NOTES

Isolation of *Streptococcus equinus* from Non-Respiratory Sources in Children

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Streptococcus equinus, a non-enterococcal streptococcus, was isolated with increased frequency in a pediatric population.

The term enterococci includes most of the species of streptococci possessing group D antigens but does not include the two species *Streptococcus bovis* and *Streptococcus equinus*. It has been recommended that the term enterococcus be maintained, since there is a "difference in antibiotic therapy for patients with enterococcal and those with non-enterococcal infections" (2).

The incidence of non-enterococcal group D streptococci is not well established, since commonly used screening methods cannot always make this distinction. Species identification requires use of several different media and incubation temperatures and a longer time than is desired for diagnostic work. The use of two reactions—bile-esculin (Scott Laboratories, Fiskeville, R.I.) and growth in 6.5% sodium chloride broth—does separate the enterococci from non-enterococcal group D streptococci (3, 4). The isolates were not routinely grouped serologically. It is recognized that two strains of alpha-hemolytic streptococci darken bile-esculin agar. These may be separated from *S. bovis* and *S. equinus* on other biochemical criteria (5).

Over a 3-month period, we identified as to species all isolates from the urinary tract of our pediatric patients that gave a positive bile-esculin reaction in 18 to 24 h by the criteria of Facklam (2). The following tests were used: tetrazolium reduction, tellurite reaction, methylene-blue milk, growth at 10°C, growth in SF broth (Difco), starch utilization, growth as mucoidal colonies on 5% sucrose agar, and acid production from arabinose, glycerol, lactose, mannitol, raffinose, and sorbitol. One hundred thirty-three strains were identified as to species: 107 *S. faecalis* (80.5%), 3 *S. faecium* (2.3%), 4 *S. equinus* (3.0%), 7 *S. avium* (group Q) (5.3%), and 18 that did not conform to any species (13.5%). Strains that were bile-esculin positive,

failed to grow in 6.5% salt, did not produce acid from lactose or grow in methylene-blue milk, and agreed in other tested characteristics were considered *S. equinus* (2).

The non-enterococcal isolates are distinguishable in that they fail to grow in 6.5% sodium chloride broth but still blacken bile-esculin agar (3, 4). By using this characteristic, we monitored the incidence over the following year and noted a significant increase in non-enterococcal isolates. Then, for 3 months we collected and identified, to species level, bile-esculin-positive streptococci from all clinical sources except respiratory. Of 127 isolates, 79 (62.2%) were *S. faecalis*, 1 was *S. faecium* (0.8%), 2 were *S. bovis* (1.6%), 3 were *S. avium* (2.4%), 1 was *S. casseliflavus* (0.8%), 22 were *S. equinus* (17.3%), and 19 (15%) were not identified as to species (two of which closely resembled *S. casseliflavus*).

We concluded that, since the majority of the isolates were *S. faecalis* (71.5%), apart from separating the enterococci from the non-enterococcal group D organisms, little was gained by species identification. The additional information is of academic interest, but it is not worth the extra time and materials in a diagnostic laboratory. However, the finding that a total of 26 (10%) of the isolates in the two samples were *S. equinus* may be of interest, particularly the observation that a 12% increase occurred from year to year. Perhaps this finding was only of sporadic occurrence, related to season, population distribution, or other factors.

Although the other non-enterococcal group D streptococcus, *S. bovis*, has been reported to produce disease (6-9, 12), little is known about *S. equinus* in this regard. In fact, it has "rarely [been] cultured from man" (1). Of the second group identified as to species, 60 isolates were from urines, and the majority of the other 67 were isolated from wounds where they may have produced disease. The clinical evaluation of

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these isolates is desirable but unavailable. This incidence of *S. equinus* is presented to increase awareness among microbiologists and clinicians alike as to its potential involvement.

Also, three isolates were tentatively identified as *S. casseliflavus* (2, 11) and represent the first reported human isolates of this species, except for 23 isolates mentioned by Isenberg et al. (10) but "considered as atypically reacting *S. faecium*."

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