

"BACTERIA OF ENCLOSED ABSCESSSES".

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Bacteria of Enclosed Abscesses.

The purpose of this thesis is to find the micro-organisms which cause suppuration in enclosed abscesses. In working with abscesses before they were opened to the action of the surrounding atmosphere, the object was to eliminate contamination by external organisms that would interfere very markedly and thus prevent the true conclusions from being reached and in obtaining the best results.

The material used in this experiment was procured from abscesses on several different horses which were being treated here at the K. S. A. C. Veterinary Hospital. Two of the cases were Fistulus Withers, two Poll Evil, while the fifth was taken from a large abscess situated on the abdomen.

The following method of extracting the material without subjecting it to external contamination, was employed. In each case the hair was shaved off from about the abscess and the skin then thoroughly disinfected. It was, however, first thoroughly washed with soap and water and then alcohol was applied for ten minutes. After this operation the skin was again washed with corrosive sublimate for another ten minutes and then one of the coal tar products was applied. A hypodermic needle and syringe was previously disinfected with a 5% carbolic acid solution for fifteen minutes and after being thoroughly washed with sterilized water the needle was plunged into the abscess and a small quantity of the pus removed by means of the syringe. All of our pus was gathered in this way, securing it without its becoming contaminated by the air.

Tubes of bouillon, previously prepared, were immediately inoculated, each with a few drops of the material, and placed in an incubator. The temperature of the incubator being kept during the whole length of the experiment at the normal temperature of a horse's body, or 37 C. When the organisms had produced a visible growth in the bouillon, the different germs were isolated by means of the Petri dishes. The colonies found growing were examined both macroscopically and microscopically. Germs from each individual colony were now transplanted to the different culture medias used and their characteristic growths noticed. The different germs were now classified according to their morphology and individual characteristics as shown in the following discussion.

Abscess I.

The material used here was obtained from a Fistulus Withers abscess. After being carefully examined by means of the method explained above, the following germs were found in the pus; Staphlococcus Pyogenes, Straptococcus Pyrogenes and Staphlococcus Pyrodenes Albus. In the former two the Gram's method of staining bacteria was used in the identification.

Staphlococcus Pyogenes Aureus.

Morphology:- Cocci irregular in clumps.

Structure of Colonies:- colonies microscopically round, granular, translucent.

Agar:- Smooth, moist, abundant in growth, bright orange in color.

Bouillon:- Turbid, with yellowish sediment.

Gelatin:- Liquefied, with yellowish film on the surface.

Litmus Milk:- Reduced.

Milk:- Coagulated, partially peptonized after four days.

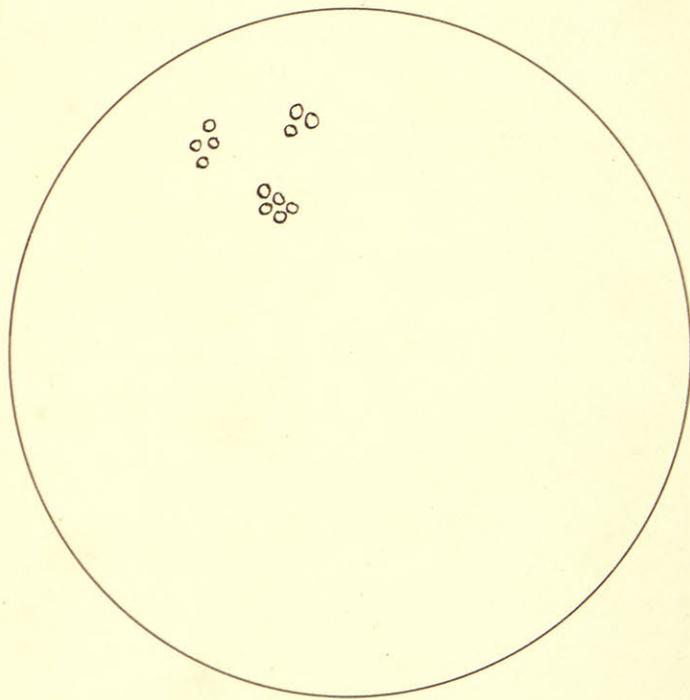
Potato:- Bright orange in color and growth abundant.

Glucose Bouillon:- No gas, acid reaction.

Drawing of stained slide.

(see next page)

Staphylococcus Pyogenes Aureus.



Staphylococcus Albus.

Morphology:- cocci 0.8 u, occuring both singly and in clumps.

Colonies:- round, irregular, white, sunken.

Ager:- moist, glistening, white growth.

Bouillon:- turbid, sediment, pellicle on surface.

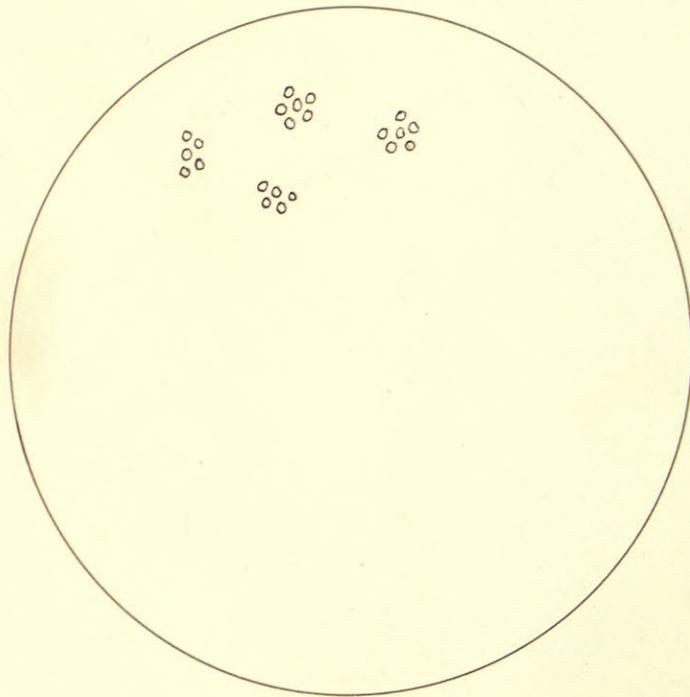
Litmus milk:- reduced.

Milk:- coagulated.

Glucose bouillon:- acid reaction, no gas formed.

Potato:- thick, white, mealy, raised growth.

Drawing of stained slide.



Streptococcus Pyogenes.

Morphology:- cocci one u, stained by Gram's method.

Colonies:- microscopically round, granular, grayish, yellow in appearance.

Agar:- grayish, translucent, moist, minute colonies.

Bouillon:- turbid, dense sediment.

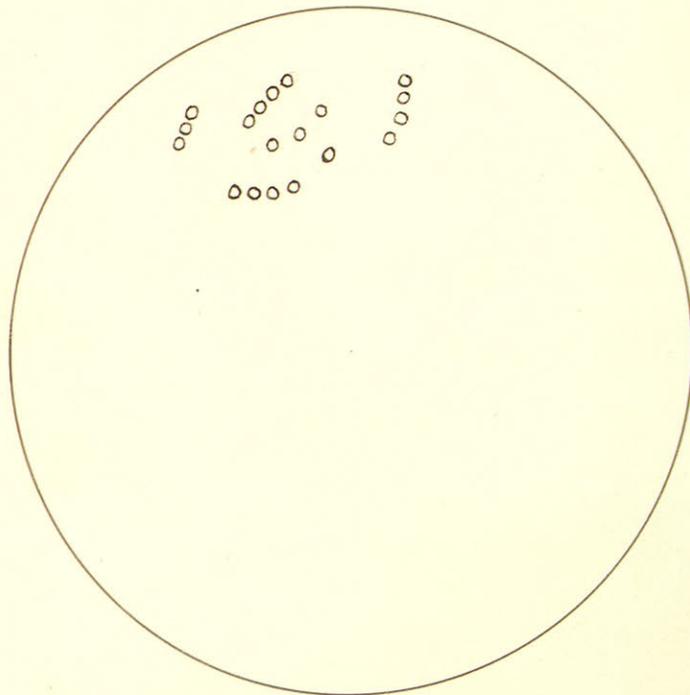
Gelatin:- Liquefied, filiform in shape after four days.

Litmus milk:- reduced.

Milk:- coagulated.

Glucose bouillon:- no gas formed, acid reaction.

Drawing of stained slide.



Abscess II.

The material used here was secured from a Poll Evil abscess. The germs found in this abscess were:- Streptococcus Pyogenes, Staphylococcus Pyogenes Aureus and Bacillus Coli Communis. It is to be noted that the first two germs were also found in the first abscess.

✓ Staphylococcus Pyogenes Aureus.

Morphology, etc., see Abscess I.

✓ Streptococcus Pyogenes.

Morphology, etc., see Abscess I.

✓ Bacillus Coli Communis.

Morphology:- Rod shaped, being twice as long as they are wide.

Colonies:- round, grayish white in color.

Agar:- moist, glistening, grayish white, translucent growth.

Bouillon:- turbid, with heavy sediment.

Gelatin:- not liquefied.

Litmus milk:- reduced.

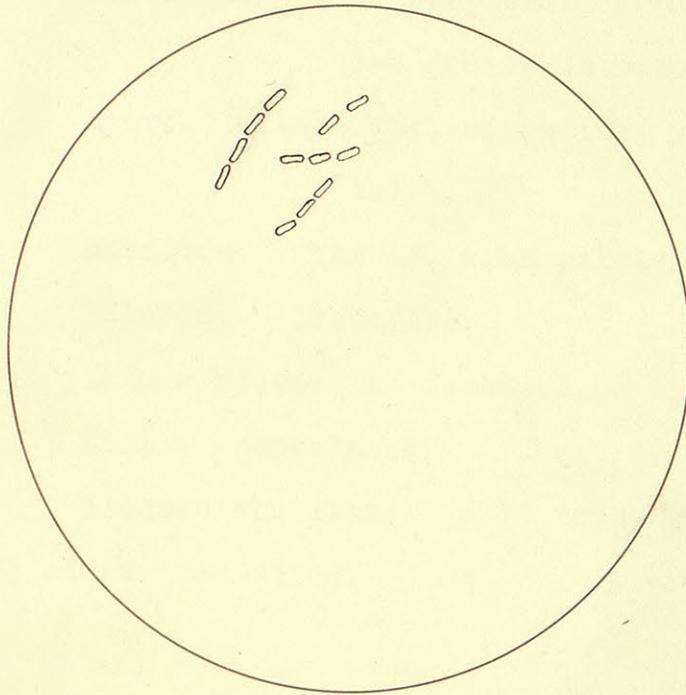
Milk:- coagulated.

Potato:- dry, yellowish brown spreading growth.

Glucosebouillon:- no gas formed and acid reaction.

Drawing of stained slide.

(see next page)



Abscess III.

The material used here was obtained from another Fistulus Wither abscess. The germs found in this abscess were:- Streptococcus Pyogenes, Staphlococcus Pyogenes Aureus, Staphlococcus Pyogenes Albus and Bacillus Pyocyaneus. The material used here was of a greenish color.

Streptococcus Pyogenes.

Morphology, etc., see Abscess I.

Staphlococcus Pyogenes Aureus.

Morphology, etc., see Abscess I.

Staphlococcus Pyogenes Albus.

Morphology, etc., see Abscess I.

Bacillus Pyocyaneus.

Morphology:- rod shaped with square ends, being three times as long as wide. Stained by Gram's method.

Colonies:- microscopically round, granular, greenish yellow in color.

Agar:- glistening, spreading, yellowish green in color.

Bouillon:- turbid, with plicle.

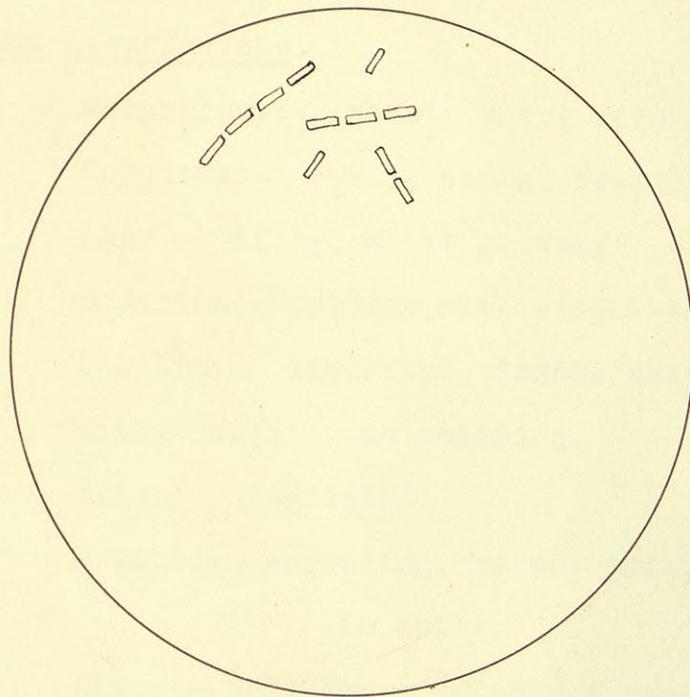
Gelatin:- liquefied.

Litmus milk:- no reaction.

Milk:- coagulated.

Glucose bouillon:- acid reaction, no gas formed.

Drawing of stained slide.



Abscess IV.

The material examined in this instance was obtained from a Poll Evil abscess and the following organisms were found:- Streptococcus Pyogenes, Staphlococcus Pyogenes Aureus, Bacillus Coli Communis and Bacillus Liquefaciens.

Streptococcus Pyogenes.

Morphology, etc., see Abscess I.

Staphlococcus Pyogenes Aureus.

Morphology, etc., see Abscess I.

Bacillus Coli Communis.

Morphology, etc., see Abscess II.

Bacillus Liquefaciens.

Morphology:- short, thick rods with round ends.

Colonies:- small, white, roundish colonies.

Agar:- dirty, white growth.

Bouillon:- cloudy with slight sediment.

Gelatin:- liquefied, funnel shaped with sediment.

Litmus milk:- no reaction.

Milk:- coagulated.

Potato:- spreading, raised growth, light yellow in color.

Glucose bouillon:- no gas formed, no reaction.

Drawing of stained slide.

(see next page)



Abscess V.

The material used here was procured from a large abscess on a horse's abdomen. The bacteria found here were:- Streptococcus Pyogenes, Staphylococcus Pyogenes Aureus and Bacillus Coli Communis.

Streptococcus Pyogenes.

Morphology, etc., see Abscess I.

Staphylococcus Pyogenes Aureus.

Morphology, etc., see Abscess I.

Bacillus Coli Communis.

Morphology, etc., see Abscess II.

In the bacteriological examination of the above abscess two germs, Streptococcus Pyogenes, and Staphylococcus Pyogenes were found in all of them. Staphylococcus Pyogenes Albus and Bacillus Coli Communis in three. Bacillus Pyocyanus and Bacillus Liquefaciens in one each, the former in the third abscess and the latter in abscess four.

Since it is impossible to disinfect the skin so as to destroy all organisms, it is very probable that some external germs may

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have been admitted when the pus was extracted from the abscesses. *Baccillus Coli Communis* and *Baccillus Liquefaciens* have both been found on the skin using it very frequently as a habitat.

In seeking for the true cause of suppuration in abscesses, it would not be unscientific to eliminate the germs *Baccillus Coli Communis* and *Baccillus Liquefaciens* from our calculations.

In three abscesses the *Staphylococcus Pyogenes Aureus*, *Staphylococcus Pyogenes Albus* and *Streptococcus Pyogenes* have been found together. The first two of the above three germs were found in all cases and one may thus very naturally come to the conclusion that the predisposing cause of suppuration in this experiment was caused by staphylococci and streptococci, in only one abscess was the *Baccillus Pyocyaneus* found, but in this case the reaction on the media was so marked that no doubt can be held about this germ taking an active part in the formation of pus.