
Hypophysectomized rats, unlike normals, accumulate high concentrations of tissue cholesterol when fed diets containing this sterol. It has been shown that this is due, in part, to a slow rate of fecal sterol and bile acid excretion in these rats. Two sequences are involved in excretion of cholesterol via the bile acid pathway: (a) conversion of cholesterol to bile acids, and (b) excretion from their recirculating pool. Either of these paths could be rate-limiting. Cholestyramine was used to increase the bile acid pool turnover rate. Since there was no corresponding decrease in bile acid pool size, the rate of bile acid elimination and not the rate of conversion of liver sterols to bile acids, controls the rate of conversion of cholesterol to bile acids. It appears that pituitary hormones do not directly influence the rate of conversion of sterols to bile acids in this species.


Since the preliminary report in 1962, of studies initiated in 1960, the authors have confirmed 47 patients with genetic lymphedema by radiological and isotopic tracers. A new term “dermal diffusion” is used to describe a patient with aplasia of the lymphatics of the dorsum of the foot who clears injected dye for venography by the gradual spread upwards through the skin. It must be differentiated from “dermal backflow” where the dye escapes to the skin from the subcutaneous collecting lymphatics through avascular or incompetent valved lymphatic capillaries of the skin. The existence of abnormal RISA renograms was noted in some of these patients. A classification of lymphedema was proposed.


The organism believed to be responsible for the clinical disease “erythrasma” was once considered to be a microsporon but is now known to be a Corynebacterium, C. minutissimum. This bacterium produces a porphyrin or porphyrins which fluoresce red under Wood’s light. Because this fluorescence and this organism have been found in intertriginous, moist, scaling
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dermatoses of the feet and groin, it has been previously postulated that C. minutissimum is a
regular etiologic factor and that intertrigo fulfilling these criteria should be considered
"erythrasma". The authors did not investigate the classical clinical disease "erythrasma".
They confined this study to patients with moist, scaling, fissuring, fluorescent intertrigo of the
feet and groin from which C. minutissimum was isolated. The subjects were supplied with
an antibacterial soap for routine use. By the subsequent absence of clinical correlation of the
disease to the presence or absence of C. minutissimum in these sites, it was concluded that
the organism is generally a saprophyte and not usually the cause of clinical intertrigo. They
felt that the diagnosis "erythrasma" should be reserved for the classical eruption rather than
extended to include other intertriginous dermatoses.

Bullous amyloidosis: a case report. C. Chow and R. E. Burns, Arch Derm 95:622-625,
Jun 1967.

A patient with extensive cutaneous amyloidosis had multiple flaccid bullae and waxy
plaques on both lower extremities. Trauma appeared to initiate both types of lesions. Ecchymoses readily developed with injury to the affected skin. Histopathologic examination
revealed nodular amyloidosis in the lower dermis and perivascular areas along with foci of
plasma cells, lymphocytes, and multinucleated giant cells. This picture is seen in primary
amyloidosis. An altered immune state is suggested by elevated γ-globulins, elevated IgA, and
positive antinuclear factor.

Hyaline bodies in odontogenic cysts: a histochemical study for hemoglobin. R. J. Dent

Reactions for hemoglobin and iron were carried out on hyaline bodies found in twelve
radicular odontogenic cysts. Hyaline bodies were observed in the epithelial linings or lumens,
or both, of the odontogenic cysts. Histochemical reactions for hemoglobin are not specific,
and hyaline bodies showed reactions to other procedures, some of which are not consistent
with hemoglobin. Currently it is impossible to identify hyaline bodies unequivocally as hemo­
globin.

Bone dynamics of rheumatoid arthritis treated with adrenal corticosteroids. H. Duncan.

Rib samples from eleven patients with rheumatoid arthritis treated with adrenal
corticosteroids, showed evidence of marked disturbance in bone metabolism which differed
from those changes seen in bone of seven other rheumatoid arthritis patients not treated
with adrenal corticosteroids. These observations were based on quantitative histological
studies aided by fluorescent tetracycline markers examined in fresh undecalcified rib sections.
Some preliminary experimental studies using the same techniques in rats and dogs showed
similar disturbances of bone metabolism were produced by adrenal corticosteroid therapy
alone. This altered metabolism resulted in a net loss of bone from the rib cortex and trabe­
culae and favored the development of osteoporosis.

Effect of fluoride on appositional rate of haversian bone formation. B. N. Epker.

In this study the effects of fluoride on the appositional rate of new haversian bone
formation were studied in 15 dogs. Three groups of pure-bred Beagles (1) control (no
fluoride), (2) low-fluoride dosage (0.3 mg of NaF/kg/day), and (3) high-fluoride dosage
(1.0 mg of NaF/kg/day) were treated for 4 months after which their bones were labeled
with tetracycline. After sacrifice, the appositional rate of haversian bone formation was
determined in ground cross sections of the mandible. It was found that these dosages of
fluoride did not significantly (p<.01) affect this parameter of bone formation.

Renin in experimental “toxemia of pregnancy”. A. H. Hodari, F. M. Bumpus and R.

The cause of hypertension, edema and proteinuria during pregnancy remains unknown.
One of the most accepted theories suggests a predominant role for uterine ischemia in the
production of preeclampsia. A study of pregnant dogs demonstrated that chronic uterine
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ischemia during pregnancy could be produced by preconception placement of hard but non-constrictive teflon bands around the uterine arteries. Banded animals regularly showed progressive hypertension, proteinuria, and hypernatremia during pregnancy; after delivery these changes disappeared. The renin concentration of plasma in normal pregnant dogs is higher than in nonpregnant animals, but in toxemic animals falls between these two levels. The ratio of uterine vein plasma renin to the femoral vein plasma renin is greater in toxemic dogs than in normal pregnant ones. An increased production of renin by the ischemic utero-placental-fetal complex may be responsible. Renin was increased in the kidneys of the fetuses born from "toxemic" dogs. Placental renin determinations were made, and a pressor substance (perhaps a new polypeptide) was demonstrated in the amniotic fluid.


In an experiment devised to induce chronic uterine ischemia during pregnancy in dogs, alterations developed which simulated those of human hypertensive disease of pregnancy — progressive hypertension and proteinuria. Upon termination of pregnancy, arterial blood pressure returned to prepregnant values and proteinuria cleared. In concept and design, the experiment resembled the Goldblatt kidney. Before pregnancy, hard Teflon bands were placed around the uterine arteries and the descending branch of the utero-ovarian arteries was ligated. During pregnancy, physiologic dilatation of the uterine arteries was prevented and blood flow to the uterus was restricted below the metabolic needs of gestation. The production of chronic uterine ischemia induced the kidneys of the fetus to produce excessive quantities of renin. Renin freely transferred across the placenta. Relatively high concentrations of renin were demonstrated in blood obtained from the uterine vein. Assays on washed placental extracts showed normal concentration of renin in the hypertensive, banded animals. Hypernatremia and elevated 24-hour urine aldosterone excretion was observed. The control of maternal blood pressure during pregnancy may be vested in the kidneys of the developing fetus.


Anatomy of the cardiac conduction system was studied in 15 rabbits with serial histologic sectioning of 4. The rabbit's sinus node is a simple and distinct structure located at the junction of the crista terminalis with the sinus intercavarum nearly midway between the two cavae; it contains an unusually large percentage of P cells but is not organized about a large central artery. The AV node and His bundle are relatively small and are displaced anteriorly by the large coronary sinus normally present in the rabbit because of its persisting left superior vena cava. The AV node is organized with input system and bypass tracts similar to those of man and the dog. Both the AV node and His bundle contain many conspicuously large nerve trunks. The blood supply of the sinus node is from terminal small branches of both the right and left coronary arteries and that to the AV node and His bundle is from similar terminal branches of the septal artery only. The possible functional significance of some of these anatomic features is discussed.


Both deafness and cardiac arrhythmias occur as congenital problems either separately or together. Based on the study of two families discovered from an electrocardiographic survey of 369 deaf children in Michigan, it is suggested that congenital deafness and cardiac arrhythmias may be closely related in inheritance but that either may occur separately within the siblings of a single family. In the presence of a prolonged Q-T interval (also a heritable trait), supraventricular arrhythmias may cause ventricular arrhythmias, frequent syncopal attacks and occasionally sudden death. The Dalmatian dog is sometimes born deaf and when so afflicted often has cardiac arrhythmias. Because of this similarity to the human syndrome, the Dalmatian dog may prove a useful experimental genetic model to study the association of congenital deafness and cardiac arrhythmias.

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Distribution of cholinesterase within the sinus node, AV node and His bundle of the human heart was studied utilizing acetylthiocholine as the substrate. Cholinesterase is present in large amounts in the conduction system tissue, much smaller amounts in right atrial myocardium and was not observed in ventricular myocardium. The sinus node artery was devoid of cholinesterase, as was the sarcolemma and nucleus of cells in the conduction system. Cholinergic nerve endings stained the most heavily of all tissue studied and were more numerous in the sinus node than the AV node. Stellate-shaped cells previously suggested to be the pacemaking site in the sinus node were found to contain abundant cholinesterase. Fibers in the AV nodal bypass tract, which lies between the AV node and right atrial endocardium, also contain cholinesterase. Within individual cells of the sinus node cholinesterase could be identified within myofibrils, with periodic absence in the linear staining most likely corresponding to the Z bands. Other organelles within the cells also contained cholinesterase, but their precise definition was impossible with the present techinics. Possible functional significance of these histochemical observations were discussed.


In anesthetized dogs, direct perfusion of the sinus node with acetaldehyde produced marked stimulation in concentrations similar to those occurring in human alcoholism. Ethanol and closely related compounds had only depressant effects, which during these acute experiments were observed only with unusually high concentrations. The stimulating action of acetaldehyde resembled that of tyramine, was not altered by atropinization, could be reversed and blocked with propranolol, and was virtually absent after reserpinization, which suggests that it is due to the direct release of myocardial norepinephrine. Both the acute and chronic cardiac effects of alcoholism may be due in part to the release of myocardial norepinephrine by acetaldehyde, the principal metabolite of ethanol.


In three patients dying with thrombotic thrombocytopenic purpura the cardiac conduction system was regularly involved. One patient had Stokes-Adams attacks which were in part due to a focal but virtually complete transection of the His bundle by infarction secondary to an arteriolar occlusion characteristic of thrombotic thrombocytopenic purpura. Although there is no question that the familiar pathology of the brain long recognized in thrombotic thrombocytopenic purpura accounts for many of the "neurologic" symptoms of the disease, transient disturbances of cardiac rhythm or conduction may also produce such symptoms and furthermore aggravate or precipitate those primarily due to pathology in the brain.


In 26 dogs after pentobarbital anesthesia, the heart was exposed and the sinus node artery cannulated. Nicotine base solutions were injected into the sinus node in concentrations ranging from 0.01 to 100 μg/ml. No systemic effects were obtained from concentrations below 100 μg/ml. With 1.0 and 10 μg/ml, both slowing and acceleration of the heart were observed. The slowing was abolished by intranodal atropine and the acceleration by intranodal propranolol and intranodal hexamethonium. Nicotine also inhibited the effects of electrical stimulation of the cervical vagus nerve without modifying the response to intranodally injected acetylcholine. The heart rate response to stellate ganglion stimulation was not abolished by nicotine.


Exudative leucocytes and associated urate crystals found in 18 synovia from eleven patients with gouty arthritis were studied by light, polarizing, and electron microscopy. The cytopopulation consisted mainly of emigrated neutrophils. Varying numbers of mononuclear leucocytes
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were present and the phagocytic macrophages contained pyknotic neutrophils, shed cyto­
plasmic buds of neutrophils, and urate crystals. The morphological appearance of urate cry­
stals in ultrathin sections and their characteristics during electron bombardment were investi­
gated. In ultrathin sections the majority of urate crystals contained within the cytoplasm partic­
ularly of neutrophils, were devoid of a limiting membrane and appeared to lie free within the cytoplasmic matrix. Other intraleucocyte urate crystals were outlined by a dense line which was either continuous or interrupted at intervals. Rarely was a urate crystal found in a typical phagosome. The cytoplasm of certain other neutrophils in synovia from each of our patients with gout revealed a striking “honeycombed” appearance. This mottled effect was evident because the more dense cytoplasmic matrix was separated by electronlucent spaces. These spaces varied in size and shape, were not membrane-bounded and contained widely dispersed particles of low electron density. Because the neutrophils in gouty arthritis contain accumulations of a low-density material and urate crystals which are devoid of a membrane the authors suggest that the urate crystals are formed at an intracellular site.


The occurrence of an abnormally elevated rate of renal clearance of potassium follow­
ing the intravenous administration of 500 mg chlorothiazide sodium is described in a patient with surgically proven aldosteronoma. Perhaps infusion of chlorothiazide may serve as a screening test for hypertensive patients who should have more detailed studies for aldosteronism.


The chronotropic effect of 17 amino acids was studied by direct perfusion of the sinus node through its nutrient artery in vivo in the dog. Fourteen of the amino acids had no significant chronotropic effect; that of histidine was only weakly negative. Aspartic acid and glutamic acid both produced a negative chronotropic effect which appears to be due to a direct action on the sinus node, has no cholinergic or antiadrenergic component, and is not pH-dependent.


As part of an Interdepartmental Committee for Nutrition for National Defense (I.C.N.N.D.) survey, dental and oral examinations were performed on approximately 2000 individuals over 15 years of age on the island of Trinidad, West Indies. The purpose was to determine the dental and oral status of the population, to relate this to nutritional, bio­
chemical, environmental or other information obtained from the general survey and to suggest possible ways in which oral health could be improved. Biochemical results revealed a high prevalence of low hemoglobin concentration. Carotene levels were adequate but vitamin A low. Thiamine, riboflavin and protein nutrition appeared adequate. No significant corre­
lations were found between periodontal disease and the biochemical findings including protein electrophoresis. Periodontal disease was severe and prevalent; it correlated signifi­
cantly with age and oral hygiene status. In general, these results are in agreement with other I.C.N.N.D. studies.


The tumors from the jaw of four patients were studied by means of enzyme histochemis­
try. Activity was noted for aminopeptidase, ATPase, esterase, cytochrome oxidase, NADH, NADPH, acid phosphatase and the following dehydrogenases: succinic, lactic, malic, isocitric, glutamic, alpha-glycerophosphate, beta-hydroxybutyric and glucose-6-phosphate. No activity was observed for alkaline phosphatase or beta-glucuronidase while 6-phosphogluconic dehy­
drogenase activity was equivocal. The results appeared similar to those obtained by others for osteoclasts; thus the enzyme activity of the giant cells of reparative granulomas may be comparable to osteoclasts.
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