

The fact that maximal breathing capacity increased more than vital capacity after therapy suggests that some of the beneficial results from corticotropin and cortisone may have been accomplished by improved respiratory muscle power and strength in addition to any change of the lung itself. The results of Reeder and Goodrich¹¹ must be kept in mind, since these workers noted a significant increase in ventilatory function in normal subjects given corticotropin and cortisone. Wright⁹ has conclusively demonstrated that impedance of the transfer of oxygen across the alveolar membrane is the earliest and the outstanding respiratory disturbance produced by chronic beryllium poisoning. The level of arterial blood oxygen which was lowered to a greater or less degree in all our patients at rest rose during treatment. This general trend toward more complete oxygenation of arterial blood as the patient breathed either room air or 100 per cent oxygen strongly implies that during treatment changes occurred in the permeability of the alveolar membrane or in the distribution of air in the alveoli which allowed more complete alveolar-blood oxygen transfer. In view of the further improvement in the capacity to extract oxygen from the inspired air as demonstrated by the continued fall of the ventilation equivalent in R. C. (case 2) and G. R. (case 4) when the ventilatory functions were reduced or unchanged, it is suggested that the effects which we have observed were primarily the result of an increase of the permeability of the alveolar membrane.

Thus, evidence has been obtained that relief of dyspnea should have been anticipated and can best be explained on the basis of both improved ventilatory and respiratory function. Unfortunately, determinations of arterial oxygen following exercise were not performed. They would have allowed a better basis for judgment of the degree of improvement than was accorded by our data.

Although we have demonstrated in this small group of patients with chronic beryllium poisoning beneficial results from steroid therapy, our experience would indicate that this improvement is dependent on continuous therapy. The beneficial effects presumably result from alteration of the host's reaction to a noxious agent rather than from correction of the underlying pathologic mechanisms.

SUMMARY

Five patients who had been proved to have chronic beryllium poisoning were treated with steroids (corticotropin and corticosterone). All showed relief of the usual subjective symptoms of cough, shortness of breath and loss of weight with corresponding objective evidence of improvement in pulmonary function.

This improvement persisted during the period of treatment and for a short time thereafter. Our experience to date suggests that continuous or intermittent therapy appears to be necessary in order to sustain clinical improvement. On account of the limited knowledge concerning the ultimate effects of prolonged administration of these agents it is impossible at present to suggest which of the agents used is the more desirable.¹²

11. Reeder, W. H., and Goodrich, B. E.: Effect of ACTH and Cortisone on Cardiorespiratory Function, *J. Lab. & Clin. Med.* **36**:979 (Dec.) 1950.

12. Since the completion of this work the excellent paper of Kennedy and associates "Effect of Adrenocorticotrophic Hormone (ACTH) on Beryllium Granulomatosis and Silicosis" has appeared (*Am. J. Med.* **10**:134 [Feb.] 1951).