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## A New Method for Production of Experimental Abscesses of the Lung in Dogs.*

W. M. TUTTLE. (Introduced by P. R. Cannon.)

*From the Department of Pathology, University of Chicago.*

The method devised by Holman,[1] Cutler,[2] Schleuter,[3] and Weidlein for the experimental production of lung abscesses has been used extensively with gratifying results by the originators. Van Allen and Adams,[4] and Tuttle and Nicoll,[5] have also demonstrated the reliability of the method.

The abscesses are produced by introducing an embolus composed of a small segment of the femoral vein of the dog into the external jugular vein of a dog and washed down with 0.85% NaCl. A small amount of bacterial suspension and a paraffined lead bird shot are put into the segment of vein and the ends tied with silk thread before the embolus is introduced.

These emboli, however, have certain disadvantages; for example, they do not all contain the same number of organisms, the vein wall is not absorbed after weeks or even months and the thread used to tie the ends and the lead shot constitute foreign bodies in the tissues. Furthermore, it is impossible to make microscopic sections of an abscess with the embolus *in situ* due to the thread and the lead shot.

In an attempt to eliminate these disadvantages, an agar embolus has been devised. The method is as follows: a bacto-beef agar is prepared, with an agar content of 5%. This is sterilized and cooled to 45°-50° C. and a known suspension of organisms is added, usually from 0.2 to 0.4 cc. of a 24-hour broth culture of *Staphylococcus aureus* or *B. coli*. The agar is then drawn into a sterile pipette, the lumen of which is the size desired for the embolus. The agar is allowed to harden and is blown from the pipette into a sterile petri dish. The agar is cut into 5-8 mm. lengths and the embolus is introduced into the external jugular vein of a dog and washed

* This work was done under a grant from the Douglas Smith Foundation for Medical Research of the University of Chicago.

[1] Holman, E., Weidlein, Schleuter, PROC. SOC. EXP. BIOL. AND MED., 1926, **23**, 266.

[2] Cutler, E. C., Schleuter, *Ann. Surg.*, 1926, **84**, 256.

[3] Schleuter, Weidlein, *Arch. Surg.*, 1927, **14**, 457.

[4] Van Allen, C. M., Adams, W. E., Hrdina, L. S., *Arch. Surg.*, 1929, **19**, 1262, 1279.

[5] Tuttle, W. M., Nicoll, G. L., *J. Thoracic Surg.*, 1932, **2**, 60.

down with 0.85% NaCl. If a radio-opaque embolus is desired lipiodol (5%) is added to the melted agar and emulsified. Such emboli more nearly simulate in form and consistency those forming from the blood constituents in man.

We have used the method thus far in 25 dogs and an abscess has developed in each instance. The abscesses so formed are true abscesses and not areas of coagulation necrosis. Microscopic sections are easily made with the embolus *in situ* and in quantitative work the presence of approximately the same number of organisms in each embolus is of advantage.

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## Experimental Production of Bronchogenic Abscess of the Lung.*

W. E. ADAMS AND A. J. VORWALD.

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

The etiology of post-operative lung abscess has been a subject of much interest and controversy during the past decade. Two theories have been presented as to the etiological factors of this condition, embolic and bronchogenic. Embolic lung abscess has been experimentally produced with almost routine regularity. Although most factors suggest a bronchial route of infection, little success has attended many ingenious methods by a large number of workers to produce this condition experimentally. The following method of producing bronchogenic lung abscess is presented because of its simplicity and dependability.

Eighteen dogs and 3 goats were narcotized with morphine sulphate. The infective organisms employed were human tubercle bacilli, H-119, which are a branch of the strain H-137. Under fluoroscopic control, a small ureteral catheter was passed through a bronchoscope into the finer ramifications of a tertiary bronchus of one of the lower lobes. By employment of the fluoroscope, the infective organisms could be placed in any desired part of the lobe. 0.2 cc. of a fairly heavy suspension of the organisms in lipiodol were injected into one or both of the lower lobes. The course of

* This work was done in part under a grant from the Douglas Smith Foundation for Medical Research of the University of Chicago.