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Clinical Notes

Bacteremia Associated with Colonoscopy

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Twenty-eight patients had a total of 168 blood cultures before and at regular intervals during colonoscopy. No bacteremia was found. Based on our results and other reports, we recommend antibiotic prophylaxis during colonoscopy only for those patients with prosthetic heart valves and for those with valvular heart disease who also have advanced liver disease.

TRANSIENT bacteremia has been reported following several procedures involving trauma to mucosal surfaces, such as dental procedures,[1] nasotracheal intubation,[2] genitourinary tract manipulation,[3] sigmoidoscopy,[4] barium enema,[5] and upper gastrointestinal endoscopy.[6]

In contrast to other endoscopic procedures, colonoscopy involves manipulation of an extensive mucosal surface populated by many microorganisms, and it usually lasts longer than other endoscopic procedures. Thus, it would seem reasonable to anticipate the occurrence of bacteremia with colonoscopy.

Material and Methods

The study group was composed of patients who consented to donate samples of blood for culture while undergoing colonoscopy at Henry Ford Hospital for indications listed in the accompanying table. Patients were excluded if they had received antibiotics during the preceding week. The preparation consisted of cleansing enemas the night before and the morning of colonoscopy. Patients also received citrate of magnesia and/or bisacodyl tablets.

Blood for culture was obtained through a #19 butterfly needle placed and secured into a forearm vein. Prepuncture skin preparation was with povidone iodine. Specimens were drawn just before colonoscopy, at 5, 15, 30 and 45 minutes during the procedure, and every 15 minutes thereafter when the procedure lasted longer than 45 minutes. The first nine patients had blood for culture drawn 15 and 30 minutes after colonoscopy. Additional samples were also drawn at the time of biopsy or polypectomies.

In the first nine patients tested, the specimen was a 2 ml blood sample drawn into a heparin-rinsed glass syringe and immediately placed in anaerobic transport vials. Each sample was divided in two halves in the anaerobic chamber. One half was removed and processed aerobically; the other was left in the anaerobic chamber. In both cases the blood was filtered through a 0.45 μ millipore disc which was then placed on the surface of a reduced blood agar plate and

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incubated at 37°C. Plates were observed for growth daily for seven days.

In the remaining 19 patients, a 5 ml blood specimen was drawn into commercial blood culture bottles (supplemented peptone broth II*) and incubated anaerobically. Previous, unpublished studies by T. Neblett indicated that this method was effective in detecting aerobic as well as anaerobic enteric organisms. Bottles were examined for turbidity daily, and gram stains were done after 18 hours, 7 and 14 days of incubation. After 7 days of incubation, each bottle was subcultured to two reduced blood agar plates, one of which was incubated aerobically in a CO_2 incubator. The other plate was incubated anaerobically in an environment containing 3% hydrogen, 12% carbon dioxide, and 85% nitrogen. Plates were observed for growth daily for seven days. At the end of 14 days, aliquots from all bottles were examined by gas chromatography.

Colonoscopy in 28 Patients

Indication	Number
Polypectomy	10
Carcinoma suspected	6
Polyp suspected	4
Unexplained bleeding	4
Inflamatory Bowel Disease	4

Results

A total of 168 samples were obtained from 28 patients who had colonoscopy. Only two cultures, one in each of two patients, were positive. In both cases Propionibacterium species was isolated.

Discussion

Propionibacteria are frequent contaminants of blood cultures obtained through cutaneous puncture. It is more likely that in our patients these isolates represent contamination rather than true bacteremia.

The importance of transient bacteremia in the pathogenesis of bacterial endocarditis is widely recognized. The use of prophylactic antibiotics when patients with valvular or congenital heart disease undergo dental or genitourinary manipulation is generally recommended.[7] Whether colonoscopy would be an indication for prophylactic antibiotics in this circumstance prompted this study.

Several studies have been done to determine the frequency of bacteremia during colonoscopy.[8-14] Results have been conflicting and, therefore, recommendations for antibiotic prophylaxis in patients at risk for infective endocarditis are also controversial. Our findings agree with those in most other studies; namely, that bacteremia is either nonexistent or very rare during colonoscopy. A possible explanation is the presence of the liver "filter" between the portal and systemic circulation. Indeed, as the report of Dickman et al suggests,[10] patients with severe liver impairment might be more susceptible to bacteremia during colonoscopy.

In view of the available evidence and since cases of endocarditis clearly related to colonoscopy have not been documented, we currently do not recommend prophylactic antibiotics for colonoscopy patients at risk for infective endocarditis. However, we concur with the American Heart Association recommendations[7] for administration of prophylactic antibiotics to patients with prosthetic valves, "since they appear to be at especially high risk." Patients who have advanced liver disease are also candidates for prophylaxis. Prophylaxis might also be indicated during colonoscopy in patients with strongly suspected or proven carcinoma of the colon because of the high carrier rate of *Streptococcus bovis* and the association of infective endocarditis due to this organism in such patients.[15]

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