Abstract

Objective: to emphasize important features in the diagnosis and monitoring of patients with childhood cervical actinomycosis.

Patients and methods: we report the case of a patient with cervicofacial actinomycosis. We also carried out a review of the literature from the past few years (Lilacs and Medline).

Results: we followed a male patient admitted to the pediatric infectious disease ward. Diagnosis was carried out through biopsy of a cervical node and isolation of bacteria. Specific penicillin treatment for actinomycosis was administered for 14 days. Subsequently, we observed remission of the node. The patient was discharged from the hospital. At least 6 months of amoxicillin therapy with simultaneous outpatient follow-up were recommended.

Conclusion: early diagnosis of actinomycosis enables appropriate and prompt treatment, thus preventing the involvement of other areas such as CNS, face, and neck.


Introduction

Actinomycosis is a granulomatous, chronic, and infectious disease with characteristics of suppuration and that is produced by gram-positive bacilli of the Actinomyces strain. These bacteria can be divided into six subgroups: israelii, naeslundii, viscosis, odontolylicius, meyeri, and pyogenes. The Actinomyces israelii is the bacillus that most commonly and significantly affects humans.

Case report

We report a case involving JRS, a male patient with 9 years and 10 months of age, with light-brown skin color, and from the city of Jânio Quadros, state of Bahia. Patient presented with complaints of neck lumps for the previous three months at emergency services elsewhere. According to the mother of the patient, he had first presented a moderate edema on the anterior cervical region, more specifically the medial part near the sternal-clavicular joint, which was associated with mild local pain and loss of appetite. Patient had presented spontaneous improvement 15 days after the onset of the lesion and had remained asymptomatic for one month. Subsequently, the moderate edema reappeared in the medial cervical region and was associated with intense local pain, moderate hyperemia, various daily episodes of fever that were not measured, and mild dysphasia. Patient sought medical assistance and was indicated to take symptomatic medication. The mother reported not perceiving any improvement and, consequently, brought the child to the state of São Paulo for medical evaluation.
The patient presented at the Institute of Pediatric Oncology with anterior cervical mass. At the infirmary services for pediatric oncology, a biopsy specimen was collected for histopathologic examination. Next, patient was indicated treatment with cephalaxin and symptomatic medication. On the 5th day of hospital stay, antibiotic therapy was replaced with ceftriaxone. After one week of evolution, the Actinomyces was isolated in biopsy of specimen collected from the patient. Patient was indicated to the department of Pediatric Infectious Diseases and submitted to treatment specific for actinomycosis with administration of crystalline penicillin for 14 days. Patient did not present intercurrence during this period and presented general improvement of clinical status. Patient also remained afebrile during the period and was discharged from the hospital and indicated long-term antibiotic therapy. The drug of choice was amoxicillin due to its reduced cost and more suitable dosage. JRS was also indicated for outpatient follow-up at the clinic for infectious diseases.

We carried out a review of the literature on cervicofacial actinomycosis of the last few years.

Discussion

Actinomycosis was first described in the 19th century as a disease found in bovine animals. In 1876, Bellinger identified the Actinomyces as a specific parasitic disease after finding mycelia in purulent specimen taken from the mandible of cattle. In 1877, the microbiologist Hartz, in using the material collected by Bellinger, confirmed the finding of radial microorganisms, which he named Actinomyces bovis (Akino for radial discharge of sulfur granules and Mycos for mycelia). In 1981, Wolf and Israel isolated an anaerobic organism in human dental caries presenting growth of anaerobic oral filamentous organism. Currently, Actinomyces are formally classified as bacteria.

The etiologic agent of Actinomyces is a member of the Actinomycetaceae family, which are colonizers of the oral cavity and of the mucous membrane of other orifices. The microorganism is classified as an intermediary between fungus and bacterium. Actinomyces do not have nuclear membranes, glycans, or mitochondria; they are anaerobic or microaerobic, sensitive to antibacterials, and do not respond to antifungal therapy.

The bacterium is a colonizer of the oral cavity that rarely causes infection, which indicates its low potential of virulence or invasion. The reduced frequency of Actinomyces infection indicates that its inoculation through oral lesion cannot be the only cause of infection. It has been described that the Actinomyces requires the presence of other types of bacteria in order to proliferate. In this sense, the oral flora determines the potential of oxygen reduction that would favor the growth of this anaerobic bacterium.

Fifty-percent of the cases of the disease are of cervicofacial actinomycosis, 20% of pulmonary and thoracic actinomycosis, and 30% of abdominal and pelvic actinomycosis. The disease affects the cervicofacial area starting at the buccal mucous membrane or pharyngeal membrane. It spreads to other areas in contact and its primary lesion is usually located at the mandible. Predisposing factors for cervicofacial actinomycosis include poor oral hygiene, break in normal mucosal barriers, and anaerobic medium. In approximately 75% of cases, onset of the disease occurs on the teeth or tonsils.

Actinomycosis is an entity with universal distribution and with equal frequency of cases in rural and urban areas. It is more common in male patients, for a ratio of 3:1 or 4:1, due to more frequent maxillofacial lesions in men as a result of sports, automobile and motorcycle accidents, alcohol abuse, and aggressive behavior (does this read somewhat sexist?). It is reported only approximately once a year in major medical centers. Weese and Smith, in 1975, reported an incidence of 1 case per 17,000 to 53,000 inhabitants.

The disease disseminates to contiguous areas with subsequent involvement of structures in contact. Hematogenous dissemination, in turn, is described as rare. The pathology presents characteristics of induration of infected tissue with a tendency to present abscedation and fistulation.

The disease displays different clinical courses, ranging from chronic to acute actinomycosis. The earlier is the most common form, and it presents slow progression, indurate infiltrate, and multiple abscesses and fistulas; the latter presents fast progression with fever (50% of cases), ulceration, fluctuating lumps mimicking a typical pyogenic infection.

Clinically, the disease presents the 5 symptoms of Poncet and Bérard: pain, trismus, lumps with fistulation, discharge of sulfur granules, and moderate general symptoms. Local pain and fever are the most common symptoms. Regional adenopathy, in turn, is not common. Resulting severe involvement of the cranium and spinal column can develop to meningitis and death. Invasion of the orbit and ear, including the middle ear, have been described as extremely rare. The main areas of infection are the face and neck, including, also, the tongue, larynx, hypopharynx, lachrymal glands, mandible, malar region, paranasal sinuses, palate, parotid gland, lachrymal canaliculus, and periodontal abscesses of the maxillae.

Early diagnosis of cervicofacial actinomycosis has been reported in less than 10% of cases. The final diagnosis is established according to bacterial growth in brain-heart infusion agar or blood agar with 5% carbon dioxide and at 37°C. Diagnostic procedures should include 14-day anaerobic culture of pus and biopsy specimens with subsequent antibiogram. The use of the culture medium for diagnosis may prove unsuccessful in 50% of cases due to growth of secondary, gram-negative bacteria, such as Streptococcus and Staphylococcus; to a breach in the anaerobic medium; and to previous use of antimicrobials. Another method for
the diagnosis of cervicofacial actinomycosis is the histopathologic examination of biopsy specimens, in which case diagnosis is established by chronic granulomatous reaction with fibrotic and avascular periphery and, also, sulfur granules with central area presenting numerous polymorphonuclear, lymphocyte, and plasmatic cell structures and measuring 0.1 to 1.0 mm.2,3,13,14

Other additional methods are tomography of the head for assessment of bone involvement and of development of the pathology; gallium scintigraphy for delimitation of the natural inflammatory process (also a good method for easy and effective follow-up procedures); ultrasonography for differential diagnosis of natural inflammation and the disease process; and sialography for assessment of salivary gland involvement.4

The disease should be included in differential diagnosis of fungus infection, tuberculosis, Yersínea enterocolitica, pseudo-appendicitis, osteomyelitis, amebiasis, hepatic abscess, chronic and bacterial infection, and nocardiosis.3

In the history of treatments for actinomycosis, in 1938, sulfonamides were the first antimicrobials used with successful results. Moreover, in 1948, Nichols and Herrell were the first to use penicillin in the treatment for actinomycosis.4

The drug of choice is the crystalline penicillin. The bacterial resistance to this antibiotic, however, is still not well understood.3,10

Actinomyces produce extensive fibrotic reactions with central necrotic lesion, resulting in hypovascular tissue with low potential for oxygen reduction and limited antibiotic penetration. Consequently, treatment requires high-dose, long-term antibiotic therapy,4 it depends on individual clinical and radiological improvement of patients, and it should be administered intravenously for 3 to 6 weeks and orally, after hospital discharge, for 6 to 12 months.3,4,7

Actinomyces are also sensitive to semi-synthetic penicillin, tetracycline, streptomycin, erythromycin, chloramphenicol, vancomycin, clindamycin, and lincomycin.3,5,15 In addition to antimicrobial therapy, surgical cleaning with abscess drainage and excision and curettage of devitalized tissue should be considered.7

It is estimated that approximately 90% of cases are cured.11

Comments

The referred clinical case exemplifies the involvement of the medial-anterior cervical region by Actinomyces with late diagnosis following abscess drainage and collection of biopsy specimen.

The actinomycosis is a rare pathology worldwide. Following the use of antibiotic therapy, especially with penicillin, this entity has become even more rare and less lethal since it is sensitive to various antimicrobials.4

References


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