

ABSTRACTS

Bacon, George E.; Lowrey, George H.; and Knoller, Mechthilde (Depts. of Pediat. and Pharmacol. (Program in Investigative Clin. Pharmacol.), Univ. of Michigan, Ann Arbor, Mich.): COMPARISON OF ARGININE INFUSION AND DIETHYLSTILBESTROL AS A MEANS OF PROVOKING GROWTH HORMONE SECRETION. *J. Pediat.* 75:385-90, September 1969.

Previous reports have indicated that estrogen administration may elevate basal plasma growth hormone (HGH) levels as well as potentiate plasma HGH responses to stimuli such as arginine infusions. In the present study the possibility that estrogen administration alone may result in a greater plasma HGH elevation in normal children than in patients with HGH deficiency was examined.

Twenty-six pediatric subjects with short stature ranged in age from four to fourteen years (twenty-two males and four females). Standard 10 gm. intravenous arginine infusions were performed and hormonal responses were compared with responses to diethylstilbestrol, 5 mg. twice daily for three days.

Eighteen patients responded to one or both stimuli with peak HGH levels of 7.2 $\mu\text{g./ml.}$ or greater. Eight patients failed to respond to either test adequately with maximum mean HGH levels of 1.4 ± 1 and $1.1 \pm 0.7 \mu\text{g./ml.}$ during arginine and estrogen provocation, respectively.

Although there was some individual variation from patient to patient, the authors suggest that a normal plasma HGH response to estrogen stimulation may be a useful, simple screening test for excluding HGH deficiency. R.K.K.

Bell, J. P.; Salamonsen, L. A.; Holland, G. W.; Espiner, E. A.; Beaven, D. W.; and Hart, D. S. (Princess Margaret Hosp. and Lincoln College, Univ. of Canterbury, Christchurch, New Zealand): AUTOTRANSPLANTATION OF THE PANCREAS IN SHEEP: INSULIN SECRETION FROM THE TRANSPLANT. *J. Endocr.* 48:511-25, December 1970.

Autotransplantation of other endocrine glands to the neck of Merino sheep has allowed the direct study of hormone secretions in unanesthetized animals without acute surgical intervention. This paper shows that the technic can also be used for autotransplantation of a portion of the pancreas. Thus, the problems of measuring the rate of insulin secretion directly have largely been overcome in sheep by the provision of a vascular union between splenic-pancreatic vessels and the exteriorized cervical artery and vein, so that all effluent blood from the transplanted portion of the pancreas can be collected at intervals without stress to the sheep.

Glucose and butyrate solutions were infused directly into the transplanted pancreas and shown to be powerful, direct stimuli of insulin secretion by the transplant. Patterns of insulin secretion during prolonged infusion of glucose and butyrate solutions into the transplant are described. The biphasic response described in other *in vitro* and *in vivo* systems appears to be present. The sheep survive in healthy condition for up to eighteen months. D.R.C.

Blanche, Robert J.; McHale, Phillip A.; Curry, Charles L.; Alexander, James A.; and Greenfield, Joseph C., Jr. (Dept. of Med. (Div. of Cardiology); Physiol-Pharmacol. and Surg. (Div. of Thoracic Surg.); Duke Univ. and Med. Center; and Veterans Adm. Hosp., Durham, N. C.): CORONARY AND SYSTEMIC HEMODYNAMIC EFFECTS OF GLUCAGON IN THE INTACT UNANESTHETIZED DOG. *J. Appl. Physiol.* 29: 769-74, December 1970.

Nine conscious dogs with implanted electromagnetic flow meters were given an intravenous bolus of glucagon, 50 $\mu\text{g./kg.}$ This resulted in a 74 per cent increase in mean coronary artery blood flow associated with a 31 beats/minute increase in heart rate. However, glucagon produced a similar increase in coronary flow during controlled ventricular pacing. Both systolic and diastolic flows increased, in contrast to the marked increase in systolic pressure seen after isoproterenol injection. Induction of beta adrenergic blockade with propranolol decreased mean coronary flow but did not block stimulation by subsequent administration of glucagon. Glucagon also increased mean aortic blood flow and decreased mean peripheral vascular resistance, effects which were not altered by controlled ventricular pacing or by beta adrenergic blockade. The authors concluded that glucagon markedly increases mean arterial blood flow without alteration of the ratio of systolic to diastolic coronary flow. The glucagon effects are not dependent upon chronotropic effects and are not blocked by propranolol. J.E.V.

Blazquez, E.; Montoya, E.; and Quijada, C. L. (Instituto G. Maranon, C.S.I.C., Velazques, 144, Madrid, Spain): RELATIONSHIP BETWEEN INSULIN CONCENTRATIONS IN PLASMA AND PANCREAS OF FETAL AND WEANLING RATS. *J. Endocr.* 48: 553-61, December 1970.

Verbatim summary. During the third part of pregnancy in the rat the concentrations of plasma insulin and tissue glycogen in the fetus increase progressively. These levels and the release of insulin by pancreas incubated *in vitro* were significantly higher than the values found in adult nonpregnant rats. After birth the correlation between plasma insulin concentration and the stores of glycogen was also evident. In the first day of life, the concentrations of plasma insulin, glycogen in liver, striated muscle and kidney decreased significantly; these values decrease even more during the first fifteen days of lactation. After weaning started (twenty days postpartum), rapid increases of insulin and glycogen were observed, parallel to the slow growth of the newborn rat during the first fifteen days of life and the more rapid rate of growth after twenty days. Similarly, the insulin content of the pancreas increased more significantly during the period in which pancreatic weight and plasma insulin concentrations increased more slowly. These results show that when plasma insulin concentrations increase, body growth and stores of glycogen are higher, suggesting an anabolic role of insulin in the fetal and newborn rat.

Brockman, W.; Cordova, L. J.; and Davis, P. J. (Dept. of Med., Baltimore City Hospitals, Baltimore, Md.): HYPERGLYCEMIC NONKETOTIC COMA IN INSULIN-DEPENDENT DIABETES MELLITUS. *Johns Hopkins Med. J.* 127:119-23, August 1970.

Verbatim summary. Two insulin-dependent diabetic patients developed hyperglycemic nonketotic coma. The occurrence of this syndrome in insulin-requiring diabetics is rare. Both patients had significant renal disease. Dehydration and hypernatremia, frequently present in the hyperglycemic nonketotic syndrome, were not observed, presumably because of high renal thresholds for glucose and lack of an osmotic diuresis despite marked hyperglycemia.

Broeckaert, Ivo (Lab. Exp. Med., Free Univ. of Brussels, Brussels, Belgium): EFFECT OF TRI-HYDROXYMETHYL-AMINOMETHANE (TRIS) ON INSULIN SECRETION IN VITRO. *Metabolism* 19:1011-13, December 1970.

Incubation of pieces of pancreatic rat tissue in media containing increasing concentrations of glucose resulted in a progressive increase in the rate of insulin secretion. A further rise in insulin secretion occurred at each glucose concentration by changing the pH from 7.4 to 7.8 by adding NaOH. Added hypertonicity at 25 mM/L. concentration, TRIS failed to induce additional insulin release; its only significant effect was that of inhibition of insulin release induced at high glucose concentration. The inhibitory effect of TRIS on insulin secretion was increased by alkalinity and was not attributable to hypertonicity. C.R.S.

Cohen, A. M.; Freund, H.; and Auerbach, E. (Diabetic Unit and Isotope Lab. for Endocr. Res.; The Vision Res. Lab., Hadassah Univ. Hosp.; and Hebrew Univ. Hadassah Med. Sch., Jerusalem, Israel): ELECTRORETINOGRAM IN SUCROSE-AND STARCH-FED RATS. *Metabolism* 19:1064-67, December 1970.

Recovery of the electrical response of the retina from a light adaptation was determined by the increase of the b-wave of the electroretinogram (ERG) during dark adaptation. The increase in the b-wave in sucrose-fed animals was significantly smaller than in normal or starch-fed animals. The rate of recovery of the b-wave was equal in both the sucrose- and starch-fed groups. Metabolic disturbances or vascular impairment in the retina may account for alterations in the ERG in sucrose-fed animals. C.R.S.

Craighead, John E.; and Steinke, Jurgen (Dept. of Path., Univ. of Vermont Coll. of Med., Burlington, Vt.; and Dept. of Med., Harvard Med. Sch., Boston, Mass.): DIABETES MELLITUS-LIKE SYNDROME IN MICE INJECTED WITH ENCEPHALOMYOCARDITIS VIRUS. *Amer. J. Path.* 63:119-30, April 1970.

Mice were injected with the relatively non-pathogenic M-strain of the encephalomyocarditis virus and histological and metabolic parameters followed for a period of time. Beta cell degranulation in the islets was associated with the initial appearance of the virus in the pancreas. High levels of immunoreactive insulin (IRI) and low blood glucose levels were found four days after virus inoculation. Later, IRI levels fell and hyperglycemia ensued. Although functional recovery of the islets was observed in many animals, responses to metabolic stress were subnormal. Females were less susceptible than males to islet damage. Some animals evolved into a state of chronic hyperglycemia and glycosuria. After five months, serum and pancreatic insulin levels were low along with the

histological appearance of shrunken islets and a reduction in the total number of islets. Other animals had normal fasting blood glucose levels, abnormal glucose tolerance curves, and apparently normal islets on histological examination.

J.E.V.

El Defrawy, Soubeir; and Buckley, Joseph P. (Univ. of Pittsburgh, Dept. of Pharmacol., Sch. of Pharmacy, Pittsburgh, Pa.): METABOLIC EFFECTS OF PHENFORMIN AT SIMULATED HIGH ALTITUDE. *J. Pharmacol. Exp. Ther.* 177:276-83, April 1971.

Verbatim summary. There was a 50 per cent reduction in hepatic glycogen content of male Wistar rats treated with phenformin hydrochloride (100 mg./kg.) or decompressed for four hours at 24,000 feet. There was also an increase in the glycogen content of the heart and diaphragm of the decompressed animals. There was a fivefold increase in the myocardial glycogen content of rats treated with phenformin for seven days as well as a marked increase in glycogen content in both the liver and diaphragm. Blood lactate increased approximately threefold after phenformin treatment and approximately eightfold after a single dose of phenformin plus four hours of decompression. The data suggest that prolonged treatment with phenformin enhances the efficiency of recycling carbohydrate under anaerobic conditions and increases utilization of carbohydrate at the expense of lipid stores.

Exton, J. H.; Hardman, J. G.; Williams, T. F.; Sutherland, E. W.; and Park, C. W. (Dept. of Physiol., Vanderbilt Univ., Nashville, Tenn.): EFFECTS OF GUANASINE 3'5'-MONOPHOSPHATE ON THE PERFUSED RAT LIVER. *J. Biol. Chem.* 246:2658-64, April 1971.

The effect of cyclic GMP and cyclic AMP were compared in the isolated rat liver perfused with buffer. Cyclic GMP was one third to one half as potent as cyclic AMP in stimulating glucose production, net glycogenolysis, gluconeogenesis from lactate, and releasing of K⁺. Cyclic GMP activated glycogen phosphorylase and inhibited the incorporation of C-14 from lactate into glycogen. This effectiveness of cyclic GMP was expected in view of its weak ability to mimic cyclic AMP in broken cell preparations. Cyclic GMP did not act by raising tissue levels of cyclic AMP nor by inducing release of cyclic AMP into the medium, a phenomenon that was noted with glucagon and epinephrine.

The unexpected potency of GMP probably resulted from the accumulation of this material in liver cells to a much greater extent than cyclic AMP. Of interest is the fact that insulin could inhibit the effects of cyclic AMP on hepatic glycogenolysis, but did not alter the effects of cyclic GMP.

T.J.M.

Feldman, Jerome M.; Boyd, A. E., III; and Lebovitz, Harold E. (Duke Univ. Med. Center, Div. of Endocr., Dept. of Med., Durham, N. C.): STRUCTURAL DETERMINANTS OF CATECHOLAMINE ACTION ON IN VITRO INSULIN RELEASE. *J. Pharmacol. Exp. Ther.* 176:611-21, March 1971.

Verbatim summary. Epinephrine and norepinephrine are known inhibitors of pancreatic insulin secretion. Previous work has shown that epinephrine blocks the insulin secretion stimulated by both glucose (3 mg./ml.) and dibutyryl cyclic adenosine monophosphate. The present study was designed to determine the nature of the sites in catecholamine structure that influence insulin release. These studies were carried out with an in vitro golden hamster pancreas system. The

effect of a series of catecholamine precursors and analogs on glucose-mediated insulin secretion was determined. L-phenylalanine, l-tyrosine and 3, 4-dihydroxyphenylacetic acid had no effect on insulin release. β -phenylethylamine, tyramine, dopamine, l-phenylephrine, l-epinephrine, 1-3,4-hydroxyphenylalanine, 1- α -methyl dopa, l-norepinephrine, dl-metanephrine and dl-isoproterenol inhibited insulin secretion. The inhibitory action of the various catecholamines and analogs on insulin secretion showed a linear log dose relationship. Dopamine was set as a reference standard and the inhibitory actions of all the others were expressed relative to it by analysis of variance. This type of analysis indicated that the inhibitory activity of these compounds was dependent on the amine group on the aliphatic chain and the hydroxyl groups on the aromatic ring rather than on alpha or beta stimulating properties. The structural determinants responsible for the effects of catecholamines on glucose-mediated insulin secretion are virtually identical to those previously reported for the indole amine series.

Golob, Erich K.; Risbi, Surendra; Becker, Kenneth L.; and Moore, Charles (Dept. of Med., Vets. Admin. Hosp., and George Washington Univ., Washington, D.C.): STREPTOZOTOCIN DIABETES IN PREGNANT AND NONPREGNANT RATS. *Metabolism* 19:1014-19, December 1970.

Streptozotocin was used to produce diabetes in pregnant rats, the survival rate of which was nearly 75 per cent. The percentage of treated rats with living fetuses was approximately half that of normal controls. The average litter size was slightly smaller and the percentage of the blighted fetuses was greatly increased in the treated animals. The fetuses and newborn of the streptozotocin-treated rats were lighter in weight than those of the normal controls. C.R.S.

Goodman, Charles; and Goetz, Frederick C. (Gen. Clin. Res. Center, Univ. of Minnesota Hosp. and Dept. of Med., Univ. of Minnesota Sch. of Med., Minneapolis, Minn.): ORAL AND INTRAVENOUS D-RIBOSE AND PLASMA INSULIN IN HEALTHY HUMANS: EFFECTS OF ROUTE OF ADMINISTRATION AND OF EPINEPHRINE AND PROPRANOLOL. *Metabolism* 19:1094-1103, December 1970.

The insulin-releasing effect of D-ribose was studied by measurement of changes in peripheral vein plasma insulin levels in healthy human volunteers following oral or intravenous administration of the pentose. The insulin response was not affected by the route of administration and was unrelated to the ribose level in venous blood. Epinephrine infusion suppressed the insulin response to D-ribose while propranolol infusion did not affect the response to ribose given by vein. The changes in peripheral insulin levels were modest when compared to the large and persisting increases noted when pancreatic insulin output was measured directly in dogs during ribose infusion. These observations suggest that the rate of disposition of insulin in the liver may be increased by the metabolism of carbohydrate such as ribose.

C.R.S.

Grant, D. B.; Jackson, Doreen; and Clayton, Barbara E. (Hosp. for Sick Children and Inst. of Child Health, London, England): COMPARISON OF SERUM GROWTH HORMONE LEVELS AFTER BOVRIL AND INSULIN STIMULATION. *Arch. Dis. Child.* 45:544-46, August 1970.

Sixty children between the ages of three and eighteen years had serum growth hormone responses assessed because of

short stature. In twenty-two cases an underlying condition was recognized to be the cause of growth retardation. In the remaining group of thirty-eight no etiologic factors were ascertained.

Serum growth hormone concentrations were measured during insulin-induced hypoglycemia and following the oral administration of Bovril, 20 gm./1.5 mm.². The ingredients of Bovril, a commercial preparation, were not specified.

Thirty-seven patients had normal responses to both stimuli, but eighteen failed to respond to either test. Of the five remaining patients only one demonstrated major differences in results of the two procedures. This subject, afflicted with an emotional deprivation syndrome, had normal growth hormone responses to insulin-induced hypoglycemia and subnormal growth hormone concentrations after Bovril administration.

The authors conclude that the Bovril test has diagnostic value comparable to other methods for determining pituitary growth hormone reserve and has the additional advantage of being given by the oral route. R.K.K.

Hampers, Constantine L.; Lowrie, Edmund G.; Soeldner, J. Stuart; and Merrill, John P. (Dept. of Med., Peter Bent Brigham Hosp., Harvard Univ. Med. Sch., Boston, Mass.): THE EFFECT OF UREMIA UPON GLUCOSE METABOLISM. *Arch. Intern. Med.* 126:870-74, November 1970.

Verbatim summary. Various factors of carbohydrate and insulin metabolism have been studied in nineteen patients with chronic renal failure before and after treatment with the artificial kidney. There is evidence in support of the conclusion that several separate factors are important in the carbohydrate intolerance of uremia.

Havivi, Eli; and Levitan, Ruven (Gastroent. Res. Lab., New England Med. Center Hosps.; Dept. of Intern. Med., Tufts Univ. Sch. of Med., Boston, Mass.; Sect. of Gastroent., Vet. Admin. West Side Hosp., The Abraham Lincoln Sch. of Med., Univ. of Illinois Med. Center, Chicago, Ill.): ABSORPTION OF GLUCOSE AND GALACTOSE FROM THE SMALL INTESTINE OF HYPOPHYSECTOMIZED RATS. *Amer. J. Dig. Dis.* 16:299-305, April 1971.

Verbatim summary. The effect of hypophysectomy on glucose and galactose absorption from the small bowel was studied in young rats. In vitro studies were performed on intestinal rings, and in vivo studies were done on jejunal loops. Glucose and galactose absorption was found to be increased in hypophysectomized rats, both in vitro and in vivo five days after hypophysectomy, but these levels returned to the control range eleven days after surgery. Conversion of glucose-1-C-14 to C-14-O₂ by small bowel rings obtained from hypophysectomized rats five days after surgery, was found to be enhanced. These observations suggest that, soon after hypophysectomy, glucose is metabolized at a higher rate by the intestine.

Irie, Minoru; Tsushima, Toshio; and Sukama, Maki (Third Dept. of Med., Univ. of Tokyo, Faculty of Med., Hongo, Bunkyo-ku, Tokyo, Japan): EFFECT OF NICOTINIC ACID ADMINISTRATION ON PLASMA HGH, FFA AND GLUCOSE IN OBESE SUBJECTS AND IN HYPOPITUITARY PATIENTS. *Metabolism* 19:972-79, November 1970.

In normal subjects, the intravenous administration of nicotinic acid (NA) caused a sharp decline in plasma FFA followed by a marked secondary rise. The reduction in FFA was followed by a significant increase in plasma HGH. In obese

subjects the initial fall in FFA and its subsequent rise were more pronounced, but FFA levels then declined gradually. The levels of blood glucose were unaffected by NA. There was no significant rise in HGH. Hypopituitary subjects manifested an initial fall and diminished secondary rise in FFA with no increase in HGH. The results suggest that the secondary rise in FFA following NA administration is partly related to augmented secretion of HGH. The rapid rebound of FFA in obese subjects does not depend on the effect of HGH but the late decrease in lipolysis might be related to diminished secretion of HGH. C.R.S.

Katz, H. P.; Cheitlin, M. D.; Wasser, A. H.; and Flair, R. C. (Depts. of Pediat. and Med., USA Tripler Gen. Hosp., Honolulu, Hawaii): OBSERVATIONS ON THE PULSE WAVE VELOCITY AND TISSUE BIOPSY IN CHILDREN WITH DIABETES MELLITUS. *Johns Hopkins Med. J.* 127:336-43, December 1970.

Verbatim summary. The pulse wave velocity (PWV), a possible early indicator of vascular degenerative disease in the major sized arteries, and a histopathologic study of gingival and ear lobe skin capillaries and arterioles by light microscopy, were performed on children who were normal, diabetic, or related to siblings or parents who were diabetic. The group of twenty-two diabetic children (age 3-16) had a significantly increased PWV compared to the fifty-five normal controls. There was only slight correlation between the PWV and the age of the patient or duration of the disease. Because the PWV may be an early indicator of vascular degenerative disease, the findings of an increased PWV in a group of young children with diabetes of relatively short duration supports the hypothesis that vascular alterations may be an integral part of the diabetic state. In searching for evidence of microangiopathy in gingival and ear lobe skin biopsies, we found no differences between normal controls, juvenile diabetics, or their siblings.

Korczyn, A. D. (Neurology Dept., Beilinson Hospital, Tel Aviv, Israel): BELL'S PALSY AND DIABETES MELLITUS. *Lancet* 1:108-09, January 16, 1971.

A series of 130 consecutive patients referred to the hospital for evaluation of Bell's Palsy was investigated to determine the prevalence of diabetes mellitus. Of the 130 patients, eighteen were known diabetics and in the remainder a standard 50 gm. oral glucose tolerance test was done. In this group a diagnosis of diabetes was made if the fasting capillary blood sugar exceeded 130 mg. per cent or the value had not fallen to below 120 mg. per cent two hours after glucose ingestion. Eight of the 112 previously undiagnosed patients were found to have overt diabetes and were diagnosed by finding elevated fasting sugars and sixty-two of the remaining 104 had abnormal tolerance to glucose. The frequency of "diabetes" in this series was thus 66 per cent. It was found to increase with age. It is suggested that all patients presenting with Bell's Palsy be screened for the possibility of diabetes. T.G.S.

Lieberman, Phillip; Patterson, Roy; Metz, Robert; and Lucena, Guillermo (Dept. of Med., Sect. of Allergy-Immunology, Northwestern Univ. Med. Sch.; and Dept. of Res., Chicago Wesley Memorial Hosp., Chicago, Ill.): ALLERGIC REACTIONS TO INSULIN. *J.A.M.A.* 275:1106-12, February 15, 1971.

Verbatim summary. Two of five patients with acute systemic allergic reactions to insulin injection required desensitization.

Immunologic studies consisted of direct skin testing with a variety of insulins which included human and synthetic insulins. Passive cutaneous transfer, leukocyte histamine release, and radioimmunodiffusion studies were also performed. Fifty diabetic patients without symptoms of insulin allergy were also selected for skin testing with a variety of insulin preparations. Results indicated that insulin allergy may be directed against the insulin molecule itself or against protein contaminants in the commercially available preparation, and that it can be mediated by IgE. Desensitization resulted in precipitous drops in reaginic antibody titers and cutaneous sensitivity, with the simultaneous induction of tolerance to insulin.

Liebermeister, Hermann (Medizinische Klinik und Diabetes-Forschung; Univ. of Düsseldorf, Düsseldorf, Germany): WEIGHT REDUCTION BY DIETING, DRUGS, AND OPERATIVE METHODS IN OBESITY. *Klin. Wschr.* 49:125-34, February 1, 1971.

Verbatim summary. The possibilities of dietetic weight reduction are discussed using total fasting, standard diets, diets with extreme nutrient relations ("Punkdiät") and 1000 calorie mixed diet. Treatment of obesity should not only be oriented toward acute weight reduction but to emptying of fat depots and to satisfactory long-term results. In this respect, the 1000 calorie mixed diet shows the best results in our experiences. Appetite depressants can be of help in weight reduction, as are biguanides for the treatment of obese maturity-onset diabetics. Because of the risk of inducing pulmonary hypertension, anorexiants drugs should be used with great caution. The same applies to thyroid preparations, diuretics, laxatives and digitalis preparations, all of which do not reduce fat reserves. The role of physical activity and of psychic factors, and recent reports on operative methods in the treatment of obesity are emphasized.

Lisch, H.-J.; Sailer, S.; Sandhofer, F.; and Braunsteiner, H. (Medizinische Universitätsklinik in Sunnsbruck, Sunnsbruck, Austria): INVESTIGATION OF THE DESTRUCTION OF ISOLATED HUMAN FAT CELLS. I. CORRELATION BETWEEN CELL VOLUME AND RELATIVE BODY WEIGHT. *Klin. Wschr.* 48:1349-53, November 15, 1970.

Verbatim summary. A method for the quantitative determination of the destruction of adipose cells during their isolation and preparation was described. By means of some modifications of the isolation procedure of human adipose cells the destruction was lowered to approximately 10 per cent. The destruction is not influenced by size or origin of the cells.

A positive correlation was found between volume and relative body weight for adipose cells from the abdominal subcutaneous adipose tissue as well as from the mesenterium and omentum maius. At the same relative body weight, cells from different regions differed markedly in size. Cells from subcutaneous adipose tissue are much bigger than those from the internal regions of the body.

Lische, H.-J.; Sailer, S.; Sandhofer, F.; and Braunsteiner, H. (Medizinische Universitätsklinik in Sunnsbruck, Sunnsbruck, Austria): INVESTIGATION OF THE DESTRUCTION OF ISOLATED HUMAN FAT CELLS. II. CORRELATION BETWEEN CELL VOLUME AND BASAL LIPOLYSIS. *Klin. Wschr.* 48:1353-56, November 15, 1970.

Verbatim summary. The basal lipolysis in isolated human

fat cells, measured as glycerol release, was studied on subcutaneous adipose tissue of the abdomen, of the calf, and on adipose tissue of the omentum maius. There was a positive correlation between fat cell volume and the rate of lipolysis in the investigated regions. A decreased lipolysis in fat cells of obese individuals can be excluded as a cause of obesity.

Any significant difference of basal lipolysis per gram adipose tissue triglyceride between the three regions could not be detected. It is suggested that for the investigated regions the basal lipolysis of fat cells is a function of cell size and not of regional origin of the fat cells.

Marshall, Alexander; Gingerich, Ronald L.; and Wright, Peter H. (Dept. of Pharmacol., Indiana Univ. Med. Center, Indianapolis, Ind.): HEPATIC EFFECT OF SULFONYLUREAS. *Metabolism* 19:1046-52, December 1970.

In the isolated perfused rat liver, the sulfonylurea drugs, tolbutamide, tolazamide and acetohexamide significantly reduced the uptake of insulin while the nonhypoglycemic metabolite of the tolbutamide, carboxytolbutamide, had no such action. The results suggest an extrapancreatic effect of sulfonylurea agents resulting in a sustained blood glucose lowering action due to reduced hepatic uptake of endogenously secreted insulin with increased action of the hormone upon peripheral tissues. C.R.S.

Marubama, Yoshikue (Dept. of Physiol., Guy's Hosp. Med. Sch., Univ. of London, London, England): CONVERSION OF INGESTED CARBOHYDRATE-C-14 INTO GLYCEROL AND FATTY ACIDS OF TRIGLYCERIDE IN PATIENTS WITH MYOCARDIAL INFARCTION. *Metabolism* 19:1085-93, December 1970.

Post-myocardial infarction patients were given labeled glucose and fructose following which serial measurements were made of radioactivity in serum TG-glycerol and TG-fatty acids. The radioactivity of TG-glycerol was ten to twenty times greater than that of TG-fatty acids both after glucose and fructose. Increases in radioactivity of TG-glycerol and TG-fatty acids were significantly greater after fructose than after glucose ingestion when expressed as cpm/ml. serum. These differences between glucose and fructose in the pattern of serum triglyceride labeling may explain the predominance of fructose in endogenous triglyceridemia production in man.

C.R.S.

Olson, Lloyd C.; Bourgeois, Curtis H., Jr.; Cotton, Robert B.; Harikul, Supha; Grossman, Richard A.; and Smith, Thomas J. (Med. Res. Lab., SEATO Med. Project, Rajvithi Road, Bangkok, Thailand; and Udorn Provincial Hosp., Udorn, Thailand): ENCEPHALOPATHY AND FATTY DEGENERATION OF THE VISCERA IN NORTHEASTERN THAILAND. CLINICAL SYNDROME AND EPIDEMIOLOGY. *Pediatrics* 47:707-16, April 1971.

Verbatim summary. During 1969, sixty-seven cases of encephalopathy and fatty degeneration of the viscera were admitted to one hospital in northeastern Thailand. Cases occurred throughout the year but were more common during the latter part of the rainy season. Almost all patients were from rural areas and were between one and six years of age. The disease is characterized by the abrupt onset of central nervous system symptoms, and 70 per cent of the patients pursue a rapidly fatal course. Hypoglycemia was profound in almost all cases, and most showed hyponatremia, hyperkalemia, and abnormal liver chemistries. The relation of this disease to Reye's syndrome and significance of its epidemiologic features are discussed. Supporting evidence strongly suggests that

the northeastern Thailand syndrome represents acute toxicity to aflatoxin, the toxin produced by certain strains of the fungus *Aspergillus flavus*.

Penny, Robert; Thompson, Robert G.; Polmar, Stephen H.; and Schultz, Robert B. (Dept. of Pediat., The Johns Hopkins Univ. Sch. of Med., Baltimore, Md.): PANCREATITIS, MALABSORPTION, AND IgA DEFICIENCY IN A CHILD WITH DIABETES. *J. Pediat.* 78:512-16, March 1971.

Relationships between pancreatitis, intestinal malabsorption and diabetes in children are reviewed in this report. In addition the association of malabsorption with IgA deficiency among pediatric patients is cited. A single case of a five-year-old girl with all of these disturbances is described, but whether this represents coincidence or a bona fide syndrome remains to be determined. R.K.K.

Rosenbloom, Arlan L.; Karacan, Ismet J.; and DeBusk, Frank L. (Dept. of Pediat. and Psychiatry, Univ. of Florida Coll. of Med., Gainesville, Fla.): SLEEP CHARACTERISTICS AND ENDOCRINE RESPONSE IN PROGERIA. *J. Pediat.* 77:692-95, October 1970.

In progeria of Hutchinson-Gilford, premature senescence, atherosclerosis, and loss of subcutaneous fat and body weight are associated with relative insulin resistance. Previous studies have suggested that plasma growth hormone responses to different stimuli are subnormal as well.

In the present investigation plasma growth hormone was measured during sleep, following insulin-induced hypoglycemia and arginine infusion in a three-year-old girl with this condition. In each instance no hormonal abnormality was detected. Measurements of basal insulin levels during sleep, however, revealed values that were higher than in a control group. Moreover, twice the usual dose of intravenous insulin was required to lower plasma glucose 50 per cent below fasting levels.

The study confirms previous observations of endogenous insulin resistance but questions the presence of plasma growth hormone abnormalities in patients with progeria. R.K.K.

Saltzman, Herbert A.; and Salzano, John V. (Depts. of Med., Physiol. and Pharmacol., Duke Univ. Med. Center, Durham, N. C.): EFFECT OF CARBOHYDRATE METABOLISM UPON RESPIRATORY GAS EXCHANGE IN NORMAL MAN. *J. Appl. Physiol.* 30:228-31, February 1971.

Studies of respiratory gas exchange were performed in five healthy male subjects after a sixteen-hour fast and following oral ingestion of 920 K. cal. of carbohydrate. Carbohydrate ingestion lead to a mean increase in the following parameters: carbon dioxide production up 43 per cent, alveolar ventilation up 47 per cent, oxygen consumption up 13 per cent, tidal volume up 25 per cent, respiratory exchange ratio up 0.21, and arterial oxygen tension up 9.3 mm. Hg. Mean arterial pH fell 0.022 units and there was no change in mean arterial carbon dioxide tension or the difference between mean alveolar oxygen tension and arterial oxygen tension $[(A-a)DO_2]$. The authors conclude that metabolism of carbohydrate in normal men increases alveolar ventilation sufficiently to raise the PaO_2 significantly. Regional ventilation to perfusion ratios did not appear to be significantly altered. There were no significant changes in the above parameters in two subjects who ingested water rather than carbohydrate. J.E.V.

Sawin, Clark T.; and Mitchell, Marvin L. (Med. Serv., Boston Veterans Administration Hosp.; Dept. of Med., Lemuel

ABSTRACTS

Shattuck Hosp.; and Dept. of Med., Tufts Univ. Sch. of Med., Boston, Mass.): A COMPARISON OF RESPONSE OF SERUM GROWTH HORMONE TO GLUCAGON AND VASOPRESSIN. *Metabolism* 19:898-903, October 1970.

Growth hormone (HGH) response in fasted subjects was found to be more reliable with glucagon administration than with vasopressin. Estrogen did not improve the response to glucagon in some subjects. The glucagon stimulation test for HGH deficiency may be regarded as a screening procedure with confirmation being sought with a different stimulus when there is no response to glucagon. C.R.S.

Schloeder, Francis X.; and Steinbaugh, Bobby J. (Renal Sect., Dept. of Int. Med., Gorgas Hosp., Balboa Heights, Canal Zone): RENAL TUBULAR SITES OF NATURESIS OF FASTING AND GLUCOSE-INDUCED SODIUM CONSERVATION. *Metabolism* 19:1119-28, December 1970.

The naturesis of fasting and its reversal by glucose was investigated in obese volunteers by measuring urine volume, free water clearance and glomerular filtration rate during water diuresis before fasting, on the fifth fasting day and after glucose administration. Alterations in the ratios of these aspects of renal function noted during fasting were promptly reversed by glucose. It was concluded that both proximal and distal sites of the nephron are involved in the naturesis of fasting and its reversal by glucose. C.R.S.

Theodoridis, C. G.; Chance, G. W.; and Rudd, B. T. (Inst. of Child Health, Birmingham, England): FASTING GROWTH HORMONE IN TREATED DIABETIC CHILDREN. *Arch. Dis. Child.* 45:720-21, October 1970.

Diabetic children who required insulin and who ranged in age from five to sixteen years old were placed into two groups. Twelve patients had poor control of their diabetes and twelve had good control. No significant differences in fasting immunoreactive growth hormone concentrations existed when the two groups were compared. The authors conclude that there is no relationship between basal growth hormone concentrations and control of diabetes mellitus. R.K.K.

Theodoridis, C. G.; Chance, G. W.; Rudd, B. T.; and Brown, G. A. (Inst. of Child Health, Birmingham, England): GROWTH HORMONE RESPONSE TO ORAL GLUCOSE LOAD IN UNTREATED DIABETIC CHILDREN. *Arch. Dis. Child.* 46:117-19, February 1971.

Verbatim summary. Blood glucose and plasma growth hormone levels were measured during a peroral glucose tolerance test in twelve untreated diabetic children. Normal growth hormone responses were found in seven out of twelve children investigated; in the remaining five the responses were subnormal.

VanderLaan, W. P.; Parker, D. C.; Rossman, L. G.; and VanderLaan, E. F. (Endocrine Div., Scripps Clin. and Res. Foundation, La Jolla, Calif.): IMPLICATIONS OF GROWTH HORMONE RELEASE IN SLEEP. *Metabolism* 19:891-97, October 1970.

Growth hormone (HGH) is barely detectable in plasma of volunteers at rest except for minor postprandial rises. During sleep a major rise occurs in HGH related to the first cycle of sleep and to stages III and IV by EEG criteria. Glucose infusion failed to suppress HGH release. In anorexia nervosa glucose loading stimulated HGH in the wakeful state in contrast to the unresponsiveness of obese subjects to stimuli of HGH release. Apparently the release of HGH during sleep is under CNS influence and is not suppressible by hyperglycemia; the evidence presented suggests that the brain monitors the nutritional state of the organism and regulates HGH release according to need. C.R.S.

Verdy, Maurice; Roussy, Jacques; Tetreault, Leon; and Leboeuf, Gilles (Section d'Endocrinologie, Metabolisme et Nutrition, Hôpital Hôtel-Dieu, Montreal, Canada): STUDY OF THE FACTORS REGULATING THE DISPOSAL OF REPEATED GLUCOSE INJECTIONS. *Metabolism* 20:273-77, March 1971.

Intravenous glucose tolerance tests performed consecutively resulted in a significant correlation between the first K value and the change observed in the second test expressed in percentage or absolute amounts. In one third of the subjects with K less than 1, the second test was better than the first; in the remainder the mean K value decreased upon retesting. Insulin levels in subjects with K greater than 1 were lower during the second test while those with K less than 1 had increased insulin levels after the second glucose load. The subjects in the latter group were older and heavier, factors which require further investigation in the interpretation of these results. C.R.S.

Westervelt, Frederic B., Jr. (Renal Div., Dept. of Intern. Med., Univ. of Virginia Sch. of Med., Charlottesville, Va.): UREMIA AND INSULIN RESPONSE. *Arch. Intern. Med.* 126:865-69, November 1970.

Verbatim summary. Preliminary explorations of in vitro whole blood and leukocyte glucose and lactate metabolism in response to insulin are reported in a further effort to characterize the glucose intolerance of uremia. Data from previous studies of forearm response to insulin are reviewed. Uremic leukocytes seem to be less responsive than normal in terms of glucose uptake and utilization, and to exhibit an increase, rather than decrease, in lactate synthesis under the conditions employed. The possibility of a defect in uremic erythrocyte glucose uptake is suggested.