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Case Report

Therapeutic Management of Helicobacter Pylori Infection in the Context of Myalgia - Comments on a Clinical Case

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Abstract

Helicobacter pylori is characterized as a spiral-shaped, gram-negative bacterium that generally affects the mucosa of the stomach and duodenum. It is associated with various gastrointestinal conditions, inducing an inflammatory response in the body that mediates the production of cytokines, including interleukins, tumor necrosis factor, and interferon. The immune response is coordinated and regulated by the contribution of those mediators. The diagnosis of Helicobacter pylori infection is established through multiple method, such as blood testing for the presence of antibodies, fecal antigen testing, breath tests, or gastric biopsy. Correct diagnosis is essential for appropriate therapeutic management. The authors present the clinical case of a 54-year-old patient admitted to our clinic for clinical-biological evaluation, reporting weight loss, dry cough, localized muscle pain, accompanied by a positive Helicobacter rapid test. The issues encountered in establishing a correct diagnosis, the case's particularities, and aspects related to antibiotic treatment are presented, exemplified and discussed. Short and medium-term results highlight the progressive reduction of muscle pain and the absence of cough, with the resumption of an active lifestyle. The diagnostic approach and therapeutic management of this case involved interdisciplinar collaboration among a diabetologist, rheumatologist and gastroenterologist. Antibiotic therapy, along with the implementation of a healthy lifestyle based on a nutritious and balanced diet, along with a physical activity regimen, constitutes an essential pillar in promoting overall health and preventing bacterial reinfection. Antibiotic treatment was the sole therapeutic means used in this case.

Keywords: Helicobacter Pylori Infection; Myalgia; Antibiotic Treatment; Multidisciplinary Team; Gastric Biopsy

Introduction

Helicobacter pylori is a bacterium with a specific, spiral shape, known as the helix, which gives it the ability to infect the gastric and duodenal mucosa in the human body. This particular structure seems to be essential for the bacteria's ability to colonize and adapt to the extremely acidic environmental conditions in the stomach. Through this spiral structure, Helicobacter pylori can navigate and adhere to the mucosa of the stomach and duodenum, where it establishes a favorable environment for survival and proliferation. This adaptability to an acidic environment contributes to the persistence of the infection and can play an important role in the associated pathology [1].

Infection with Helicobacter pylori represents a process that is initiated by the ingestion of the bacterium, and the main mode of transmission involves fecal-oral contact or the consumption of contaminated water. This condition is closely related to specific socioeconomic variables, determining a more pronounced prevalence in developing countries, where it can even reach 80% in middle-aged adults, compared to 2050% in developed countries [2]. Contrary to the situation encountered in children, where there are mentions of the spontaneous elimination of the infection, especially in the context of antibiotic administration for other ailments, in adults it often evolves towards a chronic character [3].

H. pylori stands out as a Gram-negative bacterium, with a size between 2 and 4 microns in length and 0.5 to 1 micron in width. It is usually found in a spiral form, but it can also present a rod configuration or coccoid forms, especially after a long period of cultivation in vitro or after antibiotic treatment. The bacterium is equipped with 2 to 6 unencapsulated and unipolar flagella, approximately 3 microns in length, giving it motility and allowing it to move rapidly in viscous environments, such as the mucus layer that covers the gastric epithelium [4,5].

Helicobacter pylori proves to be a capricious microorganism, requiring complex culture media, often supplemented with blood or serum. In culture media, it forms small colonies, having approximately 1 mm and a specific transparency. Being a microaerophilic bacterium, it does not tolerate high oxygen concentrations, but requires at least 2% O2 to develop [5].

Clinically, this infection can cause a variety of manifestations in the digestive system; these include gastritis, gastric or duodenal ulcer and functional dyspepsia. Gastritis, characterized by inflammation of the stomach lining, can cause symptoms such as abdominal discomfort or a feeling of fullness. Gastric or duodenal ulcer can cause abdominal pain and digestive bleeding. Functional dyspepsia is manifested by abdominal pain or discomfort, the feeling of fullness and bloating [6,7].

Recently, the link between gastric infection with Helicobacter pylori and its presence in the intestines, in the context of the development of colon adenomas, has been highlighted. This association was demonstrated through the regulation mechanism of TLR5 mucosal protein expression [8].

Helicobacter pylori infection is not limited to manifestations in the digestive system, but can also involve extra-digestive symptoms, including myalgia. Myalgia or muscle pain may occur in the context of chronic infection and may represent one of the extradigestive symptoms of this bacterium. At the same time, another extradigestive manifestation encountered is anemia, affecting the normal absorption of iron in the stomach or cardiovascular disorders, such as the association with coronary heart disease and stroke. From an endocrinological point of view, specific manifestations of diabetes can be found [9,10].

Several specific aspects must be taken into account, mentioning the undiscovered, atypical or subclinical types of a pathology. These pathologies are often treated improperly as intercurrent diseases, which can lead to the development of serious infections. In recent years, molecular methods have become available to many clinical laboratories, and their use has led to faster diagnosis and increased detection of pathogens [11].

In order to obtain all the necessary data for the anamnesis, in order to make a correct diagnosis, it is important for the doctor to have good communication with the patient. Thus, in the case of a condition with varied clinical manifestations, it is necessary for the doctor to use not only his medical skills, but also his communication skills to form a team with the patient in order to understand the patient's emotions and concerns [12].

Case Report

A 54-year-old patient, hospitalized in the nutrition and metabolic for persistent muscle pain, located in the arms, thighs and rectus abdominis muscles, accompanied by a dry cough. The symptoms persisted for about a month and were temporarily managed with anti-inflammatories. The patient also reported a weight loss of approximately 10 kg over the past year.

The patient denied any recent travel or excessive seafood consumption and had no history of respiratory tract infections. There is no history of hereditary-collateral or personal pathological antecedents. It does not present medication administered at home.

Before presenting to the hospital, the patient underwent routine tests, where a positive result was identified in the rapid test for Helicobacter pylori. This aspect brought a new perspective on the clinical presentation, suggesting a possible interaction between bacterial infection, muscle symptoms and weight loss.

Upon admission to the hospital, the patient underwent laboratory tests. The results of the blood count indicated the presence of a minimal bacterial infection, highlighted by leukocytosis at the limit of 10.34k/microL, with a distribution of leukocytes of 19.8%, lymphocytes and 72.8% granulocytes. Also, an inflammatory syndrome is highlighted by ESR 43 mm/1h and C-reactive protein 69.33 mg/L. The sideremia value is also low, 43 microg/dL, but that of ferritin is normal. Regarding biochemistry, the patient presented a normal blood sugar level. The ionogram, which included Sodium/Poatsium/Calcium/Magnesium indicated values within normal limits. Liver function was within normal parameters, with negative viral markers. Lipid profile, coagulogram, thyroid profile, myositis

profile, levels of vitamin B12 and vitamin D, ccp antibodies, as well as tumor markers, were all within normal limits.

Imaging examinations of the heart, abdomen, thyroid gland and soft tissues showed results within normal limits. Also, the cardiopulmonary x-ray showed images within normal limits.

These results provide an overview of the patient's clinical condition, highlighting the specific aspect of paraclinical and imaging examinations that were evaluated to guide diagnosis and appropriate case management.

The decision to initiate drug therapy for the eradication of Helicobacter pylori infection through a dual therapeutic approach was agreed, including the simultaneous administration of two antibiotics, Amoxicillin 1g twice a day and Clarithromycin 500mg twice a day. This treatment is associated with the administration of drugs for gastric protection in the form of proton pump inhibitors, together with an intake of probiotics, for a period of 10 days. Within this therapy, frequent monitoring of the patient's state of health is planned, in order to evaluate the effectiveness of the treatment and adapt it, if necessary, in accordance with the clinical evolution.

The general condition of the patient registered a significant improvement starting from the 5th day of antibiotic treatment, manifested by the reduction of muscle pain, the absence of cough and the improvement of the general condition. This favorable evolution suggests a positive response to the instituted therapy and indicates the effectiveness of the drug approach in managing the symptoms associated with the infection. The continuous monitoring of the patient's progress is essential for the shortterm evaluation and for the possible adaptation of the therapeutic protocol depending on the clinical evolution.

After the end of the antibiotic treatment, the patient was discharged in an improved condition, maintaining the guidelines regarding the lifestyle, diet and physical activity, associated with the return for repeating the analyzes at the interval of two weeks. At this previous evaluation, the general condition of the patient was considered good, and the results of the analyzes indicated a negative seroconversion of the Helicobacter pylori antigen, returning to normal levels. This favorable evolution suggests the effectiveness of the instituted treatment and highlights the need for continuous monitoring to confirm the absence of infection.

Results and Discussion

The differential diagnosis in this case is fibromyalgia, a condition characterized by generalized muscle pain and sensitivity to pressure in various parts of the body. The diagnostic criteria established by the American College of Rheumatology mention pain in different parts of the body, including muscles, ligaments and tendons, with a presence of at least 3 months. Our patient had localized pain, without radiating or affecting the tendons or ligaments, which appeared a month ago, improved after antibiotic treatment.

The differential diagnosis with Rheumatoid Polymyalgia, an inflammatory disease affecting the muscles and joints, causing pain and stiffness mainly in the shoulder and hip, which responds quickly to corticosteroid treatment, was also considered. In our case, the hypothesis was not supported, because the pain could be controlled with non-steroidal anti-inflammatory drugs and once the antibiotic therapy was instituted, the general condition improved significantly.

Polymyositis, characterized by muscle weakness and inflammation, was confirmed in a clinical and paraclinical setting by the lack of personal pathological antecedents of autoimmune association and by the severity associated with this disease. Also, during hospitalization, the patient performed autoimmune tests: myositis profile-negative, anti-double-stranded DNA antibodies-negative, anti-nuclear antibodies negative, anti-CCP antibodies-negative, creatine kinase within normal limits.

Thyroid and liver pathology were verified in paraclinical and imaging investigations; being within normal limits.

The general condition of the patient improved starting from the 5th day, thus highlighting a favorable evolution of the patient. This was emphasized by the decrease in muscle pain, the absence of cough and the improvement in well-being. All this suggests the effectiveness of the therapy instituted in the management of symptoms associated with Helicobacter pylori infection.

The continuous monitoring of the patient's progress is an essential aspect for the short-term evaluation and the adaptation of the therapeutic protocol, if necessary, depending on the clinical evolution. After the end of the antibiotic treatment, the patient was discharged in an improved condition with recommendations for lifestyle, diet and physical activity and to return to control in two weeks.

At the subsequent evaluation, the general condition of the patient was considered good, and the results of the analyzes indicated a negative seroconversion of the Helicobacter pylori antigen, returning to normal levels. This favorable evolution supports the effectiveness of the instituted treatment and underlines the need for continuous monitoring to confirm the absence of infection.

Conclusion

This clinical experience highlighted the importance of prompt diagnosis and treatment of Helicobacter pylori infection. We also emphasize the essential role of an interdisciplinary approach and the continuous monitoring of patients to optimize the management of the disease and prevent relapses. These observations can contribute to the improvement of medical practice and to the optimization of the treatment of patients affected by this bacterial infection.

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Conflict of Interest

Conflicts of interest and sources of funding the authors declare no conflict of interest.

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