

Frequency of *Staphylococcus intermedius* as Human Nasopharyngeal Flora

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***Staphylococcus intermedius*, a veterinary flora and pathogen, has recently been isolated from humans with infected dog bite wounds. The frequency of *S. intermedius* as a human nasopharyngeal flora was determined by culturing samples from 144 veterinary college staff members. This bacterium was isolated from only one individual (0.7%). It appears that *S. intermedius* is a true zoonotic opportunistic pathogen.**

Staphylococcus intermedius is a coagulase-positive staphylococcus that can be distinguished from *S. aureus* by further microbiological testing (1). *S. intermedius* has previously been recognized as a member of the normal veterinary flora and also as a pathogen. We have recently isolated *S. intermedius* from humans with infected canine-inflicted bite wounds (3). These findings presumptively indicate that *S. intermedius* may be a zoonotic pathogen. However, it is not known whether *S. intermedius*, like *S. aureus*, may colonize humans and subsequently infect open wounds.

Pasteurella multocida is a recognized zoonotic pathogen that rarely is a member of the normal human flora. However, carriage of this bacterium is relatively more common among humans who are frequently exposed to animals (e.g., veterinary students [3%]) (2). In order to determine the extent to which *S. intermedius* is an indigenous as opposed to a zoonotic pathogen, we examined the frequency of nasopharyngeal carriage of *S. intermedius* among veterinary college staff members.

A total of 144 veterinary staff members (median age, 28 years; age range, 18 to 66 years) from a university veterinary school volunteered to be studied. Sixty-one volunteers (44%) were male. A total of 99 volunteers (69%) were exposed to canines daily, 19 (13%) were exposed to canines two to three times a week, 14 (10%) were exposed to canines weekly, 8 (5%) were exposed to canines monthly, and 4 (3%) were not regularly exposed to canines. All volunteers had contact with canines for over 1 year. A total of 90 volunteers (62.5%) had a dog as a personal pet, and of these, 72 (80%) reported that their pets occasionally licked their faces. Seven volunteers (5%) had taken antibiotics within the previous week, and three volunteers (2%) were taking corticosteroids.

Culture specimens were obtained by inserting a sterile, moistened cotton-tipped applicator (Culturette; American Scientific Products, McGaw Park, Ill.) through the nares towards the posterior nasopharynx until there was resistance. Specimens were immediately streaked onto mannitol-salt agar (Difco Laboratories, Detroit, Mich.) and incubated at 37.0°C. All colony types from primary cultures were Gram stained and tested for catalase activity. Colonies showing mannitol fermentation within 48 h were plated onto bile esculin azide agar (Difco). Coagulase production was determined by the tube coagulase test using reconstituted citrate

rabbit plasma (BBL Microbiology Systems, Cockeysville, Md.). Readings were made after 4 h of incubation at 37.0°C and after 24 h at room temperature. Gram-positive, catalase-positive, bile esculin-negative, and coagulase-positive isolates were tested further.

Isolates were tested for acetoin production by a modification of the method of Barritt as described in reference 3. In addition, isolates were subjected to species identification by API Staph-Ident (Analytab Products, Plainview, N.Y.). All coagulase-positive isolates that were acetoin negative and API Staph-Ident β-galactosidase positive were identified as *S. intermedius*; those with the opposite results were identified as *S. aureus*.

Of 144 people tested, only one (0.7%), a 42-year-old female with daily exposure to canines and with a dog that occasionally engaged in facial licking as a personal pet, had *S. intermedius* cultured from the nasopharynx. This volunteer was not taking antibiotics or corticosteroids. Thirty volunteers (21%) carried *S. aureus*.

S. intermedius is a common bacterium in animals. For example, we have cultured *S. intermedius* from the gingiva of 53 of 135 (39%) healthy canines (3). However, it appears that *S. intermedius* is rarely found in humans even among individuals with frequent animal exposure. *S. aureus*, on the other hand, is present in both canines and humans. In our series, gingival *S. aureus* isolates were cultured from 10% of healthy dogs, and carriage among humans is well recognized.

Phage-typing studies indicate that *S. intermedius* isolates previously obtained from human wounds or from the single human nasopharyngeal carrier have phage groups similar to those of *S. intermedius* isolates obtained from canines (G. Overturf, D. Talan, K. Singer, N. Anderson, and S. Froman, Abstr. Annu. Meet. Am. Soc. Microbiol. 1989, C156, p. 419).

This information sheds light on the pathogenesis of dog bite wounds infected by staphylococci. While *S. aureus* may originate from either the dog oral cavity or the human skin, it appears that *S. intermedius* is a true zoonotic pathogen.

LITERATURE CITED

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