Infectious Endocarditis due to *Streptococcus Bovis* in a Patient with Colon Carcinoma

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We report the case of a 66 year-old female patient with infectious endocarditis due to *Streptococcus bovis* and adenocarcinoma of the colon that developed acute aortic insufficiency. She was submitted to aortic valve replacement surgery and later to tumor resection (right hemicolectomy). It is important to emphasize the need for complementing the study of the colon, even in asymptomatic individuals, when infectious endocarditis due to *S. bovis* is diagnosed.

Introduction

Streptococcus bovis is a microorganism that colonizes the human gastrointestinal (GI) tract and is present in 2.5% to 15% of individuals. It is a Group D *Streptococcus bacterium* that can cause bacteremia and endocarditis, as well as urinary tract infection and septic arthritis, among others. It accounts for approximately 14% of infection causes and 13% of all cases of infectious endocarditis (IE)[1,2].

Sometimes the IE caused by *S. bovis* is associated with colorectal cancer. This association was first described in 1951 by McCoy and Mason, but it was only in 1977 that it was recognized in clinical practice and its pathogenesis remains to be elucidated[1,2].

The objective of the present study is to report a case of IE due to *S. bovis* associated with colorectal cancer, discussing the epidemiological, clinical, diagnostic and therapeutic aspects.

Case report

A 66-year-old female diabetic and hypertensive patient, from the town of Italva, state of Rio de Janeiro, Brazil, was admitted at the Intensive Care Unit of HSJA/Itaperuna, in March 2008, with acute respiratory failure type I. After being stabilized, she was referred to the Cardiology Infirmary for investigation.

At the time, she reported a picture of fatigue at exertion for the previous three years and a worsening of the situation for a month prior to hospitalization, associated with febrile episodes (no predilection for the time of the day), nausea and generalized arthralgia. At the physical examination, the patient was febrile, pale (+/4+), presented diastolic murmur with aortic focus and aortic accessory (+++/4+), as well as pulmonary crackles. The remainder of the physical examination was normal. Laboratory assessment: hemoglobin = 11g/dl, hematocrit = 32%, hemosedimentation velocity (HSV) = 120 mm. The chest x-ray showed enlargement of the cardiac area. The echocardiogram showed slightly increased left atrium and ventricle. The pulmonary arterial pressure was 42 mmHg. The aortic valve was thickened, with a cusp fragment projecting to the LVOT (left ventricular outflow tract) in diastole. She presented a slight MI and significant AI. The left ventricular (LV) systolic function was preserved. The transesophageal echocardiogram (Figure 1) disclosed the LA (3.2 cm), LV (3.4 cm), LV indexed mass = F191.63 g (normal up to 276 g), LV ejection fraction (LVEF) = 69.13%. The LV presented hyperdynamic walls compatible with a probably acute volume overload. The tricuspid aortic valve presented vegetation adhered to the left coronary cusp, moving towards the LVOT, with around 12.3 mm in extension. The blood culture confirmed the hypothesis of infectious endocarditis caused by group D *Streptococcus bovis*.

Therapy with crystalline penicillin and amikacin was initiated even before the result of the blood cultures was available. On the subsequent days, the patient presented a good clinical picture evolution and symptom improvement without fever. She received amikacin for 14 days and penicillin for 28 days.

A colonoscopy was carried out, which disclosed the presence of a sessile polyp in the transversal colon and a plane tumor at the hepatic angle (Figure 2). The histopathological analysis showed it was a well-differentiated and infiltrating adenocarcinoma.

After the end of the antibiotic therapy, a new control echocardiogram showed the persistence of the significant aortic failure and the patient was referred to aortic valve replacement surgery. The surgical procedure was uneventful and the patient presented a favorable postoperative evolution, which allowed her hospital discharge on the 6th postoperative day. The valve culture was negative.

Key words

Bacterial endocarditis; adenocarcinoma; *Streptococcus bovis*; aortic valve insufficiency.

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Manuscript received May 18, 2009; revised manuscript received August 11, 2009; accepted August 20, 2009.

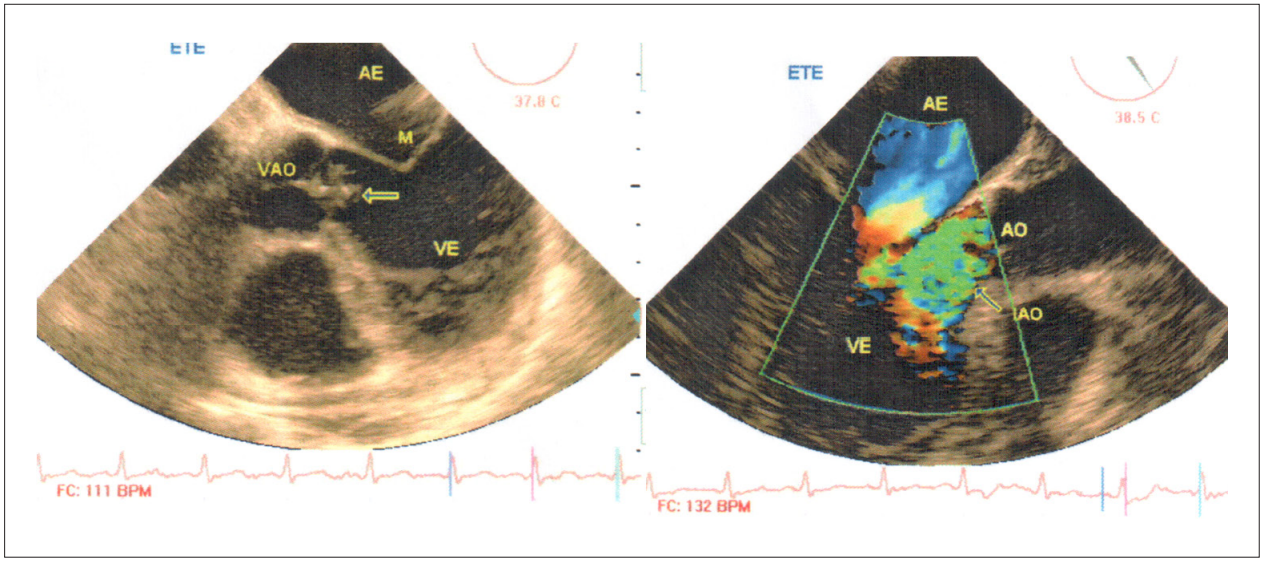

Figure 1 - *Vegetation in the aortic valve and aortic regurgitation.*

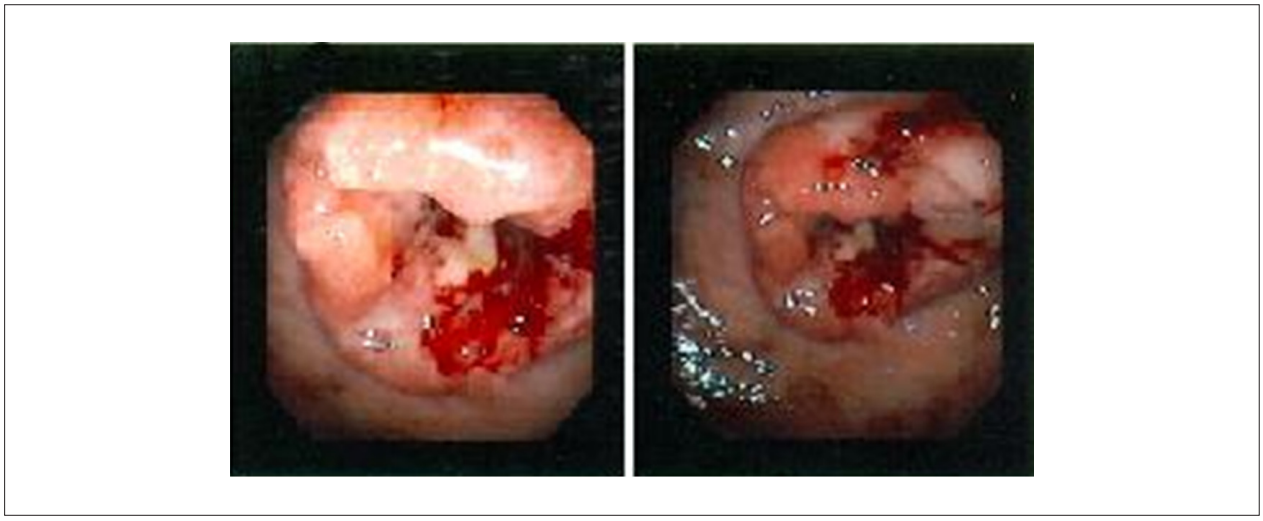

Figure 2 - *Colonoscopy: adenocarcinoma of the colon.*

Two months later a right hemicolectomy was performed and she was discharged on the 4th postoperative day.

Discussion

Infectious endocarditis is a disease in which microorganisms invade the endocardial surface, causing inflammation and injury. Its incidence is stable at around 1.7 to 6.2 cases per 100,000 individuals. Men tend to be more affected than women (1.7:1); however, the age of the affected individuals increased from 30-40 years in the pre-antibiotic era to 47-69 in the recent years. In developed countries, the degenerative valvular alterations and prostheses, and no longer rheumatic disease, are the most important predisposing factors for the occurrence of endocarditis[1,3,4].

S. Bovis is an important cause of bacteremia and infectious endocarditis in adults[5]. It represents from 7% to 14% of the cases of subacute endocarditis and is often associated with colonic neoplasia. The incidence of this association is around 18% to 62%[4]. The colonic neoplasia can appear years after the infectious event.

The endocarditis by *S. bovis* usually affects patients older than 60 years and has a predilection for the aortic valve. Its main complication is congestive heart failure. Moreover, it is frequently accompanied by a valvular abscess and systemic thromboembolism[2,5].

Clinically, there is no characteristic that differentiates the endocarditis by *S. bovis* from other etiologies; fever is observed in practically all patients.

The diagnosis of infectious endocarditis is based on Duke's criteria, which were subsequently modified[6,7]. The

transthoracic echocardiogram (TTE) is fast and noninvasive and has an excellent specificity for the diagnosis of endocarditis (98%); however, it has a general sensitivity of only 40-60%. The transesophageal echocardiogram (TEE) is a less available and more expensive method, but it presents high sensitivity (between 75% and 95%) and specificity (between 85% and 98%)[5]. It is particularly useful in patients that have valvular prostheses and in the assessment of endocarditis complications. The 2005 Guidelines of the ACC and AHA suggested that the TTE should be used in the assessment of native valves in patients with good images, whereas the presence of prosthesis or any other circumstances that impair the echocardiographic window usually requires the use of TEE[4].

The concomitant occurrence of bacterial endocarditis and colonic carcinoma was first described in 1951, by McCoy and Mason[7]. However, only in 1977 *S. bovis* was recognized by Klein et al[8], as the pathogenic agent of this neoplasia[2]. Although many authors have reported, throughout the years, the association between several types of infectious agents and tumors, the best and strongest association described to date is between the colorectal adenocarcinoma and infection by *S. bovis*[2]. Moreover, this pathogen is associated with several other pathologies in the GI tract, such as adenomatous colonic polyp, hyperplastic polyp and diverticular disease. According to Gold et al[9], the most commonly found alteration was the adenomatous polyp (53%)[9].

Based on these data, we conclude that it is important to perform a colonoscopy in all patients with a diagnosis of infection by *S. bovis*, even in the asymptomatic ones[2,9]. A more stringent follow-up is required for these patients, as infectious endocarditis can precede the onset of colonic neoplasia.

Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

Sources of Funding

There were no external funding sources for this study.

Study Association

This study is not associated with any post-graduation program.

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