AB-815-72


In an attempt to develop a radiopharmaceutical which may selectively localize blood clots, urokinase was labeled with both radiodiode and technetium. On intravenous injection this thrombolytic agent concentrated in the liver and kidneys and was rapidly excreted in the urine. In dogs preliminary tests indicated that the labeled enzyme does localize in blood clots. This localization may enhance scanning methods, a concept which at present is being evaluated.

AB-816-72

Progressive Neurological Deficits in Primary Polycythemia—Kremer M, Lambent CD, Lawton N (Department of Neurological Studies, Middlesex Hospital Medical School, London, W.1)—Brit Med J 3:216-218 (July 22) 1972

Three cases of primary polycythemia are presented in which headache with progressive focal neurological deficits resulted in the erroneous diagnosis of cerebral neoplasm. In the first and second patients there were progressive sensory and motor symptoms in the left extremities; findings compatible with parietal lobe dysfunction were noted in the first patient only. The third patient developed dyslexia, aphasia and progressive weakness of the right extremities. Headache and splenomegaly were common features to all three patients. The diagnosis of primary polycythemia was based on the presence of splenomegaly, a raised white blood count and absence of a cause for secondary polycythemia. Other previously discovered manifestations of polycythemia are discussed.

AB-817-72

Human Brain—Morphologic Differences in the Hemispheres Demonstrable by Carotid Arteriography—LeMay M (Department of Radiology, Massachusetts General Hospital, Boston, Massachusetts 02114), Culebras A—New Eng J Med 287:168-170 (July 27) 1972

The parietal operculum was more highly developed on the left than on the right in 38 of 44 persons studied by carotid arteriograms and on coronal sections of the brains through the posterior ends of the sylvian fissures. However, in left-handed persons right parietal opercularization is as great on the left as demonstrated by arteriograms in 15 of 18 left-handed patients. Definite morphological differences between the two hemispheres in a region of major importance for language are revealed by the present study. Further hemispheric differences may be discovered utilizing arteriography.

AB-818-72

Use of Persantine in Preventing Thromboembolism Following Valve Replacement—Arrants JE (Medical University of South Carolina, Division of Thoracic Surgery, Charleston, South Carolina 29401), Hairston P—Amer Surg 38:432-435 (Aug) 1972

Two groups of postcardiac valve replacement patients were studied to determine the value of Persantine as an agent to prevent thromboembolism. Twenty patients in the control group received only coumadin; eight patients had embolic episodes and there were four deaths attributed to thromboembolism. In the Persantine group, there were 39 patients, one embolic episode and one death attributed to thromboembolism. It would appear that Persantine has been beneficial in preventing arterial emboli in those patients having valvular prostheses.

Stroke, Vol. 4, January-February 1973
ABSTRACTS

AB-819-72
Predisposition to Atherosclerosis in the Head, Heart, and Legs. The Framingham Study—Gordon T (9000 Rockville Pike, Bethesda, Maryland 20014), Kannel WB—JAMA 221:661-666 (Aug 14) 1972

Three major atherosclerotic events, atherothrombotic brain infarction (ABI), coronary heart disease (CHD), and intermittent claudication (IC) are related to blood pressure, serum cholesterol level, cigarette smoking, ECG-LVH and glucose intolerance. These relationships appear to be as strong for women as men. A closer relationship is noted with ABI and IC than with CHD. Hypertension is the dominant factor predisposing to ABI, while none of the key factors is dominant for CHD. All five factors play an important role in IC. Basically, all three atherosclerotic diseases appear to share a common set of precursors which are the same in either sex.

AB-820-72

A patient with chronic subdural hematoma is presented. On angiographic study there was compression of the right cerebral blood vessels while rectilinear scan revealed a "rim" of increased activity surrounding the lesion. Accumulation of the radioactive agent within an unusually thick fibrous membrane surrounding the hematoma seems to be responsible for the "rim" sign.

AB-821-72
Posttraumatic Intracavernous Aneurysm. Epistaxis With Monocular Blindness Preceded by Chromatopsia—Keane JR (Department of Neurology, Los Angeles County-Univeristy of Southern California Medical Center, Los Angeles, California 90033), Talalla A—Arch Ophthal 87:701-705 (June) 1972

Blunt head trauma in a 19-year-old man led to headaches, epistaxis, unilateral blindness, and numbness below the eye within two and one-half months of the trauma. An aneurysm arising from the carotid artery with extension into the sphenoid sinus was demonstrated on angiographic study. Although posttraumatic intracavernous carotid aneurysm is rare, the above clinical presentation is typical of this disorder. The present mortality of 45% may be reduced if this clinical picture is recognized early so that effective surgical correction may be accomplished.

AB-822-72
Urokinase Therapy: Dosage Schedules and Coagulant Side Effects—Prentice CRM (Department of Medicine, Royal Infirmary, Glasgow, C.4, Scotland), Turpie AGG, McNicol GP, Douglas AS—Brit J Haemat 22:543-559 (May) 1972

Urokinase, a nontoxic, active fibrinolytic agent, has been studied in ten patients and three volunteers. Small initial doses gave rise to a paradoxical coagulant effect in the recipient which was associated with the formation of cryofibrinogen and an increase in factor VIII activity. Plasminogen activation was probably responsible for the coagulant effect. Minor intrinsic thromboplastic activity, similar to that described in other preparations of urokinase, were present in the tested preparation. Increasing the initial dose of urokinase overcame the initial coagulant effect producing the hemostatic defect normally associated with fibrinolytic therapy.

AB-823-72

A double-blind, randomized, seven-week study was carried out to compare the effects of administration or withdrawal of meprobamate or placebo on prothrombin time in 21 hospital outpatients who were receiving long-term anticoagulant (warfarin sodium) therapy. Meprobamate reduced the prothrombin time when compared to placebo. The difference reached borderline statistical significance at two weeks and significance (P = 0.03) at four weeks. The difference was not clinically significant. The meprobamate group failed to develop any greater change after discontinuation of medication than the placebo group.

AB-824-72

In a double blind randomized study one of three drug programs was administered to 34 men with ischemic heart disease. The programs consisted of 10 mg stanozolol per day, 10 mg stanozolol plus 100 mg phenformin, or a placebo for 12 months. At monthly intervals fibrinolytic and coagulation studies were carried out. The treated groups showed significant enhancement of plasma fibrinolytic activity. A significant difference in enhancement of fibrinolytic activity was not noted in comparing the two active treatment regimens. Ten milligrams of stanozolol daily is as effective as 10 mg stanozolol plus phenformin in increasing plasma fibrinolytic activity in men with ischemic heart disease.

AB-825-72
Hypotension and Its Effect on EEG Activity in the Dog—Wiederholt WC (Division of Neurology, Ohio State University Hospitals, Columbus, Ohio 43210), Locke G, Yashon D—Neurology 22:717-725 (July) 1972

Severe hypotension was rapidly induced in dogs by intravenous injection of trimethaphan or by arterial bleeding to mean systemic arterial pressure of 30 to 40 mm Hg. EEG was monitored with epidural electrodes. Unilateral carotid ligation was carried out in one group of dogs. EEG activity disappeared in a short time in dogs undergoing trimethaphan hypotension, while EEG activity rarely disappeared for a few seconds or was
ABSTRACTS

AB-827-72
Correlation of Regional Cerebral Blood Flow With Regional Oxygen Uptake Using 15O Method—Carter CC (University of Oregon Medical School, Portland, Oregon 97201), Eichling JO, Davis DO, Ter-Pogossian MM—Neurology 22:755-762 (July) 1972

Regional cerebral blood flow (rCBF) and regional cerebral oxygen utilization rate (rCMRO₂) were examined by use of radioactive oxygen (¹⁵O) in three areas of the brain in 33 patients undergoing carotid arteriography. The average rCMRO₂ compared favorably with the average rCBF in the normal subject utilizing the ¹⁵O method. The abnormal group had a decrease in rCBF of 22% to 29% without associated decrease in rCMRO₂. Regional brain disease may have a greater effect on rCBF than on regional utilization of oxygen, and therefore rCBF may be the more sensitive index of local disease.

AB-827-72

Radioisotope angiography using intravenous ⁹⁹mTc-albumin was successful in delineating arteriovenous malformations of the spinal cord in three patients. This technique is advantageous to myelography since lumbar or cisternal puncture is avoided and thus the possibility of injuring one of the malformed vessels is eliminated. This technique also may be used to evaluate patients in whom large amounts of unremovable myelographic contrast material remain entrapped. The authors feel this technique may be used as an alternative to myelography and as an adjunct to radiographically selective angiography of the spinal cord.

AB-828-72
Primary Intraventricular Hemorrhage. A Mild and Remedial Form—Butler AB, Partain RA, Netsky MG (Department of Pathology, University of Virginia School of Medicine, Charlottesville, Virginia 22903)—Neurology 22:675-687 (July) 1972

The entity of primary intraventricular hemorrhage is described in three cases. Etiologically vascular malformations in and near the ventricle are responsible for the hemorrhages. This partially autonomous blood supply justifies separating primary intraventricular hemorrhage from the better-known hemorrhages beginning in the parenchyma and rupturing secondarily into the ventricle. Primary intraventricular hemorrhages also may be distinguished by the more benign prognosis. Adolescents and young adults are affected primarily, distinguishing this entity from the more severe variety occurring in patients 40 to 60 years old. Premonitory symptoms include headache, vomiting and seizures. Patients may not lose consciousness, although blood may be found in the CSF. The vascular malformations may be resected in the younger patients, resulting in survival with good recovery.

AB-829-72
Value of Continuous Measurement of Acid-Base Balance in Cerebrospinal Fluid After a Cerebrovascular Accident—Schnabeath G (University Department of Neurology, Vienna, Austria) —German Med 2:6-7 (Spring) 1972

Measurement of various metabolic parameters during the acute phase of illness following cerebrovascular accidents in 14 patients have led to the following conclusions. Changes in lactate-pyruvate levels and acid-base balance in cerebrospinal fluid (CSF) are nonspecific and may occur with a variety of intracranial disorders. Acid-base balance in the CSF parallels the severity of the clinical picture (i.e., loss of consciousness, etc.). An unfavorable prognosis is associated with the following changes in CSF: pH shift toward the acid range, HCO₃⁻ decrease from normal, fall in P⁰₂ and a rise in lactate. An increase in hydrogen ion produces a central respiratory drive. Hypocapnia, which develops secondarily, adversely affects the cerebral blood flow and produces a vicious cycle.

AB-830-72
Experimental Studies of Hyperaemic Phenomena in the Cerebral Circulation of Primates—Symon L (Department of Neurosurgical Studies, The Institute of Neurology and The National Hospital, Queen Square, London, W.C.1, England), Ganz JC, Dorsch NWC—Brain 95:265-278, 1972

The study of regional cerebral circulation and gaseous metabolism in the middle cerebral arterial field of baboons is reported. Hypercapnia abolishes or reduces reactive hyperemia which follows transient middle cerebral occlusion. Reactivity of the cerebral circulation to CO₂ is reduced during the phase of hyperemia following a period of reduction in systemic blood pressure. These findings suggest the same mechanism is responsible for the reactivity of the cerebral circulation to reduced perfusion pressure and to raised CO₂ tension.

AB-831-72

Regional and total cerebral blood flow may be measured using a gamma camera in connection with a 1,600-word memory and digital magnetic tape recorder. A computer is utilized to calculate the blood flow values and the results are printed out in the form of blood flow patterns.
ABSTRACTS

Maps. Various parameters such as efficiency, energy resolution, and spatial resolution were determined and compared with the same parameters in a multidetector system for blood flow studies. The gamma camera is superior to the multiprobe technique.

AB-832-72
Changes in the Radiisotope Cisternogram in Cerebrovascular-Occlusive Disease—Halpern SE (Division of Nuclear Medicine, University Hospital, San Diego, California 92103), Alazraki N, Hurwitz S, Ashburn WL—J Nucl Med 13:493-497 (July) 1972

Intrathecal injection of $^{131}$I-albumin enabled study of flow of CSF in 11 patients with recent cerebrovascular accidents. Diminished flow of the tracer material was noted in seven patients, while four had normal cisternograms. The authors postulate that even a temporary alteration in CSF flow in the region of cerebral ischemia may affect the clinical outcome in the patient with an acute stroke.

AB-833-72
The Bleeding Time as a Screening Test for Evaluation of Platelet Function—Harker LA, Slichter SJ (Department of Medicine, University of Washington School of Medicine, and the King County Central Blood Bank, Seattle, Washington)—New Eng J Med 287:155-159 (July 27) 1972 (no reprints available)

One hundred normal subjects and 136 patients were studied to assess the value of the standardized template bleeding time. The bleeding time is 4.5 ± 1.5 minutes (±1 S.D.) with normal platelets when the circulating platelet count exceeds 100,000 per microliter. When the platelet count is between 10,000 and 100,000 per microliter, the bleeding time is 30.5 -- (platelet count per microliter)

3,850

minutes. Acetylsalicylic acid ingestion, uremia, and von Willebrand's disease result in impaired platelet function which is indicated by a prolonged bleeding time. In contrast, in idiopathic thrombocytopenic purpura or with bone marrow recovery after chemotherapy, bleeding times shorter than predicted with normal platelets are found. This finding is due to increased hemostatic competence of young platelets. The overall hemostatic role of platelets in vivo is measured by the standardized bleeding time and therefore this test is suitable for systematic screening.

AB-834-72
The Influence of Segmental Hypotension on Experimental Atheroasclerosis—Kakos GS (Department of Surgery, The Ohio State University Hospitals, Columbus, Ohio 43210), Hagen P-O, Oldham HN Jr, Davis RM, Dixon SH, Sabiston DC Jr—Surgery 72:479-482 (Sept) 1972

Mechanical stenosis of the infrarenal aorta in 12 rabbits provided a model for study of the effects of localized hypotension. Six weeks after surgery these animals plus a control group were made hypercholesterolemic. Pressure gradients of 8 to 38 mm Hg were measured across the constrictor in group 1. When the animals were sacrificed and segments of the aorta were evaluated, the animals with the constriction had less atherosclerosis in the hypotensive lowered segments. Such alterations were not observed in group 2 (controls). Localized arterial hypotension retards lipid accumulation associated with experimental atherosclerosis.

AB-835-72
An Evaluation of the Use of Cerebral Blood Volume Measurements as an Index of Change in Cerebral Blood Flow—O'Brien MD, Haggith JW (Regional Neurological Centre and Regional Medical Physics Department, Newcastle General Hospital, Newcastle upon Tyne NE4 6BE, Great Britain)—J Neurol Sci 16:229-237 (June) 1972

This study attempts to determine the relationship of cerebral blood volume to cerebral blood flow. $^{113}$In-Dioxime-labeled plasma was used as a gamma-emitting nondiffusible tracer. The changes in cerebral blood volume are small and are subject to contamination. Following CO$_2$ inhalations there was a time lag before changes in cerebral blood volume could be detected. It seems unlikely that determination of cerebral blood volume by radioisotope scanning is capable of detecting small rapid changes in cerebral blood flow. Within limitations, changes in cerebral blood volume can be used as an index of change in cerebral blood flow.

AB-836-72
Hereditary Cerebral Haemorrhage With Amyloidosis—Gudmundsson G, Hallgrimsson J, Jonasson TA, Bjarnason O (Departments of Neurology and Pathology, University of Iceland and St. Joseph's Hospital, Reykjavik, Iceland)—Brain 95:387-404, 1972

A high incidence of cerebral hemorrhage was noted in 18 members of a family consisting of 116 individuals. Cerebral hemorrhage as a cause of death was noted in 19 individuals or 54.3% of all causes of death. In the first and second generations the mean age at death from cerebral hemorrhage (CH) was about 44 years, in the third generation 29.6 years, and in the fourth generation 22.5 years. In five cases postmortem examination confirmed the diagnosis of CH and microscopic examination revealed thickening of the artery walls and deposition of a substance showing the characteristics of amyloid. Amyloid deposition in the vessels may be responsible for cerebral hemorrhage. The above cases could be a form of hereditary amyloidosis involving the cerebral arteries.

AB-837-72
A Stroke Register in Göteborg, Sweden—Harmann P, Tibblin G (Unit of Preventive Cardiology, Medical Department I, and the Department of Neurology, Sahlgren's Hospital, University of Göteborg, Göteborg, Sweden)—Acta Med Scand 191:463-470 (May) 1972

A stroke register was established in Göteborg, Sweden, in January 1970, covering all cases of acute cerebrovascular incidents occurring in inhabitants of the city born in 1904 and later. The results revealed 102 cases of stroke and a male/female ratio of 2:1. Coexistent cardiovascular disease was found to be high in this group when compared with prevalence data from
groups of similar age from the same community. The stroke register seems a prerequisite as a basic measurement tool to further describe the natural history of stroke in a community and to assess preventive, therapeutic and rehabilitative measures.

**AB-837-72**
The Prognostic Value of Cerebral Blood Flow Measurement in Patients With the Apallic Syndrome—Heiss W-D, Gerstenbrand F, Proesen P, Krenn J (Department of Clinical Neurology and Intensive Care Unit of the Department of Anesthesiology, University Hospital, Vienna, Austria)—*J Neurol Sci* 16:373-382 (Aug) 1972

In 33 patients suffering from an apallic syndrome following severe brain injury, both total and regional cerebral blood flow (CBF) were measured. Significant differences in CBF could be demonstrated between four groups of patients classified according to the severity of the clinical picture, and a significant correlation was noted between CBF and prognosis. Regional blood flow studies revealed a difference between patients with the apallic syndrome and others suffering from head trauma but without development of the apallic syndrome. In patients with the apallic syndrome there was a diffuse reduction of CBF over the entire brain, while those 15 patients without the syndrome had reduction of CBF secondary to circumscribed lesions. Estimating the prognosis in patients suffering from the apallic syndrome may be enhanced by measurement of the CBF.

**AB-839-72**
Pulmonary Edema Secondary to Subarachnoid Hemorrhage—Ciongoli AK (Department of Neurology, Medical Center Hospital of Vermont, DeGoesbrind Unit, Burlington, Vermont 05401), Poser CM—*Neurology* 22:867-870 (Aug) 1972

Three cases of acute pulmonary edema secondary to subarachnoid hemorrhage are presented. The main theories of etiology of the pulmonary edema include cardiovascular dysfunction, primary and secondary, and a cerebral edemogenic center. In the three cases presented the central venous pressure was low in two patients, supporting the concept of extracardiac origin of pulmonary edema presumably mediated by the irritative effect of blood in the ventricular system.

**AB-840-72**
The Diagnosis of Internal Carotid Artery Occlusion by Directional Doppler Sonography of the Ophthalmic Artery—Müller HR (Laboratory for EEG and Diagnostic Ultrasound, Neurosurgical Clinic, Bürgerspital, University of Basel, Basel, Switzerland)—*Neurology* 22:816-823 (Aug) 1972

The medial frontal branch of the ophthalmic artery is readily accessible to directional Doppler sonography, which is apparently a relevant means for detecting internal carotid artery thromboses and high-grade internal carotid stenoses. In the present study 14 of 15 cases of internal carotid thrombosis showed a flow reversal in the medial frontal artery. This method can furnish new and important information on carotid and orbital circulation under physiological, pathological and experimental conditions.

**AB-841-72**
Ultrasound Visualization of the Arterial Lumen—Mozerksy DJ, Hokanson DE, Sumner DS, Strandness DE Jr (Department of Surgery, University of Washington School of Medicine, Seattle, Washington 98195)—*Surgery* 72:253-259 (Aug) 1972

Using a pulsed ultrasonic velocity detector, a position-sensing arm and transducer holder, and a storage oscilloscope, one can visualize arterial anatomy and estimate arterial blood flow by a completely noninvasive technique. The authors demonstrate the value of the above technique in four patients with various arterial occlusive lesions. The method is useful for postoperative examination to estimate blood flow and possible anatomical occlusions. At the present time quantitative flow determinations are not available.

**AB-842-72**
The Effects of Antimigraine Drugs on the Vascular Responses by 5-Hydroxytryptamine and Related Biogenic Substances on the External Carotid Bed of Dogs: Possible Pharmacological Implications to Their Antimigraine Action—Saxena PR (Associate Professor in Pharmacology, Faculty of Medicine, Rotterdam, The Netherlands)—*Headache* 12:44-54 (July) 1972

Pharmacological evaluation of the effects of antimigraine compounds on the vascular responses evoked by 5-HT was undertaken in the present study. In dogs intravenous ergotamine and methysergide caused a decrease in external carotid artery blood flow. Selective vasoconstriction in the external carotid bed was suggested by a lack of change in arterial pressure. 5-HT produced vasoconstriction in the external carotid bed which was attenuated by ergotamine and methysergide but not cyproheptadine. This attenuation of 5-HT indicated that external carotid 5-HT receptors are different from the usual "D" receptors in other smooth muscle. From the present study it appears doubtful that antimigraine drugs owe their therapeutic value to their antiserotonin action. More likely, selective vasoconstriction in the external carotid artery is the mechanism of action.

**AB-843-72**
Biochemical Evaluation of Standard Treatment With Streptokinase in Acute Myocardial Infarction—Gormsen J (Medical Department and the Coagulation Laboratory of Medical Department, Sundby Hospital, Copenhagen, Denmark)—*Acta Med Scand* 191:77-85 (Jan-Feb) 1972

The study attempts to determine the biochemical effect of standard dosage of streptokinase (SK) in acute myocardial infarction. Parameters for this evaluation included euglobulin lysis time, plasma thrombin time, fibrinogen, plasminogen and fibrinogen-fibrin breakdown products. In 85% of the patients a significant fibrinolytic effect was obtained for 20 to 24 hours. Plasminogen depletion occurred in 15% lasting one to two days. When SK-treated patients and untreated
controls were compared, the mortality and bleeding complications were the same. At autopsy, however, fewer thromboembolic lesions were noted in the SK-treated group. Standard SK treatment without serious complications can be carried out in 80% to 90% of the patients according to the present study.

**AB-844-72**

The Effect of Alpha- and Beta-Receptor Blocking Agents on Collagen-Induced Platelet Release Reaction (A Comparison with ADP-Induced Release)—Kubisz P, Suranova J (Hemostasis Laboratory, Departmental Hospital, Càdca, Czechoslovakia)—Thrombosis 27:278-291, 1972

Collagen and ADP differ in their mechanism of platelet release reaction. Concentrations of alpha or beta receptor blocking agents do not influence platelet factor IV release, availability of platelet factor III or acid phosphatase. However, both blocking agents interfere with the ADP-induced release. The possible role of thromboxin in the participation of the release reaction is discussed.

**AB-845-72**

Occlusion Bilatérales de la Carotide Interne Associée à une Circulation de Suppléance Cortico-corticale, Transdurale, et du Type “Moya-Moya” chez l’Enfant Noir—Dumas M, Girard PL, Collomb H (Clinique Neuro-Psychiatrique, Faculté Mixte de Médecine et de Pharmacie, et Centre Hospitalier Universitaire, Université de Dakar, Dakar, Sénégal)—J Neurol Sci 16:1-25 (May) 1972

Five cases of bilateral occlusion or stenosis of the internal carotid arteries are presented. The patients were black Senegalese children 8 to 16 years old. This syndrome has been reported in the Japanese literature and termed “Moya-Moya.” The syndrome is not confined to the Japanese population. It is a disorder of cerebral circulation which may result from congenital anomalies of cerebral vessels, neonatal anoxia, arteritis, infections and various cardiac abnormalities.

**AB-846-72**

Ischemic Anoxia and Cerebral Serotonin Levels—Welch KMA, Meyer JS (Department of Neurology, Baylor College of Medicine, Houston, Texas 77025), Teraura T, Hashi K, Shinmaru S—J Neurol Sci 16:85-92 (May) 1972

During and after ischemic anoxia to the brain stem and cerebral cortex of baboons, cerebral arteriovenous (A-V) differences for whole blood were studied. Ischemic lesions were produced by serial occlusion of both vertebral and carotid arteries. Five-hydroxytryptamine (5-HT) was released into cerebral venous blood following ischemia of the brain stem and possibly the cerebral cortex. 5-HT accumulated in the brain when cerebral blood flow was restored. The relation of the above observations to cerebrovascular symptomatology is discussed.

**AB-847-72**

Lesions of the Blood-Brain Barrier Following Selective Injection of Contrast Media Into the Vertebral Artery in Rabbits. Comparison Between Lesions of Brain and Spinal Cord—Jeppsson PG, Olin T (Departments of Neurology and Roentgen Diagnosis, University Hospital, Lund, Sweden)—Acta Radiol (Diag) 12:271-282 (May) 1972

Four different contrast media were injected into the vertebral arteries of 60 rabbits to evaluate the toxic effect on blood-brain barrier. Three different doses were used. Both Urografin 60% and Angiografin 65% produced seizures in 5.0 and 2.5 ml doses. The blood-brain barrier was injured following 2.5 and 5.0 ml doses with all four of the media used. In general, there was less injury to the spinal cord blood-brain barrier with all the media. Isopaque cerebral 60% was the least toxic of the four media investigated.

**AB-848-72**


In an attempt to determine the relationship between activated partial thromboplastin time (APTT) and recurrent venous thromboembolism or bleeding, 234 patients receiving continuous intravenous infusions of heparin were studied. Venous thromboembolism was the diagnosis in 162 patients, and the remaining 72 patients were being anticoagulated for other diseases. APTT was maintained at one and one-half to two and one-half times the control levels by adjusting the heparin dose. Venous thromboembolism occurred in five patients; APTT was significantly lower in these patients compared to those patients without recurrence even though they received similar amounts of heparin. There were no recurrences in those patients in which APTT was maintained in the therapeutic range. Hemorrhagic complications occurred in 19 patients whose mean heparin dose and APTT were similar to those of patients without bleeding. If the APTT is prolonged with heparin therapy to one and one-half times or more than the control values, recurrence of venous thromboembolism is to be rare.

**AB-849-72**


The clinical symptoms and signs in 154 cases of ruptured intracranial aneurysms are reviewed. It is demonstrated that retinal hemorrhage is one of the most important and most common signs (32.4%—confidence limits 25 to 40).

It is suggested that fundal hemorrhages be classified on a descriptive basis, grade I being mild retinal hemorrhage, grade II moderately severe cases of pronounced retinal hemorrhage, and grade III severe cases of preretinal or vitreous hemorrhages.

A finding of even small retinal hemorrhages in patients who suddenly lose consciousness, with or without neck rigidity, indicates the presence of subarachnoid hemorrhage.
AB-850-72
Platelet Adhesiveness, Coagulation, and Fibrinolytic Activity in Obesity—Warlow CP, McNeill A, Ogston D, Douglas AS (Department of Medicine, University of Aberdeen)—J Clin Path 25:484-486 (June) 1972*

In a study of 41 fasting subjects it was confirmed that fibrinolytic activity was reduced in obese persons: an increase in fibrinogen was also associated with obesity. There was no correlation between obesity and the platelet count, platelet adhesiveness to glass, the level of serum fibrin degradation products, or the whole blood clotting time in plastic tubes.

ITEMS OF INTEREST


Warfarin Effect Enhanced by Disulfiram (Antabuse)—Rothstein E (V. A. Hospital, Brockton, Massachusetts)—JAMA 221:1052-1053 (Aug 28) 1972

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In a review, long-term daily ingestion of acetylsalicylic acid is suggested in hopes of preventing arterial thrombosis and atherosclerosis.

Angiographic and Cliniciophysiologic Investigation of a Case of Polyarteritis Nodosa—Leonhardt ETG (Department of Medicine, Central County Hospital, S-462 01, Vanersborg, Sweden), Jakobson H, Ringqvist OTA—Amer J Med 53:242-256 (Aug) 1972

A review of the literature on PAN along with a case report.
Abstracts

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