5899

Effect of Bronchial Stenosis on Pulmonary Tuberculosis in Dogs.

W. E. ADAMS AND A. J. VORWALD. (Introduced by W. L. Palmer.)

From the Departments of Surgery and Pathology, University of Chicago.

In a former publication a method for the production of massive atelectasis in dogs was described, consisting of an application of a 35% solution of silver nitrate to the mucous lining of a bronchus. The bronchial lumen subsequently became completely stenosed and was accompanied by massive atelectasis of the obstructed pulmonary lobe. It has long been known that rest of the lung by "collapse therapy" is the method of choice in the treatment of pulmonary tuberculosis. Thus, it was decided to determine the effect of atelectasis on pulmonary tuberculosis in animals. Two groups of dogs were used.

Group I. 18 dogs were subdivided into two parts. In 3 animals a saline suspension (0.1 mg. per kg. of body weight) of a one-month-old culture of human tubercle bacilli was injected into the femoral vein following the production of massive atelectasis, of part of the lung. These were sacrificed at the end of 2, 4, and 8 weeks respectively. In the remaining 15 animals a saline suspension (0.1 mg. per kg. of body weight) of a 4-weeks-old culture of human tubercle bacilli was injected into the femoral vein. Massive atelectasis was produced in 2 of the pulmonary lobes 2 to 4 weeks after injection. Most of this group died or was sacrificed within 2 to 4 months after infection.

Group II. In 8 animals a saline suspension (0.2 mg.) of a 4-weeks-old culture of human tubercle bacilli was injected into the left pulmonary artery through a thoracotomy opening. Massive atelectasis of the entire left lung was produced 2 to 6 weeks after the injection. Two of this group have died; the remaining 6 are living 10 weeks following infection.

Results. Group I (a). No gross tubercles were seen at the 2-week stage. At the end of 4 weeks many tubercles were seen in the inflated lobes. The surface of the atelectatic lobe was finely granular. By 8 weeks many tubercles were found in the inflated lobes and few or none in the atelectatic lobes.

Group I (b). In the early stages, 4 to 6 weeks following infection, the inflated lobes contained many tubercles ranging from 2 to 3 mm. in diameter. The atelectatic lobes at this period contained a few pin-point sized tubercles. In the later stages, 10 to 13 weeks

following infection, the inflated lobes were studded with tubercles 3 to 4 mm. in diameter; the atelectatic lobes having an occasional pin-point sized tubercle or none at all.

Group II. One dog died 5 weeks following infection, no lobes having been collapsed by that time. The lobes injected presented many tubercles 1 to 2 mm. in diameter. The opposite lung presented no gross tubercle formation. The second dog died 10 weeks following infection and 5.5 weeks after production of atelectasis. The atelectatic lobes (the side of injection) presented no gross tuberculosis. The inflated opposite lung revealed many large tubercles 2 to 4 mm. in diameter. The microscopic appearance confirmed the gross pathology.

Conclusions. In these experiments little difficulty was encountered in producing pulmonary tuberculosis in dogs by the hematogenous route. Definite marked improvement, to a complete cure of the lesion was obtained by the production of massive atelectasis of the region involved. This improvement or cure in one location was brought about while the animal was dying from infection in another part.

5900

Influence of Vitamin A Deficiency upon Intestinal Permeability for Bacteria.

E. SEIDMON AND LLOYD ARNOLD.

From the Department of Bacteriology and Preventive Medicine, University of Illinois College of Medicine, and Research Laboratories of the Illinois Department of Public Health, Chicago.

White rats were fed a diet of casein, cornstarch, salt mixture, dried yeast and butter. In the vitamin A deficiency series the butter was omitted. There were 18 animals in each series and the feeding experiment lasted for 9 and 10 weeks. After 24 hours' fasting 3 billion *B. typhi murii* were administered by stomach tube. Nine animals were killed in an illuminating gas chamber after one half hour and 9 after one hour in both the normal and the avitaminosis series. Specimens of liver and lung, the spleen and one kidney were removed and macerated in broth. Subcultures were made on Endo and plain agar plates after 3, 6, 9, and 24 hours' incubation. One-tenth cubic centimeter of organ-broth suspension was used for