

- 1138 Proteinuria in Chronic Cadmium Poisoning. (2) The Applicability of Quantitative and Qualitative Methods of Protein Determination for the Demonstration of Cadmium Proteinuria. M. Piscator. Arch. Environmental Health 5, 325-332 (Oct. 1962).

The value of quantitative and qualitative methods for protein estimation in cases of proteinuria due to chronic cadmium poisoning has been studied by examining urine from 40 workers exposed to cadmium and from controls comprising 15 other metal workers and 10 personnel at the Institute of Hygiene, Karolinska Institute—a total of 65 subjects. For quantitative estimations when the protein content is low, the amido-black method described by Heremans or a biuret method after precipitation of protein with Tsuchiya's reagent may be used. Trichloroacetic acid, the precipitation agent commonly used in quantitative estimations of urinary protein, is suitable only if used in a final concentration of 4% and if the precipitates are centrifuged at fairly high speeds. Estimated by the method employed, normal urine with diurnal volumes of about 1,000 ml. has a protein content of about 5 mg. %, with an upper limit of about 10 mg. %. The most suitable qualitative tests for examining cadmium proteinuria and other types of proteinuria with similar electrophoretic protein distribution are the trichloroacetic acid test and the Donaggio reaction. A combination of these 2 tests provides a fairly reliable method for differential diagnosis. Estach's test, the boiling test, and the nitric acid test are unsuitable because they do not give a response unless the protein concentration is fairly high. None of these tests is specific for cadmium proteinuria, and other diseases which give rise to similar reactions must always be considered in the differential diagnosis.

-- Author's summary

- 1139 Rebreathing Estimate of Carbon Monoxide Hemoglobin. J. D. Hackney, et al. Arch. Environmental Health 5, 306-307 (Oct. 1962).

Indirect methods of estimating carbon monoxide hemoglobin (COHb) fall into 2 groups: rebreathing and breath holding. Rebreathing methods have the advantage of requiring less subject cooperation and aid in sampling alveolar gas. Normal subjects rebreathed 4 liters of oxygen for 2 minutes. Samples of 25 cc. were analyzed for oxygen and carbon monoxide using gas chromatography. These results were substituted into the Haldane relationship (M value = 195). A total of 55 rebreathing estimates were compared with blood COHb measurements in normal subjects. There was good correlation between the estimated and measured COHb: Mean COHb 5.1%, the SD. 22, coefficient of variation 4.4%. Using an assumed oxygen concentration may lead to large errors in estimating the COHb. Previous rebreathing methods have utilized nitrogen wash out or other time consuming approaches. The authors' method requires 2 minutes and appears to have greater sensitivity. Preliminary studies on chronic lung disease subjects are reported.

-- Authors' summary

- 1140 Estimating Recent Carbon Monoxide Exposures. A Rapid Method. A. Ringold, et al. Arch. Environmental Health 5, 308-318 (Oct. 1962).

A valid method for determining the carboxyhemoglobin level in the body has been developed. The method is based on the 20-second breath-holding method first described by Jones, et al. (J. Lab. Clin. Med. 51, 553 (Apr. 1958)), using an infrared analyzer first reported by Lawther and Apthorp (Brit. J. Ind. Med. 12, 326 (1955)). The authors' work shows that a poly vinyl bag can be used for collection of samples in the field. An application of this method is reported. This confirms the fact that cigarette smoking is a major factor in determining the carboxyhemoglobin level in a population. Pipe and cigar smokers appear not to have much increase in carboxyhemoglobin. The method should be suitable for studying the relationship of carboxyhemoglobin to occupational and to ambient air pollution exposures.

-- Authors' summary