



# BENIGN ACUTE CHILDHOOD MYOSITIS DUE TO BARTONELLA HENSELAE: A RARE PATHOGEN

MIOSITIS AGUDA BENIGNA INFANTIL POR BARTONELLA HENSELAE: UN PATÓGENO INFRECLENTE

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## ABSTRACT

**Introduction:** Acute benign myositis of childhood (ABIM) is an inflammatory pathology of the musculoskeletal system, it usually manifests with pain in the lower limbs associated with elevation of creatine phosphokinase (CPK). It is a rare condition, but if it occurs, it appears after a flu case, frequently associated with influenza A and B viruses. **Caso clínico:** The case of a school-age girl with myalgia in lower limbs, fever and elevated CPK, diagnosed with MABI, with positive IgG to Bartonella henselae. **Conclusion:** It is considered important to report the case due to the little information available about this disease both in the country and in Latin America, in addition, to review the issue since there are no previous reports in Peru about Bartonella henselae as the etiological agent of MABI; Likewise, discuss management and how to reduce unnecessary hospitalizations.

**Keywords:** Myositis, Bartonella henselae, Cat scratch disease (CSD). (Source: MESH-NLM)

## RESUMEN

**Introducción:** La miositis aguda benigna de la infancia (MABI) es una patología inflamatoria del sistema músculo esquelético, suele manifestarse con dolor en miembros inferiores asociado a elevación de creatin fosfoquinasa (CPK). Es una afección poco frecuente, pero de presentarse, aparece posterior a un cuadro gripal, asociado frecuentemente al virus influenza A y B. **Caso clínico:** Se presenta el caso de una niña en edad escolar con mialgia en miembros inferiores, fiebre y elevación de CPK, diagnosticada con MABI, con IgG a Bartonella henselae positivo. **Conclusión:** Se considera importante reportar el caso debido a la poca información que se tiene acerca de esta enfermedad tanto en el país como en Latinoamérica, además, revisar el tema ya que no hay reportes previos en Perú acerca de la Bartonella henselae como agente etiológico de MABI; asimismo, discutir acerca del manejo y cómo disminuir las hospitalizaciones innecesarias.

**Palabras clave:** Miositis, Bartonella henselae, Enfermedad por rasguño de gato. (Fuente: DeCS- BIREME)

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## INTRODUCTION

Benign acute childhood myositis (BACM) is a self-limiting inflammatory disorder of the musculoskeletal system<sup>(1)</sup>, which is rare, transient, and benign<sup>(2)</sup>. It usually resolves spontaneously in a short time without complications<sup>(3)</sup> or sequelae. It occurs most frequently during the recovery phase of a catarrhal episode<sup>(4)</sup>, especially during the seasonal transition from winter to spring<sup>(5)</sup>. The etiology is usually viral, frequently involving influenza A and B viruses<sup>(4-6)</sup>. The most common age of onset is in school-aged and preschool-aged children<sup>(7)</sup>, with a predominance in males<sup>(6)</sup>. Although the incidence of BACM in Peru has not been estimated, another review reported an incidence of 2.6 cases per 100,000 during epidemic periods and 0.23 cases during non-epidemic periods<sup>(6)</sup>. The most important clinical manifestation is myalgia in the lower limbs<sup>(7)</sup>, which can be so intense that it limits or prevents walking<sup>(4)</sup> and standing<sup>(6)</sup>. It is also mentioned that a febrile episode usually precedes the myalgia<sup>(4)</sup>. On the other hand, laboratory tests show a marked elevation of CPK<sup>(3,4,6)</sup> and may also reveal alterations in the blood count and liver profile<sup>(5)</sup>.

The pathophysiological process is not yet defined, but theories have been proposed that consider direct viral infection of muscle fibers<sup>(3,4)</sup>, the release of myotoxic cytokines, and immunological responses to the previous viral infection; any of these scenarios would result in degenerative changes in muscle fibers leading to their necrosis, thus explaining the increase in serum CPK<sup>(5)</sup>. This article reports a case of BACM caused by *Bartonella henselae*.

## CLINICAL CASE

An 8-year-old female patient from Lima, with a history of asthma and no other significant medical history, and who has a pet cat, presented with a one-week history of dry cough and inframandibular pain with an intensity of 6/10 (Visual Analog Scale - VAS). Two days prior to admission, the patient developed swelling on the right side of the neck and febrile spikes of 39°C. The day before admission, she experienced myalgia in the lower limbs with an intensity of 6/10, which did not subside

with analgesics. The next day, the pain intensity increased to 8/10, causing limitations in walking and standing, prompting her to visit the Instituto Nacional de Salud del Niño (National Children's Health Institute), the national pediatric referral center located in the Breña district of Lima, Peru.

Physical examination revealed swelling in the right submandibular region with a palpable, painful lymph node of approximately 3 cm; there were also signs of cat scratches on the arms. In the lower limbs, symmetrical calves were observed with functional limitations, painful on palpation, with preserved muscle tone and strength, and no other abnormalities. Upon admission, antibiotic coverage with azithromycin, analgesia with metamizole, and conditional ketorolac for severe pain were initiated, and laboratory tests and ultrasounds were ordered. The tests showed elevated CPK at 7523 U/L, CKMB at 90 U/L, and CRP at 47.5 mg/L. Additionally, glucose was 139 mg/dL, AST was 99 U/L, ALT was 32 U/L, Na was 141 mmol/L, K was 3.6 mmol/L, Cl was 106 mmol/L, and LDH was 748 U/L. The blood count reported Hb at 14, Hct at 42%, platelets at 329,000, leukocytes at 14,600, segmented cells at 78%, lymphocytes at 16%, and monocytes at 6%. The urinalysis was within normal parameters. Cervical ultrasound showed two inflammatory-appearing lymph nodes in the right submandibular region measuring 18x11 mm and 19x13 mm, while the abdominal ultrasound showed that the evaluated organs were sonographically normal.

On the fifth day of treatment, the patient showed improvement, and follow-up laboratory tests revealed a decrease in CPK to 1689 U/L; CKMB was 50, CRP was 13.6 mg/L. Viral IFI was negative for adenovirus, influenza A and B, parainfluenza 1, 2, and 3, and RSV, and IgG for *B. henselae* was positive (1:1000). The patient's condition improved favorably with resolution of muscle pain in the lower limbs, afebrile, and ambulating without problems, so discharge was decided after completing the seventh day of antibiotics, with instructions for conditional analgesics for pain and rest. (See Figure 1).

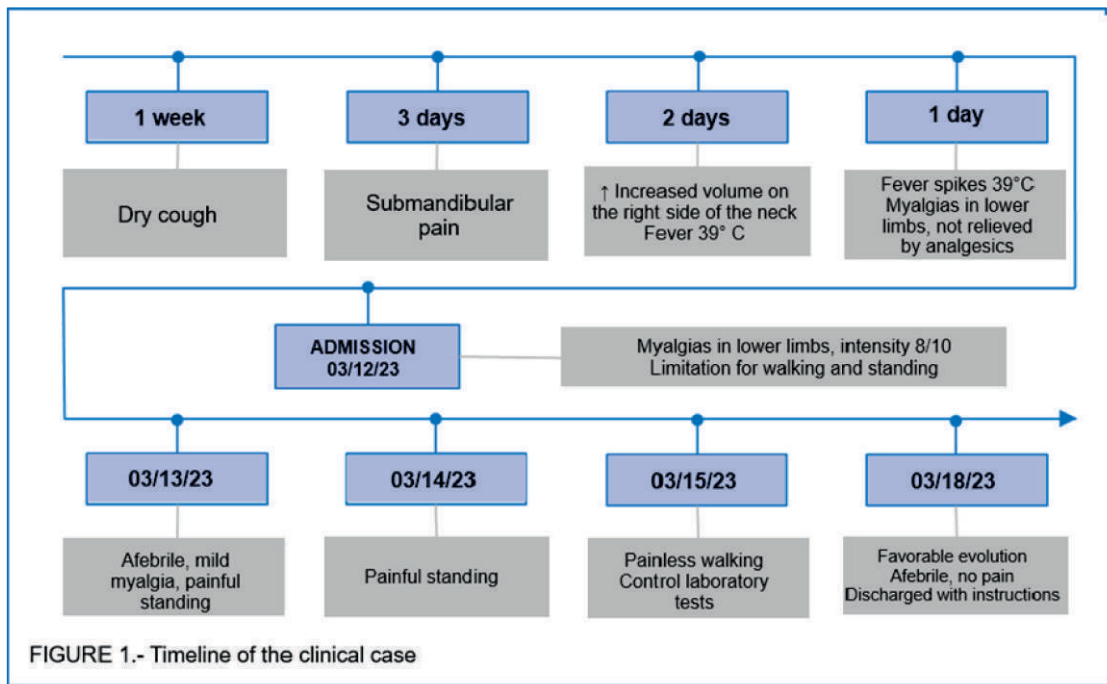


Figure 1. Timeline of the clinical case.

## DISCUSSION

Myositis is a benign inflammatory condition characterized by muscle fiber necrosis due to degenerative changes from a previous infection. Being limited to muscle fiber damage, it is transient, resolves without sequelae, and has a good prognosis. Regarding gender, it is found that males are more affected, but in our case, it affected a female patient. Reports show that most cases are found in preschool and school-aged children, which is consistent with our patient's age.

The most frequent etiology is viral, highlighting influenza A and B viruses. Additionally, it can be caused by enteroviruses, hepatitis B or C viruses, and even the human immunodeficiency virus (HIV), with *Mycoplasma*, *Brucella*, and *Bartonella* being less common<sup>8</sup>. In this case, *Bartonella henselae*, considered an atypical bacterium<sup>9</sup>, is the cause of acute myositis, as previously reported<sup>8</sup>. Our patient presented with the classic symptoms of myositis, characterized by preceding fever, cough, rhinorrhea, and coryza. Subsequently, she developed calf pain and some degree of claudication. However, it is worth mentioning that other parts of the body, such as the thighs, neck, back, and arms, can also be affected, which fortunately

was not the case for our patient. Although the initial suspicion of this pathology is clinical, certain tests are essential to reach a diagnosis. A significant increase in the enzyme CPK is evident in these patients, sometimes reaching 20-30 times its normal value and returning to normal within weeks. Despite high CPK levels, patients rarely associate with myoglobinuria or rhabdomyolysis<sup>8</sup>, but it is necessary to monitor renal function if suspected.

For etiological diagnosis, viral IFI, which evaluates 7 viruses at the institution, was requested. The results were negative, showing no reactivity for any of the evaluated viruses. On the other hand, *Bartonella henselae* IgG was requested, resulting in a dilution of 1:1000. The CDC recommends *Bartonella henselae* IgG as the gold standard, with a specificity of 92-98% and a sensitivity of 88-100%<sup>10</sup>. The CDC cutoff is 1:64, while in Peru, 1:256 confirms the case. In our case, the patient had a result of 1:1000, indicating active *B. henselae*<sup>11</sup>. Parents and healthcare personnel show much concern for BACM patients due to their symptoms, necessitating the exclusion of other conditions that can be confused with BACM, such as infectious, neurological, and muscular



pathologies. These include dermatomyositis, Guillain-Barre syndrome, polymyositis, muscular dystrophy, rhabdomyolysis, transverse myelitis, dengue, and others<sup>(3)</sup>. Therefore, a clear medical history and a comprehensive physical examination are essential to guide the diagnosis appropriately.

Hospitalization criteria include children under 2 years, a family history of neuromuscular disorders, a second episode of BACM, pathological neurological examination, poor general condition, dark urine, or altered renal function levels. However, our patient did not present any of these criteria and should have been treated on an outpatient basis<sup>(12)</sup>. The management of BACM is symptomatic with analgesics<sup>(5)</sup>, and the treatment for cat scratch disease includes macrolides or tetracyclines<sup>(8,13)</sup>. Our patient received analgesic treatment with metamizole and ketorolac, and

also with azithromycin, a macrolide, at a dose of 10 mg/kg/day, completing 5 days of treatment. The patient showed good progress, with good ambulation by the fifth day of hospitalization, as reported in other studies<sup>(6)</sup>.

## CONCLUSION

BACM is a benign, transient condition with a good prognosis, whose diagnostic suspicion is clinical, requiring a thorough history and physical examination. While viruses are the most frequent etiology, notably influenza A and B, bacteria, fungi, and parasites can also cause BACM. Therefore, it is essential to confirm the etiological agent early to tailor the therapy. Treatment is symptomatic and usually resolves without complications; however, it is important to distinguish if the patient meets hospitalization criteria to avoid unnecessary admissions.

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