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ERYSIPELOTHRIX ENDOCARDITIS WITH PREVIOUS CUTANEOUS LESION: REPORT OF A CASE AND REVIEW OF THE LITERATURE

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SUMMARY

This report describes the first documented case of **Erysipelothrix rhusiopathiae** endocarditis in Latin America. The patient was a 51-years-old male, moderate alcoholic, with a previous history of aortic failure. He was used to fishing and cooking as a hobby and had his left hand wounded by a fish-bone. The disease began with erysipeloid form and developed to septicemia and endocarditis. He was treated with antibiotics and surgery for aortic valve replacement. There are only 46 cases of **E. rhusiopathiae** endocarditis reported to date. The authors wonder if several other cases might go unreported for lack of microbiological laboratorial diagnosis.

KEY WORDS: Erysipelothrix, Endocarditis, Erysipeloid.

CASE REPORT

A 51-years-old white male was admitted to Hospital Mãe de Deus on November 30, spring of 1987, for evaluation of unexplained fever. He was a retired, mild alcoholic, who used to fish and cook as a hobby. On October 12, while cleaning some fish, he had gashed his left hand thumb, developing probable erysipeloid disease that was not detected at the time. Fifteen days later, his right foot showed signs of infection, with an erythematous lesion. His doctor prescribed corticosteroid and erythromicin for 2 days. Articular pain and astenia persisted and about 3 weeks later patient had sudden thoracic pain and a cough with ferruginous sputum. He was admitted to a hospital with a diagnosis of pneumonia and received daily doses of oxytetracycline while in the hospital. He was discharged on the seventh day but, as fever persisted, he went to Hospital Mãe de Deus. He reported feeling articular pain, dyspnea on effort and astenia. Several years earlier he had been told to have a heart murmur. When admitted, he had a fever of 37.6°C. Physical examination showed a well-fed man, with slightly discoloured mucous membranes; sisto-diastolic aortic murmur + +/6; crepitation on the base of the right lung; no hepato or splenomegalies, no haemorrhagic suffusions; blood pressure 110/60 mmHg; bilateral pulmonar infiltration evident on chest X-ray; normal electrocardiogram; white blood cells count 5.000/cu.mm; normal differential count, haematocrit 32% and haemoglobin 10.2 mg/dl; erythrocyte sedimentation rate 112 mm/hr.

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Three blood cultures were positive for a gram-positive bacilli, 48 hours later identified as **Erysipelothrix rhusiopathiae**. Echocardiogram with no evidence of vegetation, but showing left ventricular disfunction and aortic failure signs. Patient was treated for subacute bacterial endocarditis. The antibiotic used was penicillin G (18 millions units daily) for 30 days, associated with cefoxitin (6 gr. daily) for 28 days. Haemodinamic conditions deteriorated, with signs of anemia but no fever. Aortic valve replacement was indicated. Surgery was performed on December 28. A metallic prothesis was implanted. Examination during surgery showed bicuspid aortic valve with vegetation and left coronary leaflet rupture. Right coronary leaflet was also impaired. Patient recovered well and was able to leave the hospital on January 14, 1988, performing his normal activities up to now.

MICROBIOLOGICAL STUDIES

Three blood cultures were collected and sent to Laboratório Bioclínico Mãe de Deus. After 24 hours, there was a growth of slender, curved and non-spore-forming gram-positive bacilli. Subculture in microaerofilic conditions showed a growth of colonies, 0.3 mm in diameter, non hemolytic in human blood-agar, resembling **Streptococcus viridans** on plates, and diphteroids, **Listeria monocytogenes** or **Lactobacillus,** on gram-stained smears. The absence of beta-hemolysis and catalase excluded **Listeria**. The diphteroids species are catalase-positive, except **Corynebacterium haemolyticum, Corynebacterium pyogenes** and **E group**. Characterization of **E. rhusiopathiae** was obtained by the production of hydrogen sulphide in the butt of a TSI agar. Identification was later confirmed at the Microbiology Laboratory of the Fundação Oswaldo Cruz, in Rio de Janeiro.

The organism was sensitive to penicillin G, ampicillin, cephalothin, cefoxitin, cefotaxime, lincomycin, erythromycin and tetracycline, but resistent to amikacin, gentamicin, tobramycin, kanamycin, fosfomicin, trimethoprim-sulfamethoxazole, rifampicin and vancomycin revealed by Kirby-Bauer assay. Minimal inhibitory concentration of penicillin G was less than 0.1 mcg/ml.

DISCUSSION

Erysipelothrix endocarditis was first described in animals in 1870. Kock was the first to isolate the organism in 1878 from the blood of mice[7,13].

Erysipelothrix rhusiopathiae is an organism that can be found in nature, in various animal species such as sea and fresh-water fish and crabs and in several mammals, such as swine. It can also survive in the environment[11]. It has been noticed that, under natural conditions, the organism survives for 12 days in direct sunlight, four months in petrified flesh and nine months in a buried carcass[13]. In 1884 ROSENBACH first described the erysipela-like lesions of the human skin caused by **Erysipelothrix rhusiopathiae**; hence, the skin disease is called erysipeloid of ROSENBACH[25,27]. Contact with contaminated animals is the usual route of penetration, and therefore occupational contacts and cutaneous infections occur primarily among kitchen and slaughterhouse workers, butchers, fishermen, poultry workers, farmers and veterinarians[13], generally affecting hand or arms. Symptoms appear 2 to 7 days after contamination. Usually, violaceous skin lesions are present with an advancing pink border and clearing of skin previously involved[13]. Absence of suppuration and pitting distinguishes erysipeloid from other pyogenic cutaneous infections such as staphylococcal or streptococcal cellulitis[10,13]. The lesion is usually self-limiting, spontaneous recovery occuring generally in one to four weeks[4,7,10]. Fever and articular pain are common[7]. Positive cultures are rarely obtained from material collected from swabs of a local lesion. Biopsies should be taken and cultured in glucose broth followed by subculture on blood agar plates[13]. Only a few cases have been studied histologically. **E. rhusiopathiae** organisms are not demonstrable in skin biopsies by the usual histologic staining techniques[2]. The difuse cutaneous form is quite rare and involves progression from the original site of innoculation[22]. Some cases with no evidence of skin lesion have been postulated as infection by the oral route due to ingestion of infected undercooked pork[9,28]. Evolution of the disease to septicemia has been described as rare[3,4,5,11,13,20,25,26,29,30,32,33]. This low frequency is emphasized by its absence in 500 cases of hand erysipeloid observed by NELSON[22], 329 cases

observed by GILCHRIST[12] and 115 cases observed by KING[14]. Whenever present, septicemic infection is frequently associated with endocarditis. Systemic infection may be quite serious, being particularly destructive to the heart valves[25]. Only 46 cases of Erysipelothrix endocarditis have been described in medical literature since Gunther observed the first case in 1912. Most of the authors agree as to the importance of predisposing factors[5] such as previous heart disease, congenital cardiac anomalies, alcoholism, poor nutrition and diabetes[4,5,19]. Endocarditis can occur without primary or secundary skin lesions[13]. Cutaneous erysipeloid was present in only 50% of the patients with endocarditis[11]. Clinical signs of Erysipelothrix endocardits are undistinguishable from those seen in other forms of bacterial endocarditis[19,25,33]. Cerebral manifestations and meningitis were observed in one case[30]. Hematuria has been noticed in some previously reported cases[20,31,33]. As to gender, prevalence of Erysipelothrix endocarditis is greater in male than in female patients (a 1:4 ratio). Patients ages range from 10 to 72 years old, predominance being between the ages of 40 to 60 years old[11]. FRELAND[11] mentioned the influence of climate and seasons, observing that most of the cases occurred in temperate climates and that animal contamination was more frequent between the months of May and July, while human contamination occurred mostly between July and October. Our patient was contaminated in October and developed endocarditis in November, spring months in Brazil, fall in the USA and Europe. All previously reported cases occurred in the USA or Europe, with four exceptions: 1 in New Zealand, 1 in Australia, 1 in Korea, 1 in Thailand.

All cases reported before 1945 were fatal. Use of hyperimmune serum was then the only available treatment[25]. The discovery of penicillin changed the history of the disease. From the 39 cases reported after the first documented cure with antibiotic therapy (LAWES, 1952)[17], 17 died and 22 recovered. Modern drug therapy prescribes the use of 12 to 24 million units of penicillin daily for four to six weeks[25]. For penicillin-sensitive individuals, erythromycin and clindamycin or lincomycin offer an effective alternative[31]. Most authors report that **E. rhusiopathiae** produces alpha-hemolysis on blood agar. TANOMSUP[33] found a non-hemolytic organism on sheep blood agar, while NORMANN[23] observed a slight alpha-hemolysis on human blood agar. Our case was caused by alpha-hemolytic organism on sheep blood agar, non-hemolytic on human blood agar. For a correct identification of **E. rhusiopathiae** there must be an absence of beta-hemolysis and the presence of hydrogen sulphide production in TSI agar. NORMANN[23] observed hydrogen sulphide production in SIM medium.

E. rhusiopathiae is often dismissed as a skin contaminant when grown from blood culture[18]. While not difficult to obtain through culture, it is not an easily-identifiable organism[16]. Many physicians and laboratory personnel are unfamiliar with it[25]. The increase in its incidence after 1970 is probably due to the improvement of laboratorial techniques. ALEXANDER[1] raised the possibility that Erysipelothrix septicaemia is essentially an opportunistic infection. Although FLIEGELMAN[10] finds that man is relatively immune to it, we have never found any reports in medical literature discussing a case where **E. rhusiopathiae** had not caused a disease, nor have we heard about the isolation of **E. rhusiopathiae** in healthy individuals. It is our opinion that many cases might go undetected for lack of a correct microbiologic laboratorial diagnosis. We do not think that **E. rhusiopathiae** is difficult to identify. Its identification does not start in laboratory bottles, plates or computers but rather in the mind of the microbiologist.

RESUMO

Endocardites por Erysipelothrix **com Lesão Cutânea Prévia: Relato de um Caso e Revisão da Literatura**

Este relato descreve o primeiro caso documentado de endocardite por **E. rhusiopathiae** na América Latina. O paciente tinha 51 anos de idade, era alcoólatra moderado, com uma história prévia de insuficiência aórtica. Ele costumava pescar e cozinhar como hobby e feriu sua mão esquerda com uma espinha-de-peixe. A doença começou com a forma erisipelóide e evoluiu para septicemia e endocardite. Ele foi tratado com antibióticos e cirurgia para troca da válvula aórtica. Até hoje forma relatados

apenas 46 casos de endocardite por **E. rhusiopathiae**. Os autores questionam se muitos outros casos ocorrem sem que sejam relatados por falta de correto diagnóstico microbiológico laboratorial.

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