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A NEW SPECIES OF ACTINOMYCES PATHOGENIC IN MAN

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The organism which proved fatal to a boy of 14 was isolated under the direction of Dr. John Gammel of the Lakeside Hospital, Cleveland, Ohio, from a lesion measuring approximately 9 by 13 cm. located on the back. This large granulomatous process persisted for months; the central portion was ulcerated and freely exuded a tenacious, mucopurulent, sometimes blood streaked discharge. In the periphery there were several open and closed sinuses. Two biopsies revealed no actinomycotic granules although the organism was observed in sections of the granulomatous tissue. No granules were present in the morning discharge after washing with saline solution. The clinical diagnosis was paramycetoma.

A systematic study has led us to believe this organism represents a previously undescribed species of Actinomyces. In view of its marked resistance to phenol, the name *Actinomyces phenoltolerans* is proposed for the species.

Description of *ACTINOMYCES PHENOLTOLERANS* sp. nov.

Source. Granulomatous process on back of 14 year old boy, exuding a mucopurulent, sometimes blood streaked discharge.

Morphology. Nutrient-glucose-broth cultures, 72 hours, 37° C. Branching filaments, 0.4 to 0.7 microns in diameter, length of cell variable. Large club-shape forms observed in artificially infected lung tissue of the guinea pig. Spores, spherical, approximately 0.5 micron in diameter.

Cultural characters. White, chalk-like aerial hyphae on potato slants. Growth moderate in 48 hours. Medium not discolored. Gram-amphophil, non-acid fast. No soluble pigment formed. Aerobic Characteristic garden soil odor.

Litmus milk: white surface growth in 48 hours. Medium became alkaline after 2 weeks. No evidence of digestion.

Plain broth: very small, white, surface colonies. Good growth in 48 hours.

Glucose-phosphate agar: white, abundant, chalky, wrinkled growth. Growth quite evident in 24 hours. A distinct garden soil

odor was present. No acid was formed. After 2 weeks the surface was completely covered with an elevated growth.

Glycerine agar: growth did not spread; thin and white within 48 hours. Medium not changed.

Plain agar: a medium amount of white, spreading growth, apparent after 48 hours. No change in medium.

Xylan agar: scant, thin, white growth. No evidence of Xylan hydrolysis. No change in medium.

Nitrate broth: Heavy, white, feathery growth which settled to the bottom after 4 days. A very slight reduction after 3 weeks.

Glucose broth: heavy, white, wrinkled scum formed at surface. Growth quite evident in 24 hours. No acid formed.

Egg medium (plates): small dark colonies within 24 hours. Medium was cleared around the colonies after 4 days. Cleared areas turned slightly yellow.

Blood agar (plates): no change in the medium after 2 weeks. Small white, powdery colonies appeared after 24 hours. There was a distinct odor resembling that of sandal-wood.

Gelatin stabs: dark colonies grew at the surface. No evidence of liquefaction after 4 weeks. Medium did not turn dark. Good growth after 48 hours.

Starch agar (plates): small white colonies appeared after 48 hours. Slight hydrolysis after 3 weeks.

Phenol broth: heavy, wrinkled surface growth after 4 days in 0.5% phenol.

Inoculation of Animals

Experimentally induced infection of animals with species of Actinomyces may prove irregular. Several attempts to produce lesions on the abdomen of the guinea pig failed. Injection of a spore suspension into lung tissue resulted in the development of an actinomycotic lesion with a greyish-white appearance. Microscopic examination of fixed lung tissue showed the presence of mycelium. The condition of the lungs had not noticeably affected the behavior of the animal. Attempts to culture the organism from the granules in the lung tissue failed.

Discussion

Henrici and Gardner (1921) state that acid-fast Actinomyces do not form clubs in infected tissue. They also state that acid-fast forms are relatively less common and more virulent. Helzer (1930) working with an Actinomyces of human origin stated that the organism showed tissue specificity. The factor of tissue specificity

may have influenced our results inasmuch as frequently infection with purulent exudate developed at the point of inoculation only to disappear with the rapid healing of the tissue.

The failure to culture the organism from the granules is in line with the findings of Colebrook (1920) who has shown that granules do not always yield growth of the organism.

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