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Case Report

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Fatal melioidosis in an oaxacan child

Abstract

Introduction: Melioidosis is a tropical disease caused by Burkholderia pseudomallei. Endemic in Southeast Asia and northern Australia. It mainly affects adults with risk factors for the disease. The data are limited to the pediatric population.

Case report: 6-year-old male patient. Current condition: It is sudden on set with a fever of 39°C and 40°C, with no predominance of time, accompanied by right parietal headache. For cerebrospinal fluid results, compatible with meningeal tuberculosis, treatment for tuberculosis is initiated. With positive cerebrospinal fluid culture to Burkholderia pseudomallei, treatment for tuberculosis are suspended and Meropenem and Trimethoprim with Sulfamethoxazole are given. The patient dies the day after the specific treatment is started. Postmortem infection is confirmed by Burkholderia Pseudomallei, with a cerebrospinal culture and blood culture.

Discussion: It is worth highlighting the importance of improving awareness and recognition of Melioidosis.

Keywords: melioidosis, infection by burkholderia pseudomallei, melioidosis in pediatrics

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Introduction

Melioidosis is a tropical disease caused by Burkholderia pseudomallei. Endemic in Southeast Asia and northern Australia, epidemiological changes in South America indicate it as an emerging disease in this continent.[1] In the United States, it usually occurs among travelers returning from endemic areas of the disease.[2] Burkholderia pseudomallei. It mainly affects adults with risk factors for the disease. The data are limited to the pediatric population. The incidence of melioidosis in pediatric patients in Malaysia was 0.68/100 000 inhabitants per year.[3] In Mexico, a case was also reported in an adult patient without being able to specify the form of infection.[4] Also, they have been reported in medical journals in Colombia.[5] Melioidosis has an unusually wide range of clinical presentation of the disease that can range from septicemia with pneumonia and rapid deterioration to multiple organ failure, through a subacute disease with localized suppuration or asymptomatic abscess formation without clinical evidence of infection, up to disease acute onset late. The symptoms may take months and sometimes years to appear.[6]

The diagnosis of melioidosis is a challenge because the clinical signs of the disease are nonspecific and varied, and the definitive diagnosis depends on the availability of diagnostic microbiology facilities.[7] The current diagnostic standard is culture; however, B. pseudomallei can be mistakenly identified as a contaminant of the culture or as another species (for example, Burkholderia cepacia, Bacillus spp, or Pseudomonas spp.), especially by laboratory personnel unfamiliar with this organism.[8–10] The objective of this article is to report the first case of melioidosis in a pediatric patient treated at the General Hospital of Oaxaca, Mexico. Where the diagnosis was made as laboratory serendipity.

Case report

History: Male patient of 6-years of age. Known address. Location: La Carlota. Municipality: San Juan Bautista Tuxtepec, Oaxaca, Mexico. Date of Entry: August 19/2017. Medical history of importance for the current condition. He presented skin infection: Abscess in the lumbar region without documenting the cause four months before admission. Starts two months before admission to the General Hospital Aurelio Valdivieso, with a sudden onset to present fever of 39°C and 40°C, without a predominance of hours, accompanied by right parietal headache. He was checked by two medical practitioners in La Carlota. Municipality: San Juan Bautista Tuxtepec, Oaxaca, Mexico.

Diagnosed: Sinusitis, Tuberculosis, and Typhoid Fever, He received Treatment: with Antibiotics (Cefixime and Ceftibuten without specifying doses) and antipyretics, the infectious study protocols not specified were reported negative, which is why he was referred to the General Hospital in Oaxaca.

Laboratory data upon admission: Hemoglobin 7.6g/dL, Hematocrit 25%, WBC 14,300/µL, Platelets 513,000/µL, Neutrophils 54.2%, Prothrombin time 16.1 seconds, Calcium serum 8.4 mg/dL. Chest x-ray: showing interstitial, parahiliary infiltrates (Figure 1).

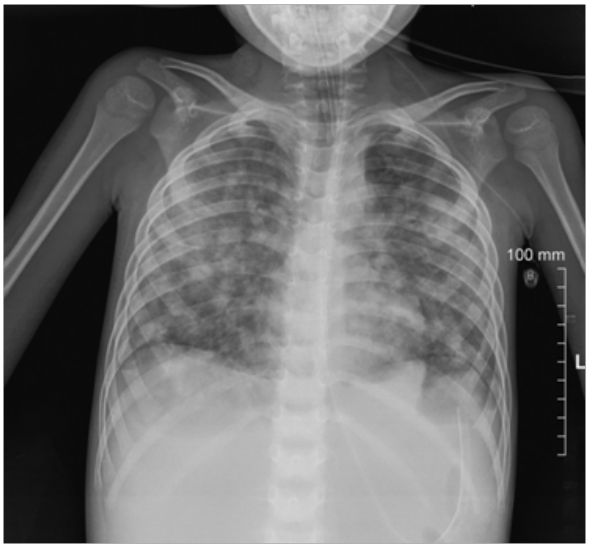

Figure 1 Chest x-ray showing interstitial, parahiliary, micronodular, bilateral infiltrates.

With these laboratory tests, we came to the diagnostic possibility:

a) School with Mild Malnutrition.

b) Febrile Syndrome in Study.

c) Atypical Pneumonia Acquired in the Community.

The initial treatment was with: clarithromycin dose: 7.5mg/kg, fractionated twice per day. Ceftriaxone dose: 80 mg/kg, fractionated twice per day. Evolution. Continuous febrile (38°C to 40°C) with a headache. Abdominal ultrasound showed vascularized infiltrates in the spleen parenchyme. Miliary tuberculosis is suspected, a reassessment of the case Document rigidity of the neck, Kernig+, Brudzinski +, Increased patellar reflex, Babinski positive, Computed tomography of the skull single phase: the presence of frontal cortical atrophy, without data of edema cerebral, or tumor masses. Lumbar puncture August 23, 2017: With cerebrospinal fluid (CSF): transparent clear appearance, positive fibrin network, pH 7. The CSF sample after centrifugation is colorless, transparent appearance, pH 7, glucose 19mg/dL, proteins of 282mg/dL. The Gram stain of CSF showed polymorphonuclear isolates, few yeasts, few Gram-positive cocci. Cerebrospinal fluid Negative Chinese ink. The CSF cytology document leukocytes 470 mm3, mononuclear 85%, polymorphonuclear 15%, erythrocytes 310mm3. Because of CSF results compatible with meningeal tuberculosis, as a possibility, Rifampicin 225mg, isoniazid 112.5mg, pyrazinamide 600 mg, ethambutol hydrochloride 450 mg, and clarithromycin and ceftriaxone are suspended (August 24, 2017). On September 4, 2017, CSF culture was reported with Burkholderia pseudomallei. The treatment for tuberculosis is suspended and Meropenem and trimethoprim are administered with sulfamethoxazole.

The patient dies on September 6, 2017, with the final diagnoses of Septic shock, neuro-infection by Burkholderia pseudomallei and anemia secondary to the infectious process. On September 6 in the perimortem period, new Cerebrospinal fluid culture was performed, the preliminary report in the automated system, VIRTEK 2 was positive for Burkholderia pseudomallei, on September 7. And on September 9 in the postmortem period, the result of Burkholderia pseudomallei is confirmed. On September 6 in the perimortem period, central blood culture is also performed, and on September 10, the positive result for Burkholderia pseudomallei is confirmed again in the postmortem period. The panel of studies carried out was: Febrile reactions and antistreptolysin antibodies, PCR (polymerase chain reaction assay) for Tuberculosis with negative result, direct negative Coombs, normal echocardiogram, general examination of normal urine, study protocol for negative lupus, BAAR in gastric juice negative, parvovirus B19 negative, hepatitis ABC negative, profile TORCH Negative, pharyngeal exudate with Klebsiella pneumoniae, Leishmania in negative serum (Immunofluorescence), determination of Brucella abortus in serum (agglutination with rose bengal, SAT standard agglutination, agglutination with 2-mercaptoethanol. -ME) reported negative, Antibody HIV I and II negative, Negative peripheral blood culture, Thick gout negative for malaria.

Discussion

Melioidosis is rare in children, although it can occur in children who live in endemic areas, the systemic disease can be fatal especially in patients with underlying immunodeficiency.[11] The present case occurred in a non-endemic area of the disease (Tuxtepec, Oaxaca, Mexico). In a patient with mild malnutrition. With a fatal evolution, for the time it takes to establish the diagnosis. Some forms of clinical presentation of melioidosis in children include suppurative parotitis, lymphadenitis, skin infections, septicemia, and pneumonia.[12] The patient reported here presented skin infection: Abscess in the lumbar region four months before admission, without being documented that it was caused by Burkholderia pseudomallei. During his hospitalization, he presented pneumonia, lymphadenopathy and neuroinfection, the latter caused by Burkholderia pseudomallei. Identified by automated VITEK 2 system through a Cerebrospinal fluid culture. And confirmed in the post-mortem period, through central blood culture and Cerebrospinal fluid culture taken in the perimortem period. Without bearing in mind the diagnostic possibility of melioidosis, in the patient in this article. The diagnosis of melioidosis was reached in 13 days, as laboratory serendipity, because there was no clinical suspicion of the disease because Oaxaca is not considered an endemic area of the disease. According to the published medical literature, a high index of suspicion of the disease in endemic areas is usually required.[13] The automated system VITEK 2, in this case, allowed to identify Burkholderia pseudomallei. What cause to initiate specific treatment according to the report of the antibiogram. The confirmation of infection by Burkholderia pseudomallei was established by cultures carried out in the period practically perimortem, which allowed to establish the postmortem diagnosis of infection by Burkholderia pseudomallei. Through a sample of central blood culture and new cerebrospinal fluid culture.

Although some identification problems between B pseudomallei and B. cepacia are presented by the automated VITEK 2 identification system of B. pseudomallei. The clinical picture and the evolution of the patient should guide physicians especially in non-endemic areas, where the possibility of melioidosis should be taken into account in patients with a history of travel to endemic areas and blood cultures positive for Burkholderia spp.[14]

The patient reported here never traveled to endemic areas and the acquisition of the disease was in the locality: La Carlota. Municipality: San Juan Bautista Tuxtepec, Oaxaca, Mexico. A situation that makes it a clinical case of great epidemiological medical interest. In a series of cases, 12 patients were treated with ceftazidime for severe melioidosis; Oral trimethoprim-sulfamethoxazole was administered in the eradication phase in 4 patients with septicemia and in 12 patients for the treatment of localized infection.[15] Amoxicillin-clavulanate as monotherapy, amoxicillin-clavulanate in

combination with ciprofloxacin or cloxacillin alone. Ceftriaxone and other cephalosporins including cefotaxime are also active against B. pseudomallei *in vitro*.[16] The treatment established in the patient was based on the sensitivity found in the antibiogram performed on the culture. That, in this case, was to meropenem and Trimethoprim with sulfamethoxazole. Burkholderia Mallei and B. Pseudomallei are the causative agents of glanders (disease of the stables and melioidosis respectively). It is also important to point out that these bacterial species have become important due to their potential use as agents of biological warfare.[17]

Burkholderia species are microorganisms that live in water and in the soil, where they can survive for prolonged periods in a humid environment, depending on the species. Transmission can occur to other people, from person to person, through contact with fomites and exposure to contaminated materials. This case report merits epidemiological surveillance before the virtual presence of the disease in the Locality: La Carlota. Municipality: San Juan Bautista Tuxtepec, Oaxaca, Mexico. Melioidosis is a serious, and often fatal, infection acquired in the community, endemic to Southeast Asia and northern Australia. It is caused by the environmental saprophyte Burkholderia pseudomallei, a bacterium that is intrinsically resistant to many commonly used antibiotics. The importance of improving the awareness and recognition of melioidosis in children should be emphasised.[18] As in the case that concerns us in this article, which is the first report of the disease in the state of Oaxaca. A situation that should motivate the search for this disease in those patients who are seriously ill and without a pathognomonic clinical picture of disease.

Conclusion

A. The laboratory diagnosis by the automated colorimetric method (GN) VITEK 2. It allows identification of B. pseudomallei up to 75 to 80%.

B. Given the virtual presence of B. pseudomallei, samples should be sent to laboratories specialized in the identification of B. pseudomallei.

C. Levels 2 and 3 of biosecurity must be established.

D. Currently, the diagnosis of B. mallei and B. pseudomallei in the clinical laboratory is very problematic, given the little knowledge of physicians about the clinical manifestations of Melioidosis and Muermo, lack of experience among microbiologists outside the endemic areas , lack of adequate means and identification systems in the average sentinel laboratory and the biosecurity conditions necessary to process these organisms (Level 2 for processing clinical samples and Level 3 for processing clinical isolates.[19]

E. It is essential to train staff of health before the virtual presence of Burkholderia in our country and in our state.

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None.

Conflicts of interest

The author declares no conflicts of interest.

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