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New Evidence for a Steroid Hormone Capable of Producing Hypertension in Man

M. I. New, M.D., P. H. Saenger, M.D.,* L. S. Levine, M.D.* and R. E. Peterson, M.D.*

Department of Pediatrics and Medicine
Cornell University Medical College
New York, N.Y.

The hypothesis that a steroid can produce hypertension in man was tested in an 18-year-old male with dexamethasone-suppressible hypertension. Reinvestigation after six years of little or no treatment demonstrated that the hypertension and mild hyperaldosteronism were decreased promptly by a small dose of dexamethasone. During dexamethasone treatment, when aldosterone secretion was suppressed to less than normal and the patient was normotensive, steroids were given by constant infusion in an attempt to reproduce the hypertension of the dexamethasone-free state. Hypertension was not caused by five days of aldosterone (A), 18-hydroxy (18-OH) desoxycorticosterone (DOC) at 1 mg./day, or DOC at 30 mg./day. However, Na+ retention and K+ loss was observed during infusion of A and DOC. Hypertension was produced within five days during infusion of adrenocorticotropic hormone (ACTH) or oral metyrapone. The hypertensive effect of the metyrapone was eliminated by the additional treatment with aminoglutethimide. These studies suggest that an ACTH-dependent steroid other than A, 18-OH DOC, or DOC may be the cause of the hypertension in this patient. The aminoglutethimide data suggest that the cause is a steroid and the metyrapone studies suggest that that steroid is an 11 desoxysteroid. Urine and blood collected under ACTH stimulation and metyrapone treatment are rich sources from which we may characterize this hormone.

Occupational and Community Asbestos Exposure from Wallboard Finishing Compounds

William J. Nicholson, Ph.D., A. Rohl, Ph.D.,* S. A. Fischbein, M.D.* and I. J. Selikoff, M.D.

Environmental Sciences Laboratory
Department of Community Medicine
The Mount Sinai School of Medicine of the City University of New York
New York, N.Y.

The primary purpose of this investigation is to evaluate the working procedures and the occupational exposure to asbestos of men engaged full-time in applying and finishing tape and spackle at the joints of wallboard in the construction industry in New York City. The extent of the exposure to asbestos of others in the construction industry who may work in the same area and to the community at large from the use of spackle by dwelling owners and others also will be ascertained. Personal air samples were taken in the breathing zone of drywall construction workers and

in adjacent areas where other building trades employees were working. In 60% of the personal samples the threshold limit value (TLV) set by the National Occupational Safety and Health Act of five fibers greater than 5 μ in length per milliliter was exceeded. These concentrations are only suggestive of the total exposure to asbestos, since a comparison of asbestos fiber counts of identical samples shows that for every fiber visible by light microscopy, there are perhaps from 200 to 1,000 fibers that can only be seen by electron microscopy. The significance is twofold: all of the asbestos is respirable and, secondly, it is undetected and unmeasured by existing methods of industrial hygiene surveillance. Ten samples of the most commonly used taping and spackling compounds on dry walls were analyzed in the laboratory by optical microscopy, x-ray powder diffraction, and electron microscopy in order to determine the minerals present, with particular attention given to the quantitative determination of asbestos minerals. Nine contained various amounts of chrysotile asbestos; four of the 10 samples contained quartz as a major constituent and two others also contained talc. A similar analysis of consumer spackling compounds showed that three contained from 0 to 10% chrysotile. In a companion study, clinical examinations have been undertaken of 69 workers specializing in taping, two thirds of whom have had at least 10 years exposure. X-ray abnormalities were found in 37 of 63 films (59% of the workers). Our preliminary findings suggest that asbestos disease is an important hazard in this trade and that appropriate control measures are required.

Influence of Amino Acids on the Formation of Intermediates of the γ-Glutamyl Cycle

M. Orlowski, M.D., and S. Wilk*

Department of Pharmacology
The Mount Sinai School of Medicine of the City University of New York
New York, N.Y.

Intermediates of the γ-glutamyl cycle, pyrrolidone carboxylate and γ-glutamyl amino acids, were determined in tissues of mice by a new gas chromatographic procedure coupled with electron capture detection. Administration of L-α-aminobutyrate and also certain other amino acids that are utilized in the reaction which is catalyzed by γ-glutamyl cysteine synthetase led to the accumulation of their γ-glutamyl derivatives and also pyrrolidone carboxylate. This accumulation could be blocked by the administration of L-methionine-R, S-sulfoximine, an inhibitor of γ-glutamyl cysteine synthetase. No accumulation of pyrrolidone carboxylate was observed after the administration of cysteine itself. The separate administration of several protein amino acids did not affect the levels of pyrrolidone carboxylate; however, the formation of small amounts of the respective γ-glutamyl amino acids was observed in the kidney. A significant accumulation of pyrrolidone carboxylate was obtained after the administration of a mixture containing all of the natural protein amino acids. These experiments demonstrate the existence of two separate pathways for the formation of γ-glutamyl amino acids and pyrrolidone carboxylate. One of these involves the synthesis of glutathione and apparently operates under a strict metabolic control mechanism. The other pathway involves the degradation of glutathione mediated by membrane-bound γ-glutamyl transpeptidase and is probably associated with the function of this enzyme in the transport of amino acid.