Pili of

Neisseria

and

Moraxella

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Date

William D. Sawyer
William D. Sawyer, M.D.
Chairman and Professor of Microbiology

Chris Miller
Chris Miller, Ph.D.
Associate Professor of Microbiology

Donald J. Niederpruem
Donald J. Niederpruem, Ph.D.
Professor of Microbiology

Richard A. Haak
Richard A. Haak, Ph.D.
Assistant Professor of Microbiology and Medical Biophysics

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ABSTRACT

Commensal Neisseria were examined for pili by electron microscopy. Of 16 N. perflava isolates, 11 had pili. Several N. sicca and N. flava isolates also were piliated. Although the degree of piliation varied under different growth conditions, no consistant pattern of variation was noted. Bacteria were depiliated by treatment with pronase or trypsin or by blending. Pili were restored when bacteria were incubated in nutrient broth; restoration was inhibited by chloramphenicol.

Both piliated and nonpiliated N. perflava were similar to avirulent T3 and T4 N. gonorrhoeae in susceptibility to phagocytosis by rabbit and human leukocytes. Differences in resistance to phagocytosis among the commensal isolates did not correlate with piliation or a discernible capsule.

Piliated, but not nonpiliated, N. gonorrhoeae and commensal Neisseria adhered to human buccal (BEC), cervical and vaginal epithelial cells. N. perflava, but not gonococci, adhered to rabbit BEC. Adherence to BEC (EA) was significantly, reduced by treatments which removed pili; restoration of pili restored adherence. Antibody against piliated N. gonorrhoeae and N. perflava reduced EA by the homologous organism; the antibody was adsorbed by piliated but not depiliated, nonpiliated or heterologous organisms. These data indicate that pili of N. gonorrhoeae and commensal Neisseriae mediate adherence to epithelial surfaces and that the pili differ functionally and immunologically.

Similar studies on two piliated Moraxella lacunata var. liquefaciens isolates demonstrated that both isolates were as resistant to phagocytosis as virulent T1 gonococci but were EA negative. Treatments which reduced Moraxella piliation did not affect susceptibility to phagocytosis. These data suggest that M. lacunata pili mediate neither resistance to phagocytosis nor EA.

These studies indicate that there are at least three functional types of pili among the family Neisseriaceae. Those of N. gonorrhoeae mediate adherence to epithelial cells and are associated with resistance to phagocytosis. Those of N. perflava mediate adherence but are not antiphagocytic, while the pili of M. lacunata var. liquefaciens mediate neither EA nor resistance to phagocytosis.