

Myalgia and Muscle Weakness Caused by Fish Allergy: A Case Report

Abdelkarim Mohamed¹; Obada Adel Alsakaji²; Muad Abdi Hassan^{2*}; Bassem Al Hariri^{1,3}

¹Department of Medicine, HMGH, Hamad Medical Corporation, Doha, Qatar.

²Medical Education Department, Hamad Medical Corporation, Doha, Qatar.

³College of Medicine, Qatar University, Qatar.

*Corresponding Author: **Muad Abdi Hassan**

Tel: +974-66104108; Email: Balhariri@hamad.qa

Abstract

Introduction: While being considered part of a healthy diet, consuming fish can induce an allergic response in susceptible individuals, and its subsequent manifestations can range from simple to severe. These manifestations are usually mediated by the activation of mast cells and the release of their mediators.

Case presentation: A 52-year-old male patient, with no past medical history and known allergies, presented with fever, skin rash, and sharp generalized diffuse muscle pain mainly in the proximal muscles of both upper and lower limbs, the symptoms that started after ingestion of a fish-based meal. Initial examination showed tenderness in proximal muscles, and laboratory results were only significant for elevated C-Reactive Protein (CRP) and Immunoglobulin E (IgE) levels, and other investigations and imaging were all normal. A few days after admission, and after conservative management only, the patient's symptoms improved, and he was discharged with follow-up.

Discussion: Sometimes, the allergic reaction presentations can extend to the level of neurological and musculoskeletal manifestations, and usually, it happens when ingesting or being exposed to a known allergen. In our patient, who had no known allergies, the symptoms of fever, rash, and muscle pain that were mainly in the proximal muscles happened a few hours after ingestion of fish, the type of food he usually eats with no problems. It was found that he had elevated levels of IgE, which are directly related to the severity of the allergic reaction. In general, treatment of food allergies, including fish allergies, is still primarily based on avoidance, however, immunotherapy is still under development.

Conclusion: While considered a nutritious food, fish consumption can trigger an allergic reaction in some people. Such was the case with our patient, who regularly ate fish despite having no prior history of allergic reaction to it. Immune therapy is still being developed, even when there is no prior history of allergies; in such circumstances, avoiding the allergen is the basis of treatment.

Keywords: Fish allergy; Myositi; Muscle weakness; Muscle pain; Histamine; Immunoglobulin E (Ige) mediators.

Abbreviations: CRP: C-Reactive Protein; IgE: Immunoglobulin E; IRB: Institutional Review Board; ED: Emergency Department; ESR: Erythrocyte Sedimentation Rate; CK: Creatine Kinase; CT: Computed Tomography; US: Ultrasound.

Citation: Mohamed A, Alsakaji OA, Hassan MA, Hariri BA. Myalgia and Muscle Weakness Caused by Fish Allergy: A Case Report. Med Discoveries. 2024; 3(2): 1116.

Introduction

Eating fish is considered part of a healthy diet. Fish has fewer total calories, less saturated fat, and less total fat than an equivalent amount of red meat. However, like any other food, eating fish can cause illness [1]. Fish allergies range from mild to severe, and even from multiple organ failure to anaphylactic shock, depending on the presenting symptoms [1]. There appear to be large geographic differences in the prevalence of fish allergies, possibly due to differences in cultural diets and types of food processing. The sensitization pathway to fish allergens appears to induce differential IgE mast cell-mediated immune responses to other allergens and should be considered in diagnosing fish allergy [2]. Here we report the case (with Institutional Review Board (IRB) approval MRC-04-23-443) of a male patient presenting with a neurological deficit with muscle weakness and tenderness after consumption of his regular seafood meal.

Case presentation

A 52-year-old male patient, with no medical history or known allergies, presented to one of the public hospital Emergency Department (ED) with a 5-day history of acute onset of fever, rash, and muscle pain. The fever and rash only lasted for two days, but the muscle pain persisted till the day of presentation. The pain was of pins and needles in nature that affected all 4 limbs, and it was intensified by standing, and it was felt. These symptoms started after the ingestion of fish, which was his regular meal, and this was the first time that he had such a problem. On examination, the patient was vitally stable. The examination was significant only for painful and acute tenderness on proximal muscles, especially on the thigh and upper arms. The neurological examination was normal for muscle tone, power, reflexes, and sensation. Initial laboratory results that were done showed only elevated CRP of 52.9 mg/L and IgE of around 235 units/L, other results like Erythrocyte Sedimentation Rate (ESR), Creatine Kinase (CK), and myoglobin levels were low, so the patient was admitted as a case of acute myositis for management and investigations. During admission, investigations like auto-immune, viral screens, endocrinological, and imaging like Computed Tomography (CT) head and abdominal Ultrasound (US) all were normal with no significant findings. The patient was managed conservatively with Intravenous (IV) fluids and physiotherapy; his symptoms were improving day by day with the help of the Physiotherapists, and his CRP level was going down on repeating the laboratory results. He was discharged 4 days later from his admission after his condition improved regarding the pain and acute tenderness in his muscle with the CRP trending down to CRP of 23 mg/L. Additionally, he was instructed to avoid the type of fish he ate before this episode happened and educated about his condition. He was seen in the clinic 15 days later from his discharge day; doing fine with a CRP of 0.7 mg/L and the IgE trending down too.

Discussion

It is commonly acknowledged that immunological tolerance develops when the immune system comes into regular contact with allergens through the stomach. Therefore, it is very unexpected that healthy persons might develop sensitivities to foods they had previously ingested several times without experiencing any negative effects. However, several observations in medical literature reveal that, in many cases, sensitivity to food allergens may arise beyond the digestive system including the nervous system or skeletal muscle [1].

The condition of unexplained myalgia, which occurs within 24 hours of consuming certain types of cooked fish [1], has become rare and there are very few reports about it these days [5]. Milder cases with fewer symptoms such as muscle weakness, fever, and general aches may be easily overlooked [3]. In this case, it is unknown what type of fish was consumed.

The clinical presentation of this allergic event was dominated by myalgia, weakness, and normal serum CK levels. The soreness of the most affected can be severe, moderate, or mild and include the muscles of the back, shoulders, neck, chest, and upper, and lower extremities. The incidence of gastrointestinal disease is higher with varying symptoms with unknown clear pathophysiology [4]. A mild presentation was common. Nearly all affected subjects made a full recovery after supportive care. However, severe illness with multiple organ failure rarely occurs [4].

True food allergies trigger IgE-mediated mast cell activation, leading to an allergic response to subsequent exposure to the food allergen. It is generally accepted that levels of serum IgE antibodies are directly related to the severity of allergic reactions, according to previous studies by Sampson et al. [2].

Immunotherapy for fish allergy is still under development, but treatment of fish allergy generally aims at avoiding the offending food and timely detection and treatment of acute allergic reactions [6,7]. In general, treatment of food allergies, including fish allergies, is still primarily based on avoidance. Some countries, such as the United States, Europe, and Japan, already require labeling foods containing fish-derived substances [8,9]. In addition, the test for biochemical and immunological variability among different fish species it can be carried out to detect it for further reference for patient best care [10,11].

Conclusion

While being considered part of a healthy diet, consuming fish can provoke an allergic response in susceptible individuals, and our patient, who had no previous history of allergic reaction to fish presented with fever, skin rash, and sharp generalized diffuse muscle pain and tenderness on palpation of the proximal muscles. The symptoms gradually disappeared after physiotherapy and conservative management. Despite not having a previous history of allergies, levels of IgE can correlate with the severity of symptoms. Avoiding the allergen is the mainstay of treatment in such cases, immune therapy is still under development.

Declarations

Conflict of interest: The authors have declared that no competing interests exist.

Human ethics: Informed written consent for the publication was obtained from the participants in this study.

Ethics approval and consent to participate: The article describes a case report. Therefore, the study was conducted after review and approval from the Institutional Review Board (IRB) of the Medical Research Center (MRC) at Hamad Medical Corporation through Abhath (MRC-04-23-443).

Funding: This case report was not funded.

Availability of data and material: All data generated or analyzed during this study are included in this published article.

Authors' contributions: Data collection, Literature search, Manuscript preparation (draft and final editing): AM, OAA, MAH, BAH.

All authors read and approved the final manuscript.

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