

Two years before admission the patient became more dyspneic, and edema of the ankles developed. Four months later he suffered a spontaneous pneumothorax and signs and symptoms of acute right heart failure, which was treated with digitalis, ammonium chloride and mercurials. Electrocardiograms showed right axis deviation and right heart strain. After this episode he took meperidine hydrochloride (demerol® hydrochloride) regularly and oxygen by nose continuously.

On admission, the patient was dyspneic and apparently unable to be without nasal oxygen. His color was good on nasal oxygen.

After a control period, ACTH treatment was started. Total pulmonary capacity was large and not significantly altered by ACTH therapy (chart 6). Residual volume decreased. This probably was due to increased expiratory reserve volume, which showed relatively the

TABLE 5 (case 5).—Results of Studies of Pulmonary Function

Patient H. A., man Age, 39 yr. Height, 176 cm.	Weight, 56.0 Kg. Body surface area, 1.70 M. ² All respiratory volumes, BTPS	Diagnosis: Pulmonary granulomatosis of beryllium worker				
		May 2, 1950	May 9, 1950	May 16, 1950	May 29, 1950	June 15, 1950
Minute volume, L./min.....		11.8	.....	13.5	13.8	16.9
Respiratory rate, resp./min.....		19	.....	16	15	16
Tidal volume, L.....		0.62	.....	0.84	0.92	1.05
Inspiratory reserve volume, L.....		0.39	.....	0.90	0.73	0.75
Expiratory reserve volume, L.....		0.81	.....	1.38	1.25	1.13
Vital capacity, L.....		1.82	.....	3.12	2.90	2.93
Expected vital capacity, L.....		4.10	.....	3.93	3.93	3.93
Residual volume, L.....		5.62	.....	3.85	3.81	4.49
Residual volume ÷ total volume, %.....		75.5	.....	55.2	56.8	60.5
Alveolar ventilation, L./min.....		4.55	.....	4.04	4.32	.....
Respiratory dead space, L.....		0.38	.....	0.59	0.595	.....
Maximum breathing capacity, L./min.....		37	.....	82	81	67
Expected maximum breathing capacity, L./min.....		112	.....	113	113	113
Total capacity, L.....		7.44	.....	6.97	6.71	7.42
Alveolar pO ₂ , mm. Hg.....		.....	132	106	101	
Arterial pO ₂ , mm. Hg.....		115*	88	78	82	
Arterial pCO ₂ , mm. Hg.....		52	44	41	46	Blood
Alveolar-arterial difference, mm. Hg.....		.....	24	28	19	studies
Serum CO ₂ , vol. %.....		73.37	69.24	60.22	65.77	not
pH.....		7.40	7.45	7.42	7.41	done
Arterial blood CO ₂ content, vol. %.....		63.47	58.74	52.47	54.32	
Arterial blood O ₂ content, vol. %.....		16.08	15.68	15.66	17.11	
Arterial blood O ₂ capacity, vol. %.....		15.96	16.21	16.55	18.20	
Arterial blood O ₂ saturation, %.....		99.3	95.3	94.6	92.8	

Therapy: ACTH 5/2/50-6/17/50—25-160 mg./day; patient discharged and maintained on dosage of 60 mg./day.

Eosinophil count: 520-75/mm.³

17-Ketosteroids excretion: 12.9-35.1-6.1 mg./24 hr.

* The patient was off nasal oxygen one minute.

greatest change. Maximum breathing capacity increased sharply but never reached the expected normal value.

Arterial blood studies showed a questionable decrease in alveolar-arterial oxygen pressure difference (table 5). He was able to do without nasal oxygen by day but used it at night. Serial roentgenograms of his chest showed only slight improvement. The fall of the eosinophil count and the increase of 17-ketosteroids excretion (table 5) indicated excellent adrenal stimulation.

CASE 6 (M. R. B., P.B.B.H. No. 6B-568, admitted March 27, 1950).—This 33 year old patient operated an exhaust machine for fluorescent lights for two years (1942-1944). During this period she was exposed to air contaminated with dust from broken lights. She returned to work in the same plant for a six-month period in 1946. Two and one-half years before she was admitted to Peter Bent Brigham Hospital, exertional dyspnea, and shortly thereafter substernal pain, developed. A chest roentgenogram was reported as showing no abnormality.