

vitaly concerned about the value of various forms of therapy now in use," said Dr. Max Miller, professor of medicine at Case Western Reserve School of Medicine and chairman of the University Group Diabetes Program (UGDP).

"It subjects to debate in newspapers and other media very serious questions which have been under study for many years, which must be discussed and evaluated first by impartial investigators in the field. Naturally

we have been concerned by our findings regarding the efficacy of certain hypoglycemic drugs. Final judgment of the relevancy and significance of the UGDP findings will rest on the detailed analyses by our peers and by comparison with other possibly related studies. Complete provision has been made for review and dissemination of the proceedings of the ADA meeting on June 14. Until that date it would be inappropriate to discuss the UGDP findings."

The following abstracts of the UGDP studies appeared in *DIABETES*:19, Supplement 1, the Program of the Thirtieth Annual Meeting of the American Diabetes Association:

"The University Group Diabetes Program: The Effects of Hypoglycemic Agents on Vascular Complications in Patients with Adult Onset Diabetes 1. Design and Methods," Martin G. Goldner, Brooklyn, N.Y., and Thaddeus E. Prout, Baltimore, Md., page 387.

"The University Group Diabetes Program: The Effects of Hypoglycemic Agents on Vascular Complications in Patients with Adult Onset Diabetes 2. Findings at Baseline," Thaddeus E. Prout, Baltimore, Md., and Martin G. Goldner, Brooklyn, N.Y., page 374.

"The University Group Diabetes Program: The Effects of Hypoglycemic Agents on Vascular Complications in Patients with Adult Onset Diabetes 3. Course and Mortality," Thaddeus E. Prout, Baltimore, Md., and Martin G. Goldner, Brooklyn, N.Y., page 375.

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Aharonson, Z.; Shani Mishkinsky, J.; and Sulman, F. G. (Dept. of Applied Pharmacology, Sch. of Pharmacy, Hebrew Univ., Jerusalem, Israel): HYPOGLYCAEMIC EFFECT OF THE SALT BUSH (*ATRIPLEX HALIMUS*)—A FEEDING SOURCE OF THE SAND RAT (*PSAMMOMYS OBESUS*). *Diabetologia* 5:379-83, 1969.

Verbatim summary. The fact that the so-called "sand rat" (*Psammomys obesus*) is highly susceptible to diabetes, and succumbs to it while changing its food from green leaves to laboratory pellets, puzzled us for a long time. Several hypotheses for this phenomenon were suggested, based on the idea that the sand rats are predisposed to diabetes, and that diabetes occurs when the rats are fed on a high caloric diet. In addition to this, it was noticed that the diabetic rats have high plasma insulin levels, which indicated an impairment in their peripheral utilization of glucose. Assuming that the green leaves which the sand rats find in nature prevent their becoming diabetic, we examined the main feeding source of the sand rats in Israel for possible hypoglycemic activity. Press juice from green leaves of *Atriplex halimus*, as well as their water extract and dialysate, were fed to normal and to alloxan diabetic albino rats, and showed a significant hypoglycemic effect without any decrease in appetite. Moreover, their food and water intake was increased by 50 to 800 per cent within five hours after treatment. The effect was also preserved in the ash of the dialysate. The composition of the hypoglycemic principle is now under study. It is not based on the presence of cations, since the active extracts contained K, Na, Ca, Mg and Al only.

Allison, S. P.; Chamberlain, M. J.; Miller, J. E.; Ferguson, R.; Gillett, A. P.; Bemand, B. V.; and Saunders, R. A. (Depts. of Med. and Experimental Path., Univ. of Birmingham, Birmingham, England): EFFECTS OF PROPRANOLOL ON BLOOD

SUGAR, INSULIN AND FREE FATTY ACIDS. *Diabetologia* 5:339-42, 1969.

Verbatim summary. Three types of experiments were carried out in normal subjects to determine the effect of therapeutic doses of oral propranolol on (1) the blood sugar, plasma insulin and free fatty acids (FFA) during prolonged fasting and exercise, (2) intravenous glucose tolerance and the rise in insulin level after intravenous glucose, and (3) the intravenous glucose tolerance on exercise. Propranolol caused only slight lowering of the blood sugar in normals, even after twenty-four-hour fasting. This was most noticeable during exercise. There was no significant effect of propranolol on fasting insulin levels, on glucose tolerance at rest or exercise, or on the response of plasma insulin levels to intravenous glucose. Lowering of plasma FFA levels was found in all subjects when taking propranolol particularly during and after exercise. Possible mechanisms of hypoglycemia in those cases reported in the literature are discussed. It is concluded that hypoglycemia is not a major problem in propranolol therapy.

Andreani, Domenico; Menzinger, Guido; Fallucca, Francesco; Aliberti, Giuseppe; Tamburrano, Guido; and Cassano, Cataldo (Istituto di II. Clinica Medica, Università degli Studi di Roma and Cattedra di Terapia Medica Sistemica, Università Cattolica del S. Cuore, Rome, Italy): INSULIN LEVELS IN THYROTOXICOSIS AND PRIMARY MYXOEDEMA: RESPONSE TO INTRAVENOUS GLUCOSE AND GLUCAGON. *Diabetologia* 6: 1-7, 1970.

Verbatim summary. Glucose disappearance, insulin-like activity (ILA) and serum immunoreactive insulin (IRI) were studied after intravenous injection of glucose or glucagon in patients suffering from thyrotoxicosis or primary myxedema. A group of normal subjects was also investigated.

Glucose disappearance rate appeared to be normal in hyperthyroid, and markedly reduced in hypothyroid subjects. Fasting ILA levels were significantly higher than normal in myxedema but normal in thyrotoxicosis. After glucose administration ILA in myxedema remained at higher values than in thyrotoxicosis at any time of the study; in myxedema, peak ILA levels were reached later than in thyrotoxicosis; peak IRI levels of similar magnitude were reached slightly earlier than normal in thyrotoxicosis, and later in myxedema; in the latter condition, elevated IRI levels were observed for a longer period than in either euthyroidism or hyperthyroidism. During this test the insulinogenic index showed only slight changes in normal and in thyrotoxic subjects, whereas it increased significantly up to sixty minutes in myxedema. The data indicate that the reduced glucose utilization in hypothyroidism is not due to insulin deficiency, but rather to insulin resistance. It also seems possible that thyroid function influences the time of maximal insulin response to intravenous glucose administration. After glucagon injection, the increase in blood glucose was lower and shorter than normal in thyrotoxicosis; it was initially somewhat slower, but later higher and more sustained than normal, in myxedema. The smaller increment in blood glucose in the former condition is probably connected with reduced glycogen stores. ILA response was very high and well sustained in myxedema, whereas it was moderate and shortlasting in thyrotoxicosis. IRI response was higher than normal in thyrotoxic subjects. No difference in the time required for maximal response was observed among the three groups.

Berchtold, P.; Bolli, P.; Arbenz, U.; and Keiser, G. (Medizinische Abteilung Bürgerspital Zug): DISTURBANCE OF INTESTINAL ABSORPTION FOLLOWING METFORMIN THERAPY. OBSERVATIONS ON THE MODE OF ACTION OF BIGUANIDES. *Diabetologia* 5:405-12, 1969.

Verbatim summary. Urinary excretion of vitamin B₁₂ and D-xylose, and the levels of blood lipids were determined in twenty-one patients with clinical or chemical diabetes mellitus and obesity, before and ten days after metformin treatment. In addition, fat tolerance and fat balance studies were carried out in seven patients. In a long-term study of nine patients, the Schilling test was repeated two to three months after the beginning of the metformin treatment in (a) seven patients with permanent metformin treatment, and (b) two patients after cessation of initial metformin treatment. The results were as follows: vitamin B₁₂ and D-xylose absorptions were pathologically low after metformin treatment. Blood lipids and body weight were reduced. There was also some indication of disturbed fat absorption, which, however, could not be proved. Based on our results, it is possible that the decrease in blood sugar after treatment with metformin is partly induced by malabsorption of glucose. Thus the concept of Sadow on the effect of metformin on carbohydrate metabolism has to be re-evaluated. The clinical implications of the results, especially with respect to vitamin B₁₂ absorption are discussed.

Boder, George B.; Root, Mary A.; Chance, Ronald E., and Johnson, Irving S. (Lilly Res. Lab., Eli Lilly and Company, Indianapolis, Indiana): EXTENDED PRODUCTION OF INSULIN BY ISOLATED RABBIT PANCREATIC ISLETS; EVIDENCE FOR BIOSYNTHESIS OF INSULIN. *Proc. Soc. Exp. Biol. Med.* 131: 507-13, June 1969.

Verbatim summary. Methods for prolonged primary suspen-

sion cultures of rabbit pancreatic islets were established, and incorporation of carbon-14 labeled amino acids into insulin and other proteins was demonstrated.

Boyns, A. R.; Pearce, N.; and Mahler, R. F. (Tenovus Inst. for Cancer Research and Dept. of Metabolic Med., Welsh Nat. Sch. of Med., Cardiff, Wales): INSULIN IN BILE. THE EFFECT OF MONOSACCHARIDES AND HYPOGLYCAEMIC AGENTS. *Diabetologia* 5:304-08, 1969.

Verbatim summary. Immunoreactive insulin is found in the hepatic bile of normal rabbits. Less than 1 per cent of an injected dose of bovine insulin reached the bile. When I-125-bovine insulin alone or complexed with antibody was given intravenously, only 40 per cent of the radioactivity recovered in the bile was precipitable with trichloroacetic acid, and less than 10 per cent reacted with guinea pig anti-insulin serum. Glucose, fructose, galactose, tolbutamide and phenformin all caused an elevation in bile insulin, which reached a maximum 40 to 50 min. after the injection. Alloxan attenuated or abolished these responses.

Cerasi, E.; Chowers, I.; Luft, R.; and Widström, A. (Dept. of Endocr. and Metabolism, Karolinska Hosp., Stockholm, Sweden): THE SIGNIFICANCE OF THE BLOOD GLUCOSE LEVEL FOR PLASMA INSULIN RESPONSE TO INTRAVENOUSLY ADMINISTERED TOLBUTAMIDE IN HEALTHY SUBJECTS. *Diabetologia* 5:343-48, 1969.

Verbatim summary. The effect of intravenous tolbutamide on insulin release in normal human subjects was investigated under various experimental conditions. The blood glucose level was either allowed to fall after intravenous tolbutamide or kept within normal limits by a concomitant glucose infusion. In other experiments, tolbutamide was given during different degrees of hypoglycemia induced by insulin. It was found that tolbutamide provoked a rapid and short-lasting insulin release as well as a post-initial and extended insulin release, provided the blood glucose concentration was kept within normal limits. The hitherto accepted transiency of tolbutamide action in healthy subjects seems to be due to the hypoglycemia which follows the administration of the drug. During more marked hypoglycemia induced by exogenous insulin, the insulin releasing capacity of tolbutamide was almost blunted. Tolbutamide markedly enhanced the insulin release following glucose administration. The findings presented might clarify some of the therapeutic effects of the drug in diabetes mellitus.

Deckert, Torsten; and Grundahl, Else (Med. Dept., Blegdams hospital, Copenhagen, Niels Steensen's Hosp., Gentofte and State Hosp., Nykøbing Sjælland, Denmark): THE ANTIGENICITY OF PIG INSULIN. *Diabetologia* 6:15-20, 1970.

Verbatim summary. Treatment of human subjects with a neutral solution of pure pig insulin crystals does not lead to the formation of insulin antibodies. Thirty-six nondiabetics with psychiatric diseases were treated with a neutral solution of crystalline pig insulin for a maximum period of 104 days, using a twenty-four-hour dosage of up to 208 i.u. In patients who had previously not received insulin treatment (twenty-four patients), insulin antibodies could not be demonstrated after the termination of the insulin treatment. However, in patients who had previously received treatment with acid solutions of insulin consisting of pig and ox insulin (twelve patients), it was possible in almost all cases to

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demonstrate insulin antibodies after the termination of the insulin treatment. In addition, ten pigs received treatment with solutions of pure pig insulin. Insulin antibodies could be demonstrated in only two pigs, both treated with acid solutions of recrystallized pig insulin, whereas antibodies could not be demonstrated in pigs treated with neutral solutions of recrystallized pig insulin. The reason why pure preparations of pig insulin are in most cases also antigenic to man, is presumably that the pig insulin preparations are injected as suspensions (zinc insulins, NPH insulin) or as is the case with acid solutions of insulin, converted to suspensions after injection, since insulin precipitates when the acid insulin solution is neutralized by tissue fluid.

Feldman, Marvin J.; Becker, Kenneth L.; Reece, William E.; and Longo, Antonio (George Washington Univ. Sch. of Med., Secs. of Metabolism, Genetics & Rheumatology, and Dept. of Med., Veterans Administration Hosp., and Howard Univ. Sch. of Med., Washington, D.C.): MULTIPLE NEUROPATHIC JOINTS, INCLUDING THE WRIST, IN A PATIENT WITH DIABETES MELLITUS. *JAMA* 209:1690-92, Sept. 15, 1969.

The authors describe the occurrence of multiple neuropathic arthropathy in a male insulin-treated diabetic patient with onset of diabetes at forty-nine years of age. The joint problems began shortly after the onset of the diabetes and nine years after onset definite neuropathy of both upper and lower extremities was present. X-ray evidence or arthropathy was present fourteen years after onset of diabetes in both feet and left wrist, with confirmation of the process in the latter location by surgical biopsy. S.B.B.

Forsander, Olof A.; and Himberg, Jaakko-Juhani (Res. Labs. of State Alcohol Monopoly, Helsinki, Finland): EFFECT OF GLUCOSE ON LIVER METABOLISM DURING ETHANOL OXIDATION. *Metabolism* 18:776-81, September 1969.

In rat liver slices ethanol was shown to inhibit CO₂ formation from labeled glucose, palmitate and acetate. In the presence of ethanol, increasing concentrations of glucose had little effect upon oxygen consumption. The rate of ethanol oxidation was enhanced with an increase in glucose to 3 mM. beyond which there was no further rise. The lactate/pyruvate ratio in the medium increased with higher levels of glucose mainly due to a decrease in pyruvate concentration. Ethanol may affect the citric acid cycle by changing the redox level of the mitochondria. In the more reduced state the equilibrium between malate and oxaloacetate shifts in favor of malate and a shortage of oxaloacetate arises. Glucose does not decrease the redox level and apparently has no effect on the blockage of citric acid cycle caused by ethanol. C.R.S.

From, George L. A.; Driscoll, Shirley G.; and Steinke, Jurgen (Depts. of Med., Harvard Med. Sch. and Joslin Diabetes Foundation, and Depts. of Path., Harvard Med. Sch. and Boston Hosp. for Women, Lying-in Div., Boston, Mass.): SERUM INSULIN IN NEWBORN INFANTS WITH ERYTHROBLASTOSIS FETALIS. *Pediatrics* 44:549-53, October 1969.

It is well established that newborn infants with erythroblastosis fetalis (EBF) are predisposed to developing hypoglycemia. In this study twelve infants with EBF had glucose and insulin concentrations measured in umbilical cord blood at birth and again prior to exchange transfusion. At birth serum glucose levels (47 mg./100 ml.) were significantly lower and serum insulin levels (30 μ U./ml.) were significantly higher than control levels measured in cord blood

from fourteen normal neonates (72 mg./100 ml. and 10 μ U./ml., respectively). Birth weights of EBF babies were also significantly less than control weights. Insulin concentrations remained elevated at time of exchange transfusion three-fourths of an hour to twenty-four hours later. There was no correlation between levels of serum insulin and hematocrits or serum bilirubin concentrations.

The authors again stress the importance of monitoring blood glucose levels among EBF infants during the neonatal period and point out similarities of this condition to that occurring in infants of diabetic mothers. R.K.K.

Hansen, Ar. P.; and Johansen, K. (Second Univ. Clinic of Internal Med., Kommunehospitalet, Aarhus, Denmark): DIURNAL PATTERNS OF BLOOD GLUCOSE, SERUM FREE FATTY ACIDS, INSULIN, GLUCAGON AND GROWTH HORMONE IN NORMALS AND JUVENILE DIABETICS. *Diabetologia* 6:27-33, 1970.

Verbatim summary. Blood glucose, serum free fatty acids, insulin, glucagon and growth hormone have been measured half-hourly in five newly diagnosed, untreated, male patients with classic juvenile diabetes and in five healthy male subjects during a twenty-four-hour period of daily life. Blood glucose, serum insulin and free fatty acids followed, on the whole, the expected pattern. Serum glucagon showed a fairly constant level during day and night in both groups. In the nondiabetic subjects, serum growth hormone was low during most of the day. Only two peaks were observed before 10 p.m. Four of the subjects showed peaks at precisely the same time, namely at 10:30 p.m. and 1:30 a.m. Two showed peaks at 5:00 to 5:30 p.m. The mean serum growth hormone concentration during the twenty-four-hour period was 1.98 ng./ml. In the juvenile diabetics, the growth hormone was higher and the level fluctuated much more, showing more frequent and higher peaks than in the nondiabetics. The mean serum growth hormone concentration during the twenty-four-hour period was 7.26 ng./ml., i.e., three to four times higher than in the nondiabetics.

Hellebusch, Arthur A. (Dept. of Surg. [Urology], Univ. of Kentucky, Lexington, Ky.): CLINICAL NOTES: RENAL PAPILLARY NECROSIS. A UROLOGICAL EMERGENCY. *JAMA* 210: 1098-1100, Nov. 10, 1969.

Four cases of acute necrotizing papillitis are described: associated with diabetes (2), long-term phenacetin therapy (1) and obstructive uropathy secondary to adenocarcinoma of the prostate (1). All recovered and success was attributed especially to adequate ureteral catheterization and lavage with saline or antibiotic solutions, combined in some patients with oral antibiotic administration. Roentgen findings during the attack showed obstruction with necrotic renal tissue and after recovery findings were indistinguishable from chronic pyelonephritis. S.B.B.

Hulse, M.; and Gershberg, H. (Dept. of Med., New York Univ. Sch. of Med., and Bellevue Hosp., N.Y., N.Y.): VARIABILITY IN BLOOD CHOLESTEROL, TRIGLYCERIDES, FREE FATTY ACIDS, GLUCOSE AND BODY WEIGHT IN MATURITY-ONSET DIABETICS. *Amer. J. Med. Sci.* 258:114-20, August 1969.

This is an attempt to control the validity of previous studies of the effect of tolbutamide and phenethylbiguanide upon blood lipid levels. The authors studied the effect of

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diabetic (calorie restricted) diets upon blood cholesterol, triglycerides, free fatty acids and glucose, and body weight of fifty maturity-onset diabetics (thirty-two female, eighteen male) over a period of nine months. It presumably was the initial period of treatment of the diabetes.

There was considerable variability in the levels of the blood cholesterol and triglycerides, especially the latter. The decreases observed in both blood cholesterol and triglyceride levels were more striking in those with initially elevated blood levels. The absolute change of blood cholesterol in the nine months of study of this control group was less than those of the phenformin-treated but more than that of the tolbutamide-treated group previously reported. S.B.B.

Jaksic, Zelimir; and Skrabalo, Zdenko (Andrija Stampar Sch. of Public Health, Medical Faculty, University of Zagreb and Dept. of Med., within the Ozren Novosel Hosp., Vuk Vrhovac Centre for Diabetes, Medical Faculty Univ. of Zagreb, Yugoslavia): ZAGREB DIABETES SURVEY. *Diabetologia* 5:366-72, 1969.

Verbatim summary. The results are presented of a diabetic survey in Zagreb where, in a typical population sample from five General Practice Units, 88.9 per cent of the total number of inhabitants aged over fifteen (9,176) were examined. The examination in the screening phase comprised the determination of blood sugar one to two hours after the largest daily meal. The results are analyzed from technical, socio-medical, and epidemiological aspects. (1.) For standardized epidemiological comparisons, blood sugar measurements after glucose loading should be adapted and so arranged that the validity of the screening phase may be assessed. (2.) All blood sugar distributions proved unimodal, continuous, and positively skewed. Consequently, all critical diagnostic values are necessarily arbitrary and of greater importance to group than individual diagnosis. The OGTT results in so-called borderline cases proved unreliable in the course of time. Classifications based upon single determinations are inadequate. (3.) In the epidemiological studies of diabetes, a quantitative approach to the analysis of relationship between the continuously varying blood sugar level and other epidemiological characteristics of the population has been neglected. The use of this approach in the Zagreb Diabetes Survey promises further refinements in the understanding of the importance of glucose tolerance in complete populations.

Matsui, Nobuo; and Plager, John E. (Div. of Med., Roswell Park Memorial Inst., New York State Dept. of Health, and The Med. Foundation of Buffalo, Buffalo, N.Y.): "ANTI-INSULIN" ACTION OF CORTISOL. I. INFLUENCE OF CORTISOL ON THE METABOLISM OF SPECIFICALLY-LABELED GLUCOSE, PYRUVATE AND GLUCOSE-6-PHOSPHATE. *Endocrinology* 84: 1439-49, June 1969.

Cortisol inhibited the metabolism of glucose to CO₂, fatty acid and glycogen in a mouse ear strip preparation. Oxygen consumption of the tissues was not influenced by concentrations of cortisol which markedly inhibited glucose metabolism. The rate of glucose conversion to fatty acid and CO₂ was proportional to the cut edge of the tissue suggesting that glucose metabolism occurs at this surface. The effect of cortisol is likewise related to the length of the cut surface. The influence of cortisol on glucose metabolism suggests an action either on glucose penetration into the cells or on conversion of intracellular glucose to glucose-6-phosphate.

Measurements of pyruvate conversion to CO₂ and fatty acid demonstrated that the effect of cortisol on pyruvate metabolism was secondary to an effect on glucose. Using glucose-6-phosphate it was noted that the metabolism of this compound was inhibited by cortisol. These observations are consistent with the concept of inhibition by cortisol of penetration of glucose and glucose-6-phosphate through cell membranes. C.R.S.

Mendelsohn, L. V.; Friedman, L. M.; Corredor, D. G.; Sieracki, J. C.; Sabeb, G.; Vester, J. W.; and Danowski, T. S. (Depts. of Med. and Path., Univ. of Pittsburgh & Med. Center, & Shadyside Hosps., Pittsburgh, Pa.): INSULIN RESPONSES IN MYOTONIA DYSTROPHICA. *Metabolism* 18:764-69, September 1969.

In a group of eleven adults with myotonia dystrophica administration of glucose, tolbutamide and intravenous glucagon resulted in levels of blood sugar, inorganic phosphorus, growth hormone and immunoassayable insulin which were indistinguishable from those of healthy control subjects. The frequent absence of undue hyperinsulinemic responses to these stimuli in myotonic patients suggests a variability in this trait which is greater than that anticipated from the findings previously reported. C.R.S.

Modigliani, E.; Strauch, G.; Luton, J. P.; and Bricaire, H. (Laboratoire de Pathologie Médicale de la Faculté de Médecine et Service d'Endocrinologie et de Métabolisme, Hôpital Cochin, Paris): EFFECTS OF GLUCOSE AND ARGININE ON THE SECRETION OF INSULIN IN CUSHING'S SYNDROME. *Diabetologia* 6:8-14, 1970.

Verbatim summary. Plasma insulin levels have been measured by radioimmunoassay in fifteen patients with untreated Cushing's syndrome, using oral glucose tolerance tests (OGTT), arginine infusions (AI) or both of these stimuli. During OGTT, glucose tolerance was impaired in twelve subjects, at the upper limit of the normal range in two, and normal in only one case. Statistically significant hyperinsulinemia occurred in five patients. Nine subjects had plasma insulin levels in the control's range, though their glycemic curve was of the diabetic type. During arginine infusion, insulin peak was not reduced in these nine patients. A negative response to each test was observed in one patient. These heterogeneous results are discussed in the light of experimental data and known physiological effects of glucocorticoids.

Mohos, Steven C.; and Skoza, Lorant (Dept. of Path., New York Med. Coll., N.Y., N.Y.): GLOMERULAR SIALOPROTEIN. *Science* 164:1519-21, June 27, 1969.

Verbatim summary. The high content of sialic acid in the glomerulus is associated with the cell membrane of epithelial cells lining the basement membrane. Whereas enzyme studies indicate that sialic acid is a determinant of the nephritogenic antigen, the physicochemical properties of this nephritogenic glycoprotein suggest that sialic acid may have an important role in the filtration mechanism.

Pierce, Lawrence E.; and O'Brien, John J. (Mercy Hosp., and State Univ. of New York at Buffalo, N.Y.): HYPERGLYCEMIC COMA ASSOCIATED WITH CORTICOSTEROID THERAPY. *New York J. Med* 69:1785-87, June 15, 1969.

Verbatim summary. An elderly, nondiabetic patient was treated with prednisone and six-mercaptopurine for idiopathic

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autoimmune hemolytic anemia of the warm antibody type. While the daily prednisone dosage was 80 mg., the patient lapsed onto hyperglycemic-hypernatremic coma which gradually improved with insulin administration and rehydration over a three-day period. This prednisone complication has not previously been emphasized in the steroid literature.

Rasio, E. A.: THE DISPLACEMENT OF INSULIN FROM BLOOD CAPILLARIES. *Diabetologia* 5:416-19, 1969.

Verbatim summary. Normal anesthetized bull dogs were perfused with constant amounts of I-125 bovine insulin. During the control period, steady state arterio-venous gradients and lymph levels were achieved. Positive arterio-venous differences were observed across the hind limbs and the head. Lower levels of I-125-insulin were found in cervical and leg lymph than in corresponding venous plasma. The rapid intravascular injection of unlabeled insulin resulted in an almost immediate reversal of the arterio-venous gradients of I-125-insulin in the head and the hind limb. The injection of small amounts of glucose into the lower abdominal aorta induced a very rapid diminution of the arterio-venous gradient across the hind quarters; the effect was not mediated by the release of endogenous insulin. In both experiments, the lymph levels of I-125-insulin remained relatively constant.

The data indicate that the vascular pole of the capillary endothelial cells can adsorb labeled insulin and either exchange it with unlabeled insulin or release it under the direct influence of glucose.

Rosenfeld, Paul S.; Wool, Marvin S.; and Danforth, Elliot, Jr. (Dept. of Metabolism, Walter Reed Army Inst. of Res., Washington, D.C.): GROWTH HORMONE RESPONSE TO INSULIN-INDUCED HYPOGLYCEMIA IN THYROTOXICOSIS. *J. Clin. Endocr.* 29:777-780, June 1969.

Verbatim summary. The serum growth hormone (GH) response to insulin-induced hypoglycemia of ten thyrotoxic patients was compared with that of fourteen normal subjects. All thyrotoxic subjects had a distinct rise in GH, attaining a value of at least 6.4 ng./ml. Mean GH levels of thyrotoxic subjects did not differ significantly from those of normals at any time during the insulin tolerance test. These results indicate that GH response to insulin-induced hypoglycemia in thyrotoxicosis is normal.

Rubenstein, Arthur H. (Dept. of Med., Univ. of Chicago, Chicago, Ill.): THE SIGNIFICANCE OF IMMUNOASSAYABLE INSULIN IN URINE. *JAMA* 209:254-56, July 14, 1969.

This is a review of the assay technics for determination of urinary insulin content, and the physiological and pathological variations in insulin excretion in health and disease, in both adults and children. Approximately 2 per cent of filtered insulin or 8,000 to 30,000 μ U. per twenty-four hours is excreted in adults. Its excretion is altered in renal disease, pregnancy and hypertension. S.B.B.

Sabeh, G.; Mendelsohn, L. V.; Corredor, D. G.; Sunder, J. H.; Friedman, L. M.; Morgan, C. R.; and Danowski, T. S. (Dept. of Med., Univ. of Pittsburgh, Med. Center & Shadyside Hosps., Pittsburgh, Pa.; Dept. of Anat., Univ. of Indiana, Bloomington, Ind.): GROWTH HORMONE IN INSULIN-TREATED DIABETES MELLITUS. *Metabolism* 18:748-53, September 1969.

Serum immunoassayable growth hormone levels of insulin-dependent diabetic patients may be higher than those recorded in noninsulin treated patients. During fasting and following oral glucose, juvenile or adult-onset diabetic patients manifested elevations of serum growth hormone. Possibly insulin therapy tends to raise growth hormone levels by sudden decreases in blood sugar or by actual hypoglycemia. If retinopathy can be shown to occur with greater frequency in patients receiving insulin, one could invoke the higher levels of growth hormone in these patients as a causal or contributing factor. C.R.S.

Shabani, B.; and Spalding, J. M. K. (Dept. of Neurol., United Oxford Hosps., Oxford, England): DIABETES MELLITUS PRESENTING WITH BILATERAL FOOT-DROP. *Lancet* 2:930-31, Nov. 1, 1969.

The authors report two patients who presented with bilateral foot-drop. The first, a fifty-eight-year-old woman, presented with sensory, motor, electromyographic and motor-nerve conduction abnormalities consistent with injury to the lateral popliteal nerve in the region of the popliteal fossa. The second patient, an eighty-year-old woman, presented with almost identical but more severe findings. Treatment for diabetes was associated with much improvement in both patients. It is speculated that trauma to the isolated nerve plus a metabolic abnormality may be responsible for the development of the neuropathic findings. It is recommended that diabetic patients be advised to avoid situations which result in pressure to exposed peripheral nerves. T.G.S.

Wessing, A.; and Meyer-Schwickerath, G. (Augenlinik am Klinikum Essen der Ruhruniversität Bochum): TREATMENT OF DIABETIC RETINOPATHY BY LIGHT COAGULATION. *Diabetologia* 5:312-17, 1969.

Verbatim summary. Results of treating diabetic retinopathy by light coagulation are reported. Early symptoms, e.g., microaneurysms, lipid deposits and retinal edema, improved after light coagulation. Coagulation during early phases of the disease prevented development of vascular proliferation, hemorrhages and retinal detachment. Where vascular proliferation and fibrous changes of the vitreous body were already present when the therapy was instituted, the further deleterious course was prevented in only a few cases.

Zaragoza, N.; and Felber, J. P. (Dept. of Clinical Biochem., Univ. of Lausanne, Lausanne, Switzerland): STUDY OF THE METABOLISM IN VITRO OF GLUCOSE IN THE RAT EPIDIDYMAL FAT TISSUE. *Diabetologia* 5:284-92, 1969.

Verbatim summary. The rat epididymal fat tissue was incubated with glucose differently labeled with C-14, and the effect of palmitate bound to albumin was studied in the absence or presence of insulin. No inhibition by palmitate of the glucose metabolism was observed. On the contrary, it was demonstrated that palmitate stimulates the different pathways of the glucose metabolism, particularly the fatty acid neosynthesis. The results are discussed in relation to the glucose and palmitate metabolism in the adipose cell, and in relation to the role in vivo of the adipose tissue in the decrease of the glucose assimilation observed in conditions which abnormally increase the serum level of free fatty acids.