

Atrial Fibrillation During Flexible Sigmoidoscopy In A 36-Year-Old Man

Richard D. Bruehlman, MD

Flexible fiberoptic sigmoidoscopy has gained wide acceptance among family physicians for colorectal cancer screening and as a diagnostic tool in patients with symptoms referable to the lower gastrointestinal tract. The procedure is generally regarded as safe, and serious complications are rare.¹ Reported here is an unusual case of a 36-year-old man, with no history of cardiac disease, who developed atrial fibrillation during flexible sigmoidoscopy.

Case Report

A 36-year-old man came to the office for a general history and physical examination. He stated that twice during the previous month he had passed small amounts of bright red blood from his rectum following bowel movements. His concern was heightened by his family history, as both his maternal and paternal grandfathers had suffered from colon cancer. His medical history was negative for rheumatic fever, coronary artery disease, thyroid disease, diabetes, hypertension, or other chronic disorders. Between the ages of 18 and 20 years, he had three orthopedic procedures to remove or debride damaged cartilage in his right knee; to his knowledge there were no perioperative arrhythmias. He denied smoking and use of illicit drugs. He stated he drank four to six cups of coffee per day and two alcoholic beverages a week.

His physical examination was notable only for mild, truncal obesity. Findings on auscultation of the heart and lungs were normal. He had no external hemorrhoids, no abnormal palpable mass, a smooth prostate, and no gross or occult blood on rectal examination.

Laboratory studies reported a mildly elevated fasting glucose (150 mg/dL), mild hyperlipi-

demia (total cholesterol 241 mg/dL, triglycerides 248 mg/dL, high-density lipoproteins 34 mg/dL), a hemoglobin of 15.9 g/dL, and a normal thyroid-stimulating hormone of 0.84 μ U/mL (normal 0.38 to 7.10 μ U/mL). Electrolytes, blood urea nitrogen, and creatinine were all within normal limits.

A flexible sigmoidoscopic examination was performed in the endoscopy suite of a community hospital. The patient's temperature, pulse rate, and blood pressure were obtained approximately 5 minutes before the procedure; he was afebrile, his pulse 72 beats per minute and regular, and his blood pressure 110/60 mmHg. According to hospital protocol, his cardiac rhythm was continuously monitored. The flexible sigmoidoscope was advanced to an insertion length of 50 cm where it could not be advanced further because of lower abdominal discomfort. The patient experienced no symptoms of chest discomfort, palpitations, or dyspnea during the procedure, and the abdominal discomfort resolved as the sigmoidoscope was withdrawn below 50 cm.

Immediately upon completion of the sigmoidoscopy, the cardiac monitor showed an irregular, moderately rapid, narrow complex tachycardia. A 12-lead electrocardiogram (ECG) was obtained, which confirmed atrial fibrillation with a moderately rapid ventricular response. No ST or T wave abnormalities were apparent. The patient remained asymptomatic, and his automated blood pressure reading was 128/95 mmHg.

The patient was transferred from the endoscopy suite to a recovery area where cardiac monitoring continued. Vagal maneuvers were unsuccessful in decreasing the ventricular rate. Approximately 45 minutes after the sigmoidoscopy was completed, however, the patient spontaneously converted to normal sinus rhythm. A 12-lead ECG was repeated and findings were normal. He maintained normal sinus rhythm during a period of observation and was discharged.

Ten days later, the patient performed an exercise stress test. He completed 10 minutes of the

Submitted, revised, 2 May 1995.

From the Department of Family Medicine and Pediatrics, Saint Margaret Memorial Hospital, and the Department of Family Medicine and Epidemiology, University of Pittsburgh, Pittsburgh, Pennsylvania. Address reprint requests to Richard D. Bruehlman, MD, Glenshaw Medical Associates, 619 Mount Royal Boulevard, Pittsburgh, PA 15223.

Bruce protocol. The test was stopped due to fatigue. No ischemic ECG changes were found, blood pressure response was normal, and there were no arrhythmias. An echocardiogram showed normal chamber size, left ventricular ejection fraction, and valvular function.

Discussion

Cardiac arrhythmias and ST segment and T wave changes have long been recognized as a potential consequence of sigmoidoscopy,² colonoscopy,³ and upper gastrointestinal endoscopy.⁴ The vast majority of ECG disturbances are benign and transient. Gupta, et al.⁵ reported new electrocardiographic changes in 21 of 92 patients during upper and lower gastrointestinal endoscopy. These changes included unifocal ventricular ectopy, frequent premature atrial ectopy, and ischemic ST segment and T wave changes; all were transient, and patients remained asymptomatic. Wilcox, et al.⁶ studied 25 patients with coronary artery disease and found arrhythmias and ischemic ECG changes to be no more frequent during gastrointestinal endoscopy than during a corresponding, base-line period.

Nonetheless, serious cardiac events during gastrointestinal endoscopy have been reported. Davison, et al.⁷ reported a case of ventricular fibrillation during colonoscopy in a 73-year-old woman who had stable angina pectoris. In 1957 Palmer and Wirts⁸ reviewed 300,000 cases of upper endoscopic procedures and found four cases of myocardial infarctions.

The case reported here involved induction of a potentially serious arrhythmia, atrial fibrillation, in a 36-year-old man who had no history of cardiac disease. Although mildly overweight and glucose intolerant, he lacked evidence of hypertension, hyperthyroidism, anemia, and valvular heart disease, conditions that can predispose an individual to atrial fibrillation. Echocardiography subsequently demonstrated no structural abnormality, and an exercise stress test failed to induce any ischemic ECG changes or arrhythmias.

The atrial fibrillation was detected by continuous cardiac monitoring, using a standard hospital protocol. Had the flexible sigmoidoscopy been performed in an office setting without such monitoring, however, the episode might have gone undetected, because the patient remained asymptomatic during the 45 minutes he remained in atrial fibrillation.

Because this patient spontaneously converted to normal sinus rhythm and suffered no adverse consequences of the time spent in atrial fibrillation, it is arguable whether continuous cardiac monitoring was of any benefit in this instance. Routine cardiac monitoring of healthy patients during screening flexible sigmoidoscopy is not justifiable, either on the basis of this case report or other medical literature. Patients with cardiovascular or pulmonary problems, however, might not tolerate even a brief episode of atrial fibrillation and might not spontaneously convert to normal sinus rhythm after atrial fibrillation ensues. In addition, several studies have found a higher incidence of arrhythmias induced by lower gastrointestinal endoscopy in those patients with pre-existing cardiac and pulmonary disorders.^{3,5} Endoscopists might reasonably choose to perform flexible sigmoidoscopy in high-risk patients in a setting that includes continuous cardiac monitoring, as well as readily available equipment and drugs for advanced cardiac life support.

References

1. Groveman HD, Sanowski RA, Klauber MR. Training primary care physicians in flexible sigmoidoscopy — performance evaluation of 17,167 procedures. *West J Med* 1988; 148:221-4.
2. Fletcher GF, Earnest DL, Shuford WF, Wenger NK. Electrocardiographic changes during routine sigmoidoscopy. *Arch Intern Med* 1968; 122:483-6.
3. Alam M, Schuman BM, Duvernoy WF, Madrazo AC. Continuous electrocardiographic monitoring during colonoscopy. *Gastrointest Endosc* 1976; 22:203-5.
4. Schuman BM, Gale H. Electrocardiographic changes associated with gastroscopy. *Bull Gastrointest Endosc* 1962; 8:10-3.
5. Gupta SC, Gopalswamy N, Sarkar A, Suryaprasad AG, Markert RJ. Cardiac arrhythmias and electrocardiographic changes during upper and lower gastrointestinal endoscopy. *Mil Med* 1990; 155:9-11.
6. Wilcox CM, Faibicher M, Wenger NK, Shalek KA. Prevalence of silent myocardial ischemia and arrhythmias in patients with coronary heart disease undergoing gastrointestinal tract endoscopic procedures. *Arch Intern Med* 1993; 153:2325-30.
7. Davison ET, Levine M, Meyerowitz R. Ventricular fibrillation during colonoscopy: case report and review of the literature. *Am J Gastroenterol* 1985; 80:690-3.
8. Palmer ED, Wirts CW. Survey of gastroscopic and esophagoscopy accidents: report of committee on accidents of the American Gastroscopic Society. *JAMA* 1957; 164:2012-5.