

NOTES

Association of *Streptococcus bovis* Bacteremia with Bowel Disease

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We reviewed the medical records of 19 patients who had *Streptococcus bovis* bacteremia. Eight patients had diverticulosis, four had benign adenomatous colonic polyps, and three had adenocarcinomas of the gastrointestinal tract. Laboratory workers and clinicians should be aware of the association of *S. bovis* bacteremia and gastrointestinal disease.

Group D streptococci include enterococci and two nonenterococcal species, *Streptococcus bovis* and *Streptococcus equinus* (2, 4). *S. bovis* organisms are part of the normal bowel flora of humans and animals (1, 2). Sabbaj et al. (15) isolated group D streptococci from fecal specimens from 25 of 25 normal subjects; 4 of the 25 specimens also contained *S. bovis*.

The nonenterococcal group D streptococci are an important cause of bacterial endocarditis (2, 6, 9, 10, 13). Parker and Ball (13), for example, found *S. bovis* to be the causative agent in 15% of 317 patients with endocarditis.

Recent studies have noted an association between *S. bovis* bacteremia and gastrointestinal disease. Klein et al. (8) isolated nonenterococcal group D organisms from the feces of 35 (56%) of 63 patients with colonic cancer; 11 (10%) of 105 normal subjects who served as controls had nonenterococcal group D streptococci in their feces. Klein et al. (7) also demonstrated a further association between *S. bovis* bacteremia and colonic cancer in a prospective study of 29 bacteremic patients. Other workers, (3, 5, 11, 12, 14, 16, 17) have also noted an association of *S. bovis* bacteremia with gastrointestinal disease, primarily cancer of the colon. Due to recent attention given this association, we undertook the following retrospective study of 19 patients who had *S. bovis* bacteremia.

Between January 1978 and October 1979, 21 isolates of group D streptococci submitted to the

Bacteriology Reference Laboratory of the Massachusetts State Laboratory Institute were confirmed as *S. bovis* by procedures described by Facklam (4). The isolates were gram-positive cocci which produced chains when grown in broth. They grew best under anaerobic conditions and produced alpha hemolysis or no hemolysis when grown anaerobically on sheep blood agar. All strains fermented glucose rapidly and gave negative catalase and bile solubility tests. They uniformly hydrolyzed esculin in the presence of 40% bile and did not grow in broth containing 6.5% NaCl. They produced acid aerobically from lactose, hydrolyzed starch rapidly, and possessed a group D antigen.

These isolates represented 21 episodes of *S. bovis* bacteremia in 19 patients. The medical records of the 19 patients were reviewed, as were the results of pathological and radiological studies of the patients.

A total of 14 of the 19 patients were diagnosed as having endocarditis due to *S. bovis*. Three other patients were suspected of having endocarditis. Two patients had no evidence of endocarditis.

Ten of the patients underwent a complete gastrointestinal evaluation including sigmoidoscopy or colonoscopy (or both). All 10 had endocarditis. There were five men and five women. Their mean age was 72 years. One patient had rectal adenocarcinoma, and four had colonic villous adenomas without evidence of malignancy. The other five patients did not have a neoplasm detected; one of the five had had a hemigastrectomy in the past as treatment for peptic ulcers, and one had inflammatory bowel

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disease. Five patients, including three who had no detectable neoplasm, had diverticulosis.

There were nine patients who underwent limited gastrointestinal evaluations or no gastrointestinal evaluation at all. Six were male. There were eight adults and one infant. Four patients had endocarditis, and three had clinical evidence suggestive of endocarditis. No evidence of endocarditis was seen in two patients, including an infant who had had a repair of a lumbar meningocele and developed meningitis due to *S. bovis*. One patient had adenocarcinoma of the colon. One had metastatic adenocarcinoma of the stomach. Seven patients did not have gastrointestinal neoplasms. Three of the seven had diverticulosis, and two had had inguinal hernias repaired.

This study confirms the work of Klein et al. (7, 8), who found a relationship between *S. bovis* bacteremia and gastrointestinal disease. In our survey a substantial proportion of patients who had bacteremia due to *S. bovis* had gastrointestinal disorders. Eight had diverticulosis, four had benign adenomatous colonic polyps, and three had carcinomas of the gastrointestinal tract.

In a prospective study of *S. bovis* bacteremia in 29 patients, Klein et al. (7) found that 13 of 15 patients who underwent complete gastrointestinal evaluations had gastrointestinal neoplasms. Eight had carcinoma of the colon, three had adenomatous polyps of the colon, and two had carcinoma of the esophagus.

Although the patients that we studied had fewer malignancies than the patients studied by Klein et al. (7, 8), our findings reaffirm the association between bacteremia and especially endocarditis due to *S. bovis* and gastrointestinal disease.

Although the mechanisms involved in this association are not known, it is important that diagnostic bacteriology laboratories be aware of this association. Isolates of gram-positive cocci from blood should be fully identified so that clinicians can be made aware of bacteremia due to *S. bovis* and initiate appropriate diagnostic studies.

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