rhea, and tricuspid stenosis. A number of these patients have now been described. They secrete large amounts of 5-hydroxyindole acetic acid in the urine and this provides a convenient and reliable method for antemortem diagnosis of metastatic carcinoid. Serotonin has been found in large quantities in the blood of these patients, and there can be little doubt that it plays an important part in the mechanism of the syndrome. Since serotonin has some chemical resemblance to the plant growth hormones, the proliferative response of the endocardium in the right side of the heart suggests an even broader spectrum of effects.

The possible role serotonin might play in the function of the nervous system stems mainly from 3 observations: (1) serotonin is present in the mammalian central nervous system in relatively large amounts; (2) the dimethyl derivative of serotonin, called bufotenine, produces hallucinations and is used in Haiti for that purpose; (3) both the central and peripheral actions of serotonin may be blocked by lysergic acid diethylamide (L.S.D.), which produces severe, schizophrenic-like mental disturbances. We are as yet far from knowing the precise role played by serotonin or other indole derivatives in cerebral function, but current evidence suggests its great importance.

Serotonin is also present in the ganglia of many invertebrates in relatively much greater quantities than acetylcholine. This finding, plus other testimony, has led to the belief that serotonin may be an important transmitter of nerve impulses in autonomic ganglia.

The action of reserpine has been suggested to be due to intermediation of serotonin. After reserpine administration, brain cells seem to lose their power to retain serotonin, with the result that it is liberated from cells and destroyed by monoamine oxidase. Bound serotonin does not seem susceptible to destruction by this enzyme. Another "tranquilizing" agent, chlorpromazine, antagonizes the cardiovascular actions of serotonin.

Serotonin and related indole derivatives have rather suddenly assumed a new importance with discoveries linking them to various bodily functions and dysfunctions. During the next few years, which are assured of being busy ones for both clinical and basic scientists, it will undoubtedly be necessary for all of us to become better acquainted with the multiple facets of their actions. The story of serotonin exemplifies the great importance of isolation, structural identification, synthesis, and, finally, making available to a large variety of investigators substances found in the animal body.

Irvine H. Page
J. W. McCubbin

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circulation major o le circulation minor. Mesmo in casos de alternation bilaterale, iste variation cyclic pote disparer in un del circulationes e persistir in le altere.

Ben que hypertension pulmonar o systemic eseva frequentemente associate con pulmonar e systemic pulso alternante, respectivamente, le presentia de hypertension non eseva sin exception. In plus, alterationes del pression in le circulationes major e minor non eseva regularmente relationate al apparition o disparition de pulso alternante.

Nulle specific explication del factos revelate in le presente studio se provava satisfactori ben que varie mechanismos responsable pro pulso alternante eseva prendite in consideration—specialmente variationes del volumine per pulso e del pressiones vascular.

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MEDICAL EYMONYMS

By Robert W. Buck, M.D.


In his conclusion he says (p. 419):

“The blue sickness, especially when diagnosed in the adult, is the result of a small number of perfectly definite cardiac malformations.

“Of these cardiac malformations, one exceeds all the others in frequency, since we have found it in nearly 74 per cent of our cases....”

“This malformation is a true anatomical-pathological entity, represented by the following tetralogy: (1) stenosis of the pulmonary artery, (2) communication between the ventricles, (3) displacement to the right of the origin of the aorta, (4) hypertrophy of the right ventricle, almost always concentric in type. To these may occasionally be added, with only accessory significance, a persistent ductus Botalli.”
FOLLOW-UP OF MITRAL COMMISSUROTOMY


WILLIAM WITHERING

William Withering (1741–1799) a graduate of Edinburgh was the discoverer of the therapeutic virtues of digitalis. One of the ablest English clinicians, he published various clinical treatises including “An Account of the Scarlet Fever and Sore Throat or Scarlatina Anginosa, Particularly As It Appeared at Birmingham in the Year 1778.” A physician with broad interests, he determined the chemical composition of minerals and mineral waters, was a breeder of cattle and dogs, a climatologist, and engaged in playing the flute, bagpipes and harpsichord. During his medical student days, he disliked the study of botany, but having fallen in love with Helena Cooke, a young amateur painter of flowers, who subsequently became Mrs. Withering, his interest in plants and flowers grew apace. His five volume masterpiece “The English Linnaeus” established his fame as one of the greatest of medical botanists. His knowledge of botany and the pharmacological properties of various plants was, indeed, largely responsible for his great discovery. As Withering states on the second page of the Introduction in his great classic (“An Account of the Foxglove and Some of Its Medical Uses”—Birmingham 1785):

“In the year 1775, my opinion was asked concerning a family receipt for the cure of the dropsy. I was told that it had long been kept a secret by an old woman in Shropshire, who had sometimes made a cure; after the more regular practitioners had failed. I was informed also, that the effects produced were violent vomiting and purging; for the diuretic effects seemed to have been overlooked. This medicine was composed of twenty or more different herbs; but it was not very difficult for one conversant in these subjects, to perceive, that the active herb could be no other than the Foxglove.”

His last years were clouded with recurrent attacks of “consumption” and finally led to his death in 1799 when he was 58 years of age. A friend who visited him during his last days was responsible for the celebrated pun, uttered sadly and with warm affection, “The flower of English physicians is indeed ‘withering.’”—Ed.
scribed. The right kidney was removed after recurrent hematuria and adenocarcinoma was found, which produced the arteriovenous fistula by erosion of the vessels. The blood pressure was 140/70 mm Hg; the size of the heart was normal, but the output was high, with a cardiac index of 4.8. The oxygen saturation in blood samples from the right renal vein varied from 90 to 94 per cent.

Aortography demonstrated the shunt well and also revealed smaller shunts in the liver, but the oxygen saturation in blood samples from the liver veins was not higher than normally found.

**SUMMARIO IN INTERLINGUA**

Es describite un caso de fistula arteriovenose del vasos dexterorenal in un femina de 66 annos. Le ren dextere eseva aberite post recurrente hematuria; e adenocarcinoma eseva trovate le qual produceve le fistula arterio-venose per erosion del vasos. Le pression sanguineae eseva 140/70 mm Hg. Le corde eseva de dimensiones normal, sed le rendimento eseva alte: le indice cardiac eseva 4,8. Le saturation oxygenic in specimenes de sanguine ab le vena dexterorenal variava ab 90 a 94 pro cento.

Le shunt eseva aortographicamente ben demonstrabile. Le examine aortographic etiam revelava plure shunts de extension minor in le hepeate, sed le saturation oxygenic in specimenes de sanguine ab le venas hepatic non excedeva constatationes normal.

**REFERENCES**


Of 37 patients with recent Stokes-Adams attacks, 25 required resuscitation with an external electric cardiac pacemaker. It resuscitated them repeatedly from ventricular standstill and maintained an adequate circulation for as long as 5 days during persistent standstill. Ten survived 1 to 24 months after resuscitation. From these experiences a program for the treatment of Stokes-Adams disease has been developed, combining the use of drugs with the electric pacemaker.

External electric stimulation was also effective repeatedly in resuscitating 5 patients with ventricular standstill, syncope, and convulsions due to reflex vagal stimulation. Ventricular standstill due to digitalis or procaine amide was terminated by external cardiac stimulation in 4 patients. In 5 patients the external pacemaker resuscitated the heart from unexpected circulatory arrest due to ventricular standstill. In 7 other patients it was ineffective in the presence of ventricular fibrillation or myocardial unresponsiveness due to anoxia from delay in treatment. Prompt external application of the electric pacemaker should be carried out in these emergencies before one resorts to thoracotomy and cardiac massage.

Bernstein

The study was undertaken to determine whether or not training in the athlete altered the methods of oxygen transport employed during mild to moderately severe exercise.

Cardiac catheterization was carried out on 3 track men, 2 of whom were studied before training and again during training. Cardiac output, A-V oxygen differences, and pulmonary arterial pressures were obtained during rest and mild and moderately severe exercise. In addition, the effect of training on maximum breathing capacity and vital capacity was determined.

The cardiac output and arteriovenous O₂ difference during exercise was no different in the trained than in the untrained individual. Vital capacity was not changed by athletic training; however, the maximum breathing capacity was increased by training. Pulmonary arterial pressure increased in response to all grades of exercise regardless of training.

Training produced no difference in the way the individuals met the tissue demands for an increased supply of oxygen during exercise up to levels requiring 2 liters of oxygen intake a minute. Up to this level of oxygen consumption, the contributions of increased cardiac output and increased oxygen extraction from arterial blood to an increasing rate of oxygen consumption are roughly equal.

The results of this study indicate that athletic training does not change the method by which the athlete meets the tissue demands for an increased supply of oxygen during exercise up to levels requiring 2 liters of oxygen a minute.
accordo con le proportion \((Q_p - Q_s)/Q_p\). Le deviation standard del differentias esseva 7 procento.

Estimationes del tempore de recirculation pulmonar (valor median 4,4 sec) indicava in multe patientes un rapidissime circulation pulmonar. Valores pro le volumine del sanguine pulmonar in iste patientes esseva in le majoritate del casos 1,0 a 2,5 pro cento del peso corporee.

REFERENCES


What we call sense or wisdom is knowledge, ready for use, made effective, and bears the same relation to knowledge itself that bread does to wheat. The full knowledge of the parts of a steam engine and the theory of its action may be possessed by a man who could not be trusted to pull the lever to its throttle. It is only by collecting data and using them that you can get sense. One of the most delightful sayings of antiquity is the remark of Heraclitus about his predecessors—that they had much knowledge, but no sense.—WILLIAM OSLER. The Student Life. Farewell Address to American and Canadian Medical Students. Med. News (N. Y), 1905.
the order of 3 mg./24 hr. A pheochromocytoma was excised from the region of the left adrenal gland; the tumor weighed 42 Gm., and contained 0.97 mg./Gm. of epinephrine and 70 per cent (2.67 mg./Gm.) of norepinephrine. The diaphoresis and hypertension were completely relieved. The patient has continued to complain of fatigability, constipation, and abdominal and joint distress.

Patient no. 8 (680-495). This young man of 22 years was admitted to the hospital in November 1952 with the diagnosis of pheochromocytoma made on the basis of sudden onset of hypertension, a depressor response to piperoxan, and an elevated basal metabolic rate (+42). His attacks occurred about twice weekly over 6 months and consisted of headache, violent heart action, anxiety, tremor, and blurred vision with sweating. Prerenal air insufflation demonstrated what seemed to be bilateral tumors in the region of the adrenal glands. These were excised; the tumor from the left side weighed 22 Gm. and of its total catecholamine (colorimetric assay) of 1.7 mg./Gm., 89 per cent was norepinephrine; the tumor from the right weighed 20 Gm. and had a catecholamine content of 3.5 mg./Gm., of which 50 per cent was norepinephrine. The histology was such that malignant disease was suspected, although the tumors had not invaded their capsules. Since operation, the patient has been asymptomatic and the response to piperoxan became weakly pressor, although moderate hypertension has persisted.

Patient no. 9 (711-983). This woman of 57 years complained principally of excessive perspiration of 1 year's duration; hypertension had been present for 5 years and hypermetabolism (+50 to +70) demonstrated 2 years before. A feeling of warmth with sweating and palpitation had distressed her for about 1 year. Regitine and piperoxan yielded depressor responses and histamine was pressor. A laminagram showed a possible mass in the region of the left adrenal gland. At operation this lay medial and anterior to the upper pole of the kidney. The tumor invaded the adrenal vein and was presumed to be malignant. It weighed 70 Gm. and an extract of it indicated a pressor activity equivalent to 14 mg./Gm. of pressor amine in terms of norepinephrine. Her complaints and her hypertension were relieved by operation, after which she began rapidly to gain weight. Preoperatively, the urine contained increased amounts of catecholamine (Dr. Marcel Goldenberg).

Patient no. 10 (751-541). This 17-year-old girl (a patient of Dr. Wm. Leonard, Jr.) was referred to the Cleveland Clinic (Drs. Stanley O. Hoerr and Eugene F. Poutasse) with the diagnosis of pheochromocytoma, based on frequent, disabling episodes of pounding headache, profuse perspiration, palpitation, and nervousness, lasting about 10 minutes and often precipitated by emotional tension, with hypertension (admission, 210/130) of about 1 year's duration. The blood sugar tolerance was impaired; the basal metabolic rate was increased (+31 per cent). Regitine (5 mg. i.v.) decreased blood pressure from 230/150 by 80/60 mm. Hg. Bioassay (Dr. R. Schneckloth) indicated the presence in urine of the pressor equivalent of 1 µg. norepinephrine/ml. At operation the tumor was found at the bifurcation of the aorta, adherent to the vena cava, apparently by extension through the capsule. Peaks of pressure during operation were controlled with Regitine, and pressure was maintained postoperatively at about 120/80 by infusion of norepinephrine. Regitine tests were repeated 1 week postoperatively, with initial pressures of 140/110 and 160/110 with negative results. Provocative histamine tests were done at 1 week and at 3 months with initial pressures respectively of 160/110 and 126/80, also with negative results. Symptoms have completely disappeared. The tumor weighed 54 Gm., was histologically well differentiated, but was diagnosed as malignant because of its invasiveness. Dr. Marcel Goldenberg informed Dr. E. Perry McCullagh that it contained traces of epinephrine and 1.87 mg. of norepinephrine/Gm. Dr. Goldenberg's estimate of the urinary excretion of norepinephrine corresponded to that made by Dr. Schneckloth.


In 200 cases of hypertension, the noradrenaline excretion in the urine was found to be below 80 µg./24 hours. In 3 cases of pheochromocytoma this excretion ranged between 225 and 750 µg./24 hours, but fell to normal levels following operation. It is considered that the estimation of urinary pressor amines offers the best available special method of diagnosis of pheochromocytoma.

BERNSTEIN
ranged between 21 and 115 ml., with a median value of 56 ml. In dealing with a physiologic variable of this magnitude, an error of 5.9 ml. might be quite acceptable for many purposes. But an error of 24 ml. seems so large that it would be difficult to use such variable data.

**Summary**

The application of Starr's multiple-regression equation for the prediction of stroke volume to 104 intra-arterial pressures obtained from 28 resting patients resulted in a standard error of 24.0 ml. rather than the 5.9 ml. obtained by Starr. Application of an independently derived equation to our own data resulted in a standard error of 24.3 ml.

To employ a multiple-regression equation validly several conditions must be fulfilled, 1 of which is a linear relation between each independent variable (diastolic pressure, pulse pressure, and age) and the dependent variable (stroke volume). This requisite has not been satisfied in our data. It is apparent that Starr's equation is not sufficiently accurate to yield meaningful estimates of stroke volume in a heterogeneous group of hospital patients.

**Summario in Interlingua**

Le equation Starr a regression multiple pro le prediction del volumine pulsar esseva aplicate a 104 pressiones intra-arterial obtenite ab 28 patientes in stato de reposo. Le resultante error standard esseva 24,0 ml plus tosto que le 5,9 ml obtenite per Starr. Le application de un equation de derivation independente resultava in un error standard de 24,3 ml.

Le uso valide de un equation a regression multiple presuppone le satisfaction de plure conditiones. Un de istos es le existentia de un relation linear inter cata un del variabiles independente (pression diastolic, pression pulsar, etate) e le variabile dependente (volumine pulsar). In nostre datos iste condition non esseva satisfacite. Il es clar que le equation Starr non es sufficientemente accurate pro le calculation de significative estimationes del volumine pulsar in un gruppo heterogenee de patientes hospitalisate.

**References**


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It is often difficult to determine by palpation whether a pulsating liver is due to tricuspid insufficiency, to the impact of the contracting right ventricle, or to the expanding subdiaphragmatic aorta. In the majority of instances, simple physical examination will make the correct diagnosis. The fingers of one hand are placed on a carotid artery, while the other hand presses gently upon the enlarged liver. If the pulsations are transmitted by a ventricular or aortic impact, both carotid and hepatic pulsations are felt to occur simultaneously; if due to tricuspid insufficiency, the hepatic pulsation is felt after the carotid pulsation, imparting a see-saw sensation to the examining fingers. The accuracy of this simple procedure has been checked by recording characteristic insufficiency pressure curves from the right atrium during cardiac catheterization in man and by postmortem examination.

**Kitchell**