

of the protein electrophoresis was elevated to 2.53 gm per 100 ml of serum. The lactic dehydrogenase enzyme level was elevated to 364 units per liter (normal, to 127 units per liter); the L.E.-cell clot test and the test for rheumatoid factor were negative.

A roentgenogram of the chest showed a diffuse interstitial process throughout both lungs. A smear of induced sputum revealed no acid-fast bacilli or fungi. Results of the tuberculin skin test, with the use of 5 and 250 tuberculin units, were negative.

Pulmonary-function tests showed a restrictive ventilatory disorder with an abnormal carbon monoxide diffusing capacity. An electrocardiogram disclosed a repolarization abnormality.

Transbronchoscopic lung biopsy revealed a mild interstitial pneumonitis, and a diagnosis of diffuse interstitial pneumonitis secondary to nitrofurantoin was made. Nitrofurantoin use was terminated, and the patient was treated with prednisone, 10 mg 3 times each day.

His condition had improved when he returned to our clinic 4 months later, and the dose of prednisone was reduced gradually to 5 mg twice a day. A roentgenogram of the chest on January 29, 1968, showed definite clearing, and pulmonary-function tests on the following day indicated improvement. The level of lactic dehydrogenase had decreased to 148 units per liter.

The patient returned on May 8, 1968, not having received steroid therapy for 6 weeks. X-ray study and tests of pulmonary function showed that the improvement had been maintained, and he was asymptomatic.

CASE 3. A 75-year-old housewife was admitted to the hospital on March 26, 1968, because of shortness of breath and dry cough of 7 weeks' duration. She had been admitted to another institution on February 19 because of shortness of breath and had received digitalis, without benefit.

She had taken nitrofurantoin intermittently for recurring urinary-tract infections since 1961. She had an average of 5 urinary-tract infections each year and took nitrofurantoin, 50 mg 4 times a day, for 2 or 3 weeks during each episode, until symptoms subsided.

Physical examination revealed an elderly woman who was cyanotic and moderately dyspneic. She had decreased chest expansion and leathery crackling rales at both bases of the lungs.

A roentgenogram of the chest showed diffuse interstitial fibrosis in both lungs. The urine was normal, but a urine culture grew more than 100,000 *Esch. coli* organisms per milliliter. An electrocardiogram revealed T-wave changes, with poor progression of the R wave in the precordial leads. The lactic dehydrogenase level was elevated to 251 units per liter. Results of routine laboratory tests were normal, and the L.E.-cell clot preparation and rheumatoid flocculation were negative. Electrophoresis demonstrated hypoalbuminemia. A smear of induced sputum was negative for acid-fast bacilli and fungi. Pulmonary-function tests showed a restrictive ventilatory abnormality and a severe decrease in the carbon monoxide diffusing capacity.

Transbronchoscopic lung biopsy revealed chronic inflammatory infiltration with focal interstitial fibrosis. Chronic interstitial pneumonitis secondary to nitrofurantoin was diagnosed.

On discharge, the patient was receiving digoxin, 0.25 mg daily, and prednisone, 5 mg 4 times a day. She was seen again 5 weeks later, when she had improved symptomatically. A roentgenogram of the chest indicated almost complete clearing, but the carbon monoxide diffusing capacity had shown little improvement.

CASE 4. A 70-year-old farmer had been seen at the Mayo Clinic on numerous occasions. In 1962, when a long history of genitourinary symptoms was evaluated, cystoscopic examination revealed an obstructive prostatic gland with a trabeculated bladder and a transitional-cell carcinoma of the bladder. Transurethral resection and excision and fulguration of the vesical neoplasm were carried out. Before operation, therapy with nitrofurantoin, 100 mg 4 times daily, was started.

Between October, 1962, and April, 1965, he was seen on 3 other occasions for re-examination of the urinary bladder and because of chronic dysuria and pyuria, for which he was accustomed to taking nitrofurantoin on an intermittent basis (averaging 100 mg per day). During this interval, mild dyspnea on exertion and a slight cough had developed. In February, 1965, an acute influenza-like illness