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Abdulbayoglu, Sefik; and Marble, Alexander (New Eng. Deaconess Hosp., Harvard Med. School and Joslin Clinic, Boston, Mass.): NECROTIZING RENAL PAPILLITIS (PAPILLARY NECROSIS) IN DIABETES MELLITUS. *Amer. J. Med. Sci.* 248:623-32, December 1964.

A review of the clinical and pathological features of fourteen diabetic patients with necrotizing renal papillitis seen in the hospital from 1955 to 1963. Thirteen died and autopsy material was studied. The incidence was 2.7 per cent of autopsied patients in that period. These thirteen patients were classified into three groups: (1) an acute fulminating type, five; (2) a subacute, two; and (3) a type, six patients, in which the disorder was found incidentally at autopsy.

The clinical features are described: six of the thirteen had unilateral involvement, eleven were females, and only four were diagnosed before death. The frequent association of pyelonephritis and of renal vascular disease was considered of major importance in the pathogenesis of this disorder. S.B.B.

Berson, Solomon A.; Yalow, Rosalyn S.; Glick, Seymour M.; and Roth, Jesse (Radioisotope Serv., V.A. Hosp., Bronx, N.Y.): IMMUNOASSAY OF PROTEIN AND PEPTIDE HORMONES. *Metabolism* 13:1135-53, October 1964 (Part 2)

Radioimmunoassay was employed originally for the detection and measurement of insulin in biological fluids. The method has been applied subsequently to the determination of glucagon, human growth hormone, parathormone and ACTH in plasma. The technical details of this assay procedure pertaining to different hormones varies, depending on their individual properties. The problems of sensitivity and specificity of the procedures are discussed in this extensive review. The method permits the simultaneous assay of several hormones in the study of their interrelationships upon the metabolic activities in specific tissues. C.R.S.

Calame, Simone S.; and Lostrub, Ardis J. (Hormone Res. Lab., Univ. of California, Berkley, Calif.): EFFECT OF INSULIN AND LACK OF EFFECT OF TESTOSTERONE ON THE PROTEIN OF VENTRAL PROSTATES FROM CASTRATED MICE MAINTAINED AS ORGAN CULTURES. *Endocrinology* 75:451-54, September 1964.

The prostate glands of castrated mice were maintained as an organ culture on a synthetic medium to which was added leucine-1-C-14. An aqueous suspension of testosterone or a solution of Crystalline Zinc Insulin was added to the medium to determine the effect of these hormones upon incorporation of the amino-acid into protein. Under these conditions insulin effected a 20 per cent increase in protein content and a 100 per cent increase of leucine-C-14 incorporation. Testosterone had no effect upon either protein content or leucine incorporation into protein. The prostate explants exhibited typical retrogressive changes prior to culture but substantial repair after four days on medium plus insulin. C.R.S.

Cameron, J. Stewart; and Rees, J. Russell (Dept. of Med., Guy's Hosp., and Dept. of Cardiology, Westminster Hosp., London, England): THE EFFECT OF SMALL DOSES OF INSULIN AND GLUCAGON ON THE HUMAN LIVER. *Clin. Sci.* 27:67-76, August 1964.

Studies were performed with the technic of hepatic retrojection by injecting test substances and control materials directly into the liver through a double lumen catheter introduced through a hepatic vein. The liver took up the substances so delivered; a small mass of tissue was impregnated without liver damage. Saline retrojection had no effect but glucagon gave a marked rise in glucose concentration in blood samples from the treated segments. Insulin retrojection in five of eight normal subjects studied showed a reduction in blood glucose concentration. This effect was not enhanced by glucose infusion and was present during glucagon infusion. G.D.M.

Cesari, E.; and Luft, R. (Karolinska Hospital, Stockholm, Sweden): INSULIN RESPONSE TO GLUCOSE LOADING IN ACROMEGALY. *Lancet* 2:769-71, Oct. 10, 1964.

Studies of the effects of endogenous growth hormone on insulin secretion were carried out by measuring plasma insulin (immunoassay) before, during and after glucose infusion in nine acromegalics. In general, fasting insulin levels were normal or high and glucose disappearance rates were normal or low. In three patients with very active acromegaly insulin levels rose markedly in response to glucose infusion but glucose disappearance rates were normal. These data could be explained by an inhibitory effect of growth hormone on insulin action and an adaptive increase in islet cell secretion. In other acromegalics insulin secretion rates were less and glucose uptake was reduced below normal. The findings could be explained by islet cell exhaustion. T.G.S.

Dubre, J. (Dept. of Med., St. Thomas Hosp. Med. Sch., London, S.E. 1, England): AN INTESTINAL HORMONE AFFECTING GLUCOSE DISPOSAL IN MAN. *Lancet* 2:672-73, Sept. 26, 1964.

Glucose uptake is more rapid after oral than after intravenous glucose administration. When glucose is infused into the jejunum, plasma insulin rises higher than when the same quantity is infused intravenously. Such an effect persists after portal vein ligation with porto-caval anastomosis. A factor present in the small gut could be responsible for these differences. To test this hypothesis, secretin in a dose of 1-1.5 units/kg. was given intravenously to twelve normal subjects as part of a rapid intravenous glucose tolerance test (25 gm. glucose). The addition of secretin reduced the half-time for fall of blood glucose from 43.7 ± 5.3 to 23.0 ± 2.8 minutes. T.G.S.

Elrick, H.; Stimmler, L.; Hlad, C. J., Jr.; and Arai, Y. (Res. Labs., V.A. Hosp., Depts. of Med., Pharmacol. and Pediat., Univ. of Colorado Sch. of Med., Denver, Colo.): PLASMA

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INSULIN RESPONSE TO ORAL AND INTRAVENOUS GLUCOSE ADMINISTRATION. *J. Clin. Endocr.* 24:1076-82, October 1964.

Ten normal individuals were given intravenous and oral glucose tolerance tests. Glucose was administered by infusion over one hour either intravenously or by a gastric tube. Approximately 20 gm. of glucose were administered by both routes and blood sugar values were similar during and one hour after the glucose infusion. The K values (disappearance rates) were identical, whether glucose was administered intravenously or orally, but not the insulin levels as measured by immunoassay. The insulin level rose swiftly by some 40 μ U./ml. from the mean fasting level of 57 μ U./ml. in response to the oral type of glucose tolerance test. Also, the high levels were maintained after the infusion was stopped. The intravenous glucose tolerance test produced a transient rise by some 30 μ U./ml. toward the end of the infusion time and the insulin level returned to normal afterwards.

The possibility was considered that during the intravenous glucose tolerance test a rise in blood sugar was the only stimulus for an enhanced insulin release from the islets, while during the oral glucose tolerance test an additional intestinal or hepatic factor may have contributed to the augmented insulin secretion. O.V.S.

Fabrykant, Maximilian; Gelfand, Maxwell L.; and Rosenberg, Abner S. (Univ. Hosp., New York Univ. Med. School; N.Y. Infirmary; Brooklyn Eye & Ear Hosp., and L. I. Coll. Hosp.): FURTHER EXPERIENCE WITH ANABOLIC STEROIDS IN DIABETIC RETINOPATHY: FACTORS PRECIPITATING RETINAL HEMORRHAGES. *Amer. J. Med. Sci.* 248:304-16, September 1964.

Forty-six adult diabetics with diabetic retinopathy were treated for an average of four and one-half years. The factors which predisposed to progression of this complication were analyzed in an attempt to avoid or correct them. These fell into categories such as hypoglycemia, hypertension, psychic stress, vomiting, lability of blood sugar, etc. In addition, they utilized a low fat, high protein diet and hormonal drugs such as estrogens and steroid anabolic agents.

Fourteen similar adult diabetic control patients with retinopathy were studied simultaneously. It was felt that the therapeutic program retarded the rate of progression of the retinopathy. S.B.B.

Frankl, William S. (Edw. B. Robinette Foundation, Cardiovascular Sect. of the Hosp. of the Univ. of Pennsylvania and the Dept. of Med., Temple Univ. Med. Center, Philadelphia, Pa.): GLYCOPROTEINS IN DIABETES MELLITUS AND ATHEROSCLEROSIS. *Amer. J. Med. Sci.* 248:588-95, November 1964.

The glycoprotein content was determined in fasting sera from fifty normal control patients, 100 diabetic subjects and twenty nondiabetic subjects with atherosclerosis obliterans of the extremities and significant coronary artery disease. The determinations were made electrophoretically, expressed as area in mm^2 and divided into albumin, alpha-1, alpha-2, beta and gamma fractions. All fractions were elevated in diabetics as compared with normals, but the albumin fraction was decreased in the nondiabetic group with complications. Among the diabetics no significant differences were found between those with complications or fasting hyperglycemia. The diabetics and the twenty nondiabetics with atherosclerosis had in common an elevation of the alpha-2 fraction. The diabetic

state in addition was associated with an elevation of the beta and gamma fractions. S.B.B.

Hellerström, Claes; Inge-Bert, Täljedal; and Hellman, Bo (Histological Dept., Univ. of Uppsala, Uppsala, Sweden): QUANTITATIVE STUDIES ON ISOLATED PANCREATIC ISLETS OF MAMMALS. II. ACID PHOSPHATASE ACTIVITY IN OBESE-HYPERGLYCEMIC MICE. *Acta Endocr.* 45:476-86, March 1964.

The islets of the animals were composed of a relatively pure population of B cells. The authors found no evidence for a relationship between insulin secretion and acid phosphatase activity of the B cell. G.D.M.

Hellier, F. F. (Leeds, England): ITCHING AND DIABETES. *Brit. M. J.* 2:628, Sept. 5, 1964 (From Correspondence).

In this correspondence, the author questions the significance of generalized itching due to diabetes, particularly in elderly patients as described in a previous article of the *British Medical Journal* (Aug. 15). The author further questions that such itching was any more common in diabetics than in any comparable group of elderly patients, although agreeing that localized itching is quite a different matter. He also raises the possibility that many of the local irritations are due to candida infection whether they be of vulvae or penes. *Oakley, Wilfrid* (Diabetic Clinic, King's College Hosp., London S.E. 5, England): *Brit. Med. J.* 2:818, Sept. 26, 1964. Oakley responds to previous requests for opinions as to the occurrence of itching in diabetes by stating that generalized pruritis is a rare symptom, no more common in the elderly diabetic than in the nondiabetic of comparable age. He affirms that pruritis vulvae rarely occurs in renal glycosuria, emphasizing that glycosuria as a result of hyperglycemia appears to be necessary. *Murray, Ian* (Glasgow C.3, Scotland): *Brit. Med. J.* 2:877-78, Oct. 3, 1964. Here, the correspondent, Ian Murray, agrees with Dr. Wilfrid Oakley that generalized pruritis is no more common in the elderly diabetic than in the nondiabetic of comparable age, but he questions whether the addition of elevated sugar is sufficient explanation for the occurrence of pruritis vulvae in the diabetic woman when the latter symptom is rare in patients with renal glycosuria. He offers no explanation. R.F.B.

Jones, C. S. (Prince Henry Hosp., Sydney, Australia): CYTOTOXICITY OF AUTOCLAVED CARBOHYDRATE SOLUTIONS. (From Correspondence). *Brit. M. J.* 2:878, October 3, 1964.

The correspondent reports the occurrence of a striking increase in the height of T waves and occasional bizarre complexes appearing in the electrocardiogram of patients receiving 100 to 200 ml. of 50 per cent dextrose solution, which was associated with no change in circulating potassium levels. He questions whether changes in myocardial function, associated with rapid artificial elevations of blood glucose level, might be due to the recent autoclaving of dextrose solutions, in view of the fact that the electrocardiographic changes appeared not to be due to alterations in ionic equilibria. R.F.B.

Katsoyannis, P. G. (Div. of Biochem., Med. Res. Center, Brookhaven National Lab., Upton, Long Island, N.Y.): ON THE PROBLEM OF THE CHEMICAL SYNTHESIS OF PROTEINS WITH SPECIAL REFERENCE TO INSULIN. *Metabolism* 13:1059-74, October 1964. (Part 2)

A detailed review of the problems of peptide synthesis as related specifically to insulin. The intricate biochemical reactions involved in the synthesis of the A and B chains through

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multiple subunits and deblocking reactions are described. C.R.S.

Kuftinec, Dubravko M.; and Mayer, Jean (Dept. of Nutrition, Harvard Univ. Sch. of Public Health, Boston, Mass.): EXTREME SENSITIVITY OF OBESE HYPERGLYCEMIC MICE TO CAFFEINE AND COFFEE. *Metabolism* 13:1369-75, November 1964.

Obese hyperglycemic mice were more sensitive to the toxic effects of caffeine than normal animals. Caffeine administered by injection or orally as coffee resulted in a prompt and sustained rise in blood glucose in the obese mice. The lean animals were found to have a decrease in blood sugar following injected caffeine and no change after the ingestion of coffee. The obese mice have previously been shown to have a paradoxical response to alloxan with a fall in blood glucose and massive granulation of beta cells. The administration of other purines and pyrimidines had no significant effect upon blood sugar. No explanation for the unexpected action of caffeine in the obese mice is offered. C.R.S.

Landon, J.; Wynn, V.; and James, V. H. T. (Surg. Unit and Dept. Chem. Path., St. Mary's Hosp., London, England): THE ADRENOCORTICAL RESPONSE IN INSULIN-INDUCED HYPOLYCAEMIA. *J. Endocr.* 27:183-92, November 1963.

Changes in the level of blood glucose and plasma cortisol were studied in human subjects at intervals after the intravenous injection of glucagon-free insulin. In normal subjects the administration of 0.15 U. insulin per kg. caused a mean elevation of 12.8 μ g per 100 ml. in plasma cortisol level in twelve tests; the rise was usually maximal one hour after the injection of insulin. The administration of 0.10 U. insulin per kg. resulted in a much smaller and less consistent rise in plasma cortisol levels of normal subjects. On the other hand, nine chronically malnourished patients exhibited a mean rise of 12.1 μ g per 100 ml. in their plasma cortisol level. As a general rule, significant elevation of plasma cortisol was observed whenever the blood glucose fell below 40 mg. per 100 ml. for at least ten minutes. One patient with diabetes insipidus, hypothyroidism and adrenal insufficiency attributed to a hypothalamic lesion of unknown etiology, and three patients with pituitary insufficiency caused by pituitary lesions or hypophysectomy showed no rise in plasma cortisol level in response to hypoglycemia. No untoward effects of hypoglycemia were encountered in this series. The authors suggest that the test may be of value in the investigation of endocrine disorders. H.T.N.

Leboczky, T.; Halasy, M.; Simon, G.; and Harnos, G. (Neurological Dept., Istvan Hosp., and Pathophysiological Inst. of the Univ. of Budapest, Hungary): SKELETAL MUSCLE GLYCOGENOSIS IN IDENTICAL TWINS. *Brit. Med. J.* 2:802, Sept. 26, 1964 (Medical Memoranda).

An atypical form of muscle glycogenesis was studied in twenty-nine-year-old male twins. The clinical course and results of effort tests for ischemia were similar in both. Biochemical and histological studies were made in one. The resting serum pyruvate was slightly raised and was increased to twice the normal value following effort ischemia. The serum lactate following ischemia rose from the upper limit of normal to a level 4 mg. per cent higher. Histologic study of

quadriceps femoris muscle showed the presence of numerous vacuoles of varying size and moderate proliferation of sarcolemmal nuclei. Mucopolysaccharide, increased glycogen content of the muscle, and normal amounts of phosphorylase were found.

In discussion, these patients are compared with other individual reports of similar glycogen myopathies with the suggestion that the findings resembled most closely those in a four-year old child (Thomson, W. H. S. et al.) and that the twins would be placed in type 5 of the classification by Stetten and Stetten (*Physiol. Rev.* 40:505, 1960). R.F.B.

Lentle, B. C.; and Thomas, J. P. (Medical Unit, Cardiff Royal Infirmary, Cardiff, Wales): ADRENAL FUNCTION AND THE COMPLICATIONS OF DIABETES MELLITUS. *Lancet* 2:544-49, September 12, 1964.

Adrenal and pituitary function was studied in nine diabetic patients with complications of retinopathy and peripheral neuropathy and compared with six uncomplicated diabetics, normals, and patients with Cushing's syndrome. The levels of plasma cortisol in both groups of diabetics were higher than normal and the diurnal variation reduced. Urinary 17-hydroxycorticoids were higher than normal in uncomplicated diabetics and greatly elevated in those with complications. Cortisol secretion rates were also higher in the complicated group. The uncomplicated diabetics responded normally to corticotrophin and metapyrapone but the complicated group had a supranormal response to corticotrophin and a subnormal response to metapyrapone. Furthermore, pyrogen infusion produced normal increments in plasma cortisol and dexamethasone failed to suppress urinary corticoids completely. The results indicate that patients with complicated diabetes have adrenal hyperplasia which is governed at the hypothalamic level. T.G.S.

Liebow, Irving M.; Newill, Vaun A.; and Oseasohn, Robert (Depts. of Preventive Med., Western Reserve Univ., Sch. of Med. and Univ. Hosps., Cleveland, Ohio): INCIDENCE OF ISCHEMIC HEART DISEASE IN A GROUP OF DIABETIC WOMEN. *Amer. J. Med. Sci.* 248:403-07, October 1964.

A study was made of the incidence of ischemic heart disease in fifty-eight women with newly discovered diabetes over the three years subsequent to institution of therapy of the disease. Initially, one third had evidence of ischemic cardiac abnormalities by both symptoms and electrocardiography.

In the subsequent three years one third of the thirty-nine without evidence of heart disease developed evidence of the condition, and one third of the nineteen with heart disease developed evidence of progression. S.B.B.

X Luke, R. G.; Dinwoodie, A. J.; Linton, A. L.; and Kennedy, A. C. (Artificial Kidney Unit, Dept. of Med. and Biochem., Glasgow Royal Infirmary, Glasgow, Scotland): FRUCTOSE AND GLUCOSE TOLERANCE IN UREMIA. *J. Lab. Clin. Med.* 64:731-40, November 1964.

Seven severely uremic patients were studied by intravenous glucose and fructose tolerance tests. Intravenous glucose tolerance was distinctly impaired and in the range found in diabetes in three patients. Fructose tolerance was normal. These findings are interpreted as indicative that the glucose intolerance of uremia may be due to a reduced insulin effect rather than a general defect in carbohydrate metabolism, and that fructose administration is a desirable calorie source in uremia. T.G.S.

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Patterson, Roy; Colwell, John A.; Gregor, Wesley H.; and Cary, Eliza (Dept. of Med., Northwestern Univ. Med. Sch., and the V.A. Research Hospital, Chicago, Ill.): AVIAN ANTI-INSULIN SERUM: A COMPARISON OF ITS IMMUNOLOGIC AND BIOLOGIC ACTIVITY WITH THAT OF GUINEA PIG AND RABBIT ANTISERA. *J. Lab. Clin. Med.* 64:399-411, September 1964.

Although precipitating antibody may be employed as the basis for study of many immunochemical systems, its use has not been possible with insulin antibodies. Because the chicken is known to produce readily precipitating antibodies, this species was studied by giving it large doses of bovine insulin. The best method of producing such antibodies was four weekly injections of 250 U. emulsified in incomplete Freund's adjuvant. Antisera produced in this fashion hemagglutinated insulin-coated tanned cells, produced a flocculation reaction when mixed with insulin and gave rise to a precipitating band with insulin in double gel diffusion studies. It also inhibited insulin induced hypoglycemia in the mouse and produced hyperglycemia in the rat and dog. Three insulin binding globulins were demonstrated in chicken antisera by radio-autographs of immuno-electrophoresis slides. T.G.S.

Polsky, Louis S. (Dept. of Obstet. and Gynec., Philadelphia General Hospital, Philadelphia, Pa.): CORTISONE PROVOCATIVE GLUCOSE TOLERANCE TEST IN PREGNANCY. *Obstet. Gynec.* 24:722-27, November 1964.

Verbatim Summary

1. A study designed to standardize and improve the accuracy of a testing method for earlier detection of subclinical or suspect diabetes in pregnancy is reported.

2. The method of Fajans and Conn utilizing the cortisone provocative GTT in the third trimester of pregnancy was evaluated.

3. The differences of the averages of the one-hour, two-hour, and three-hour true blood glucose values between the standard and cortisone GTT's were similar in the known diabetics and in the suspect group. The 60 to 70 mg. per 100 ml. rise seen at each of the above time intervals in both groups appeared to be significant and may have indicated that patients in the study group in whom such rises were observed were suspect diabetics.

4. Derangement in carbohydrate metabolism was demonstrated in 80 per cent of patients who met the criteria for suspicion.

5. The cortisone provocative GTT demonstrated the abnormality in carbohydrate metabolism in a patient who during an earlier pregnancy had shown a diabetic curve and who presently had a normal standard GTT.

6. Glycosuria in pregnancy is not a "benign" finding and must be thoroughly investigated as an early sign of the predisposition in the pregnant patient to defective carbohydrate metabolism or to diabetes mellitus.

7. A selected group of patients was studied and no attempt was made to evaluate the correlation between increasing incidence of diabetes and increasing age and gravity.

8. Management consisted only of dietary regulation in the suspect diabetic mothers. For uniformity of evaluation, all patients were allowed to carry their gestations to term or to go into labor spontaneously.

9. When the study group of patients are classified as suspect or gestational prediabetics and can be evaluated further in

future years, the percentage of progression to overt diabetes may correspond to O'Sullivan's data. Thus the cortisone GTT may be a tool by which a much earlier diagnosis of diabetes mellitus can be made.

10. The oral GTT should be utilized since it more closely parallels the actual metabolic pathways than does the intravenous GTT and is simpler to standardize with GTT results in other series of patients.

11. It is recommended that this method be applied to a greater number of patients and in all trimesters of pregnancy for statistical confirmation of the present results. E.A.W.

Power, Lawrence; Reyes-Leal, Bernardo; and Conn, Jerome W. (Dept. of Intern. Med., [Div. of Endocr. and Metabolism and the Metabolism Res. Unit], Univ. of Michigan, Ann Arbor, Mich.): SERUM INSULIN-LIKE ACTIVITY IN GENETIC AND EXPERIMENTAL DIABETES MELLITUS. *Metabolism* 13:1297-309, November 1964.

The widely documented elevations of insulin and insulin-like activity in sera of certain types of untreated diabetic patients are confirmed by the use of another modification of the epididymal fat pad assay in which the conversion of 1-C-14 glucose to C-14 lipid provides the assay of ILA. A group of mild, untreated diabetic patients exhibited abnormally elevated ILA levels before and after glucose loading with a delay in their ILA response to glucose. High ILA was noted in seven of twenty-seven normal control subjects, two of whom were found to have a family history of diabetes. In contrast, the ILA of dogs with experimental diabetes (partial pancreatectomy) showed a fall following glucose administration. These data support the concept that insulin is present in excess in sera of mild diabetics and that the rise is secondary and compensatory to something which antagonized the action of insulin. C.R.S.

Rennie, I. D. B.; Keen, H.; and Southon, Ann (Dept. of Med., Guy's Hosp., London, S.E. 1, England): A RAPID ENZYME-STRIP METHOD FOR ESTIMATING BLOOD-SUGAR. *Lancet* 2:884-86, October 24, 1964.

A comparison of estimates of capillary blood sugar as measured by the Dextrostix paper-strip method and the Auto-Analyzer ferricyanide method is reported. In general, the strip method is felt to overestimate low values and underestimate high values, but its use is recommended for clinical situations in which rapid and gross estimates of blood glucose are needed. Factors which possibly might introduce variations in values such as differences in the observer, illumination or thickness of the film of blood were found not to greatly influence the result. T.G.S.

Sabo, Jack; Oberlander, Lawrence; and Enquist, Irving F. (Dept. of Surg., State Univ. of New York, Downstate Med. Center, Brooklyn, N.Y.): THE EFFECT OF CARTILAGE POWDER ON GRANULATING WOUNDS IN DIABETIC ANIMALS. *Surg. Gynec. Obstet.* 119:559-62, September 1964.

Evidence thus far suggests that cartilage powder, applied topically or parenterally, enhances the rate of healing of experimental wounds in normal animals. The possible extension of this effect to the diabetic was examined by study of male albino Wistar rats with alloxan diabetes treated with just enough insulin to prevent acidosis but allowing blood glucose levels greater than 300 mg. per 100 ml. The latter animals were divided into controls and into groups treated either with pow-

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dered, acid pepsin-digested bovine tracheal cartilage applied topically with an atomizer, or cartilage extract given subcutaneously. In the animals whose wounds were treated with topical cartilage powder, healing occurred at a significantly more rapid rate than in controls. In animals receiving cartilage extract subcutaneously, large necrotic lesions developed at the site of injection and all the animals died.

The authors speculate that the use of a *purified* extract of cartilage powder, if and when it is isolated, should exert a more potent healing effect and deserves further study with a view to possible subsequent use in diabetic humans. R.F.B.

Sandler, Richard; Herrera, M. Guillermo; and Renold, Albert E. (Baker Clinic Res. Lab. in the Dept. of Med., Harvard Med. Sch., Boston, Mass.): EFFECT OF HYPOPHYSECTOMY ON THE METABOLISM OF EPIDIDYMAL ADIPOSE TISSUE. *Endocrinology* 75:222-25, August 1964.

Rat epididymal adipose tissues obtained from hypophysectomized and sham-operated animals were studied with respect to glycine incorporation into protein and glucose into fatty acid or CO₂. Glycine incorporation into protein was decreased in hypophysectomized animals, while its oxidation to CO₂ was the same in both groups. Glucose metabolism was not significantly altered in the tissues of hypophysectomized animals. Administration of growth hormone to the hypophysectomized animals for three days caused an increase in glycine utilization in protein formation and an apparent decrease in glucose metabolism to fatty acids and CO₂. C.R.S.

Schless, Guy Lacy (Dept. of Exp. Med., Guy's Hosp. Med. Sch., London, England): NONESTERIFIED FATTY ACIDS AS A METABOLIC SUBSTRATE: THE RAPID TURNOVER THEORY. *Metabolism* 13:934-41, October 1964.

The uptake or output of nonesterified fatty acid (NEFA) by the forearm tissues of diabetic and nondiabetic, obese and thin volunteers was determined before and following glucose administration. In the fasting state there was an uptake of NEFA (positive A/V difference) in both normals and diabetic patients. Following glucose administration, the arterial concentration of NEFA decreased rapidly while the venous concentrations fell more slowly, resulting in a negative A/V difference. These data were interpreted as indicating that a rapid increase in the rates of uptake and output of NEFA by muscle occurs following the increased availability of glucose to the tissue. C.R.S.

Schlietf, Guenter; Gunning, Barbara; Uzawa, Haruo; and Kin-sell, Laurance W. (Inst. for Metabolic Res., Highland-Alameda County Hosp., Oakland, Calif.): THE EFFECTS OF CALORICALLY EQUIVALENT AMOUNTS OF ETHANOL AND DRY WINE ON PLASMA LIPIDS, KETONES AND BLOOD SUGAR IN DIABETIC AND NONDIABETIC SUBJECTS. *Amer. J. Clin. Nutr.* 15:85-89, August 1964.

Under metabolic ward conditions, five adult-onset, noninsulin-dependent diabetics, one subject with colloid goiter and clinical atherosclerosis, and one subject with simple obesity but otherwise well, were maintained on formula diets of high fat, low carbohydrate, and adequate protein content. Carbohydrate intake was in the range of 9 to 16 gm.; protein, 42-77 gm.; and fat 94-252 gm. per twenty-four hours. Dietary fat was supplied in saturated form (coconut oil) or unsaturated (safflower oil). Alcohol was added as an aqueous solution of ethanol or a calorically equivalent amount of very dry wine given at one or two-hour intervals over a twelve-hour period.

In all but one of the subjects, ethanol per se caused elevation of blood ketones, transient in some. Wine produced a somewhat lesser effect in raising blood ketones. No clearly demonstrable effect upon triglycerides, free fatty acid, cholesterol or phospholipids was noted, nor was there any consistent effect upon blood sugar values. In some subjects, however, during the intake of saturated fat, a marked elevation in cholesterol and phospholipids was noted.

It is suggested that since ethanol is largely metabolized to acetaldehyde it would be expected to lead to hyperketonemia. Also that in constructing a diet for the diabetic or the atherosclerotic subject, alcohol should be regarded as an exchange for saturated fat. R.F.B.

Shipp, Joseph C. (Dept. of Med., Univ. of Florida, Coll. of Med., Gainesville, Fla.): INTERRELATION BETWEEN CARBOHYDRATE AND FATTY ACID METABOLISM OF ISOLATED PERFUSED RAT HEART. *Metabolism* 13:852-67, September 1964.

The isolated rat heart perfusion system was used to investigate the interrelationships of carbohydrate and fatty acid metabolism. The oxidation of glucose was consistently reduced by palmitate; the over-all effect was that of increasing the glucose label in cellular glycogen, inhibiting glycogenolysis, and increasing lactate formation during perfusion with sodium palmitate. Similar effects were obtained with sodium pyruvate and acetate. The oxidation of palmitate-1-C-14 was not diminished by glucose or pyruvate. The incorporation of the palmitate label into tissue lipids was enhanced by these substrates as well as by acetate; the latter reduced the oxidation of palmitate by 44 per cent. The controlling effect of fatty acids upon glucose metabolism is suggested by these observations in which the free fatty acids were oxidized in preference to glucose by the perfused heart muscle. A possible site of fatty acid-glucose interaction wherein glucose oxidation is inhibited may be found at the pyruvate-acetyl Co-A level. C.R.S.

Smith, J. Lawton (Bascom Palmer Eye Inst., Dept. of Ophthalmology, Univ. of Miami, School of Med., Miami, Fla.): ASTEROID HYALITIS AND DIABETES MELLITUS. *Trans. Amer. Acad. Ophthal. Otolaryng.* In press.

Asteroid hyalitis (Benson's disease) is an ophthalmoscopic entity in which myriads of small white, motile opacities are suspended in the vitreous. The disorder is unilateral in 75 per cent of the cases, may be seen from the fourth to the ninth decades, and the average age at diagnosis has been between sixty to sixty-five years. In the past this entity was regarded as simply an impressive ophthalmoscopic finding of little clinical consequence. The author had previously reported the importance of excluding diabetes mellitus in these patients. This paper reports on sixty additional cases of asteroid hyalitis in which a formal three-hour oral glucose tolerance test was performed. These cases were collected by several ophthalmologists throughout the country. Criteria for diagnosis of diabetes from the glucose tolerance test data used were as follows: (1) any value of 200 mg. per 100 ml. or over at any time during the test; (2) any value of 150 per 100 ml. or over at two hours on the curve; and/or (3) any value of 160 per 100 ml. or over at one hour plus any value of 120 per 100 ml. or over at two hours on the curve. Using these criteria, forty of the sixty cases had diabetes mellitus. It is

stressed that if the patient with asteroid hyalitis has a fasting or postprandial blood sugar, one third of the cases will be found to have diabetes. However, if a three-hour oral glucose tolerance test is done, two thirds of the cases of asteroid hyalitis will be found to have diabetes mellitus. J.L.S.

Spellacy, William N.; Goetz, Frederick C.; Greenberg, Beryl Z.; and Ellis, Joyce (Dept. of Obstet. and Gynec., and Dept. of Intern. Med., Univ. of Minnesota Med. Sch., Minneapolis, Minn.): THE HUMAN PLACENTAL GRADIENT FOR PLASMA INSULIN AND BLOOD GLUCOSE. *Amer. J. Obstet. Gynec.* 90:753-57, November 15, 1964.

Verbatim Summary

Plasma insulin and blood glucose have been simultaneously measured in maternal venous blood and umbilical vein blood at the time of a normal term delivery. Blood glucose appears to pass between the mother and fetus. Plasma insulin is present on both sides of the placenta, but the concentration is lower on the fetal side and is unrelated to the maternal level. These results are interpreted as evidence that natural human insulin, as measured by the immunoassay technic, does not freely pass the placental barrier. E.A.W.

Takemori, A. E. (Dept. of Pharmacol., State Univ. of New York, Upstate Medical Center, Syracuse, N.Y.): THE INFLUENCE OF MORPHINE ON GLUCOSE UTILIZATION IN CEREBRAL PREPARATIONS OF RATS. *J. Pharmacol. Exp. Ther.* 145:20-26, July 1964.

Cerebral cortical slices from young rats were incubated in 0.006 M glucose and respiratory and stoichiometric studies were performed. Both brain slices from morphinized rats and brain homogenates treated with morphine exhibited an increased glucose uptake compared to controls. Potassium chloride-stimulated respiration of slices from control rats could be depressed by morphine, but this did not occur in brain from chronically morphinized rats. Increased cerebral glucose uptake could not be produced by means of respiratory depression with pentobarbital or ethanol. Morphine did not alter glucose uptake of kidney or diaphragm, or glucose production by liver slices. Lactate formation and oxygen uptake did not explain the increased glucose uptake. Morphine may stimulate the cerebral pentose phosphate cycle. A.R.C., Jr.

van Dongen, Robert (Dept. of Anatomy, Univ. of Adelaide, Adelaide, Australia): INSULIN AND MYELOSCHISIS IN THE CHICK EMBRYO. *Austral. J. Exp. Biol. Med. Sci.* 42:607-14, October 1964.

Verbatim Summary

Injections of various doses of insulin were made in two series of eggs — at the twenty-four- and forty-eight-hour stage of development respectively. The insulin was introduced directly

into or very near the subgerminal cavity. In the twenty-four-hour series, the main abnormalities encountered were rumplessness, microphthalmia, and myeloschisis. All but myeloschisis occur just as frequently in control eggs injected with distilled water. At forty-eight hours, only a low incidence of myeloschisis was found. This is probably associated with the fact that closure of the neural tube is nearing completion at this time. The etiology of the increased neural bulk observed in myeloschisis is at present unknown. W.R.K.

Whitehouse, Fred W.; and Block, Melvin A. (Div. of Metab. and Gen. Surg., Henry Ford Hosp., Detroit, Mich.): THE PROBLEM OF THE "DIABETIC FOOT." *J. Amer. Geriat. Soc.* XII:1045-50, November 1964.

A conservative approach to the therapy of infection and/or gangrene of the feet of diabetic patients is stressed. Review of the records of 541 patients with diabetes mellitus seen during a nine-month period in 1963-64 yielded 16 per cent incidence of foot problems. Most of these were due to local ischemia, neuropathy or infection. The authors noted little indication for the transmetatarsal amputation and suggested that the use of appropriate antibody and local debridement of an ischemic foot could frequently result in healing without amputation. When amputations are necessary, they strongly urge consideration of the below-knee amputation because this operation results in a higher proportion of successful rehabilitations. Prosthetic devices are used more successfully by these patients than those with an above the knee amputation. Prophylactic care of the feet by an expert podiatrist is stressed in the diabetic population. B.R.B.

Yde, Hans (Second Univ. Clinic of Internal Med., Kommunehospitalet, Aarhus, Denmark): THE GROWTH-HORMONE-DEPENDENT SULFATION FACTOR IN SERUM OF UNTREATED DIABETICS. *Lancet* 2:624-26, September 19, 1964.

"Sulfation-Factor" (SF) is a substance in serum which stimulates the uptake of radioactive sulfur by the costal cartilage of hypophysectomized rats. It is related to growth hormone as it disappears after hypophysectomy and increases after growth hormone injection. The author measured levels of SF and glucose in the plasma of sixty fasting newly discovered untreated diabetics. These subjects had a mean FBS of 233 mg. per 100 ml. and their SF value of 0.788 ± 0.020 was statistically lower than the 0.967 ± 0.050 found in twelve normals. The SF of the thirty-three who were not obese correlated in a negative fashion with blood sugar. Such a relationship was not found in the twenty-seven diabetics who were obese. A 100 gm. glucose load reduced SF values in each of seven lean diabetics. T.G.S.