Case Report

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Myocarditis case associated with Campylobacter jejuni

[Campylobacter jejuni ile ilişkili Myokardit vakası]

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Abstract

Objective: Myocarditis is an inflammatory disease of the heart caused by various agents and especially enteroviruses, and it is difficult to diagnose and treat. Myocarditis is rarely associated with bacterial infections. Although the most common bacterial infections are Salmonella spp. and Shigella spp., extremely rare cases of Myocarditis due to Campylobacter jejuni are also reported.

Patient and methods: A 17-year-old male patient with no previous chronic illness was admitted to our emergency department with complaints of abdominal pain, diarrhea, vomiting, and chest pain. He stated that symptoms began after eating a chicken burger a few days ago.

Results: In the laboratory tests performed, CK-MB and high sensitive Troponin I values were determined as 33.8 IU/L and 1816 ng/L, respectively. Electrocardiogram results revealed left axis left anterior hemiblock in the normal sinus rhythm as well as a ST-T change in the inferior and lateral derivations. Campylobacter jejuni was detected in the stool sample of the patient.

Conclusion: Myocarditis is one of the rare complications of C. jejuni infection. Bacterial myocarditis should be considered when troponin and cardiac enzymes are elevated in patients admitted to the emergency department with diarrhea and chest pain.

Keywords: Myocarditis; Campylobacter jejuni; hsTroponin I; Fast food; Chest pain.

Özet


Hasta ve Yöntem: Daha önce herhangi bir kronik rahatsızlığı bulunan 17 yaşındaki erkek hasta, karın ağrısı, diyare, kusma ve göğüs ağrısı şikayetleri ile hastanemiz acil servisine başvurdu. Semptomların birkaç gün önce yediği tavuk hamburger ile başladığı ifade ettiği.


Sonuç: Myokardit, Campylobacter jejuni enfeksiyonunun nadir komplikasyonlarından birisidir. Diyare ve göğüs ağrısı ile acil servise başvuran hastalarda Troponin ve kardiyak enzim yüksekliğinde bakteriyel myokardit düşünülmelidir.

Anahtar Kelimeler: Miyokardit; Campylobacter jejuni; hs Troponin I; Fast food; Göğüs ağrısı.

Introduction

Campylobacter jejuni, a gram-negative microaerophilic bacterium, is one of the most common causes of gastroenteritis worldwide. It has been reported that it can be
transmitted from contaminated water and undercooked foods (especially poultry). Its infection is asymptomatic and can heal on its own, or it may cause arthritis, meningitis, endocarditis, sepsis or Guillain-Barré syndrome due to bacteremia [1–5]. Myocarditis can occur as a complication of several infectious diseases. In North America and Western Europe, enterovirus infection is one of the common causes of myocarditis. On the other hand, bacterial infections rarely cause myocarditis. Among bacterial infections, myocarditis cases caused by Salmonella spp. and Shigella spp. are more frequent, whereas myocarditis caused by C. jejuni is quite rare [6].

The purpose of this case presentation is to inform physicians about myocarditis associated with C. jejuni, which can rarely be seen in individuals consuming undercooked fast food and is the first reported case in Turkey.

### Patient and methods

A 17-year-old male patient who had no previous health problems was admitted to our emergency department complaining of abdominal pain, nausea, diarrhea and chest pain. The patient stated that abdominal pain and nausea started after eating a chicken burger meal in a fast food restaurant 3 days ago, diarrhea started the next day, and the patient applied to our emergency department when chest pain symptoms started. Informed consent was obtained from patient to participate in the case report.

### Results

Patient’s examination revealed that body temperature, heart rate, blood pressure and oxygen saturation were normal. Electrocardiogram results revealed left axis left anterior hemiblock in the normal sinus rhythm as well as a ST-T change in the inferior and lateral derivations. Routine biochemistry and high sensitive Troponin I (hsTroponin I) (Vidas, BioMerieux Sa, France) tests were requested for the patient. Patient’s liver and kidney function test results were normal. CRP levels of the patient, which are hemogram parameters normal, were determined to increase to 5.02 mg/dL. CK-MB (33.8 IU/L, reference range: 0–25) (Cobas C501, Roche Diagnostic, Mannheim, Germany) and hsTroponin I (1816 ng/L, reference range: 0–18) levels were also increased. The patient was admitted to the cardiology department. Daily hsTroponin I levels of the patient are given in detail in Figure 1. No pericardial effusion or segmental wall-motion impairment was detected in the daily echocardiographic examinations of the patient. Treatment with Ibubrofen 400 mg tablet and intravenous isotonic saline was initiated. After the patient ate a chicken burger at a fast food restaurant, intestinal symptoms, chest pain and the high level of troponin, which were observed in him made us assume that he may have got myocarditis. The patient was requested for stool sample to quest for Salmonella spp. and Shigella spp., which are the most common bacterial reasons of these symptoms. Moreover, PCR analysis was done to quest for C. jejuni. Because of its difficulty in reproducing in the sample. Stool sample was taken from the patient (the second day of the patient’s hospitalization). Stool analysis revealed no Salmonella spp. and Shigella spp. proliferation. Campylobacter jejuni was detected in Real-time PCR analysis (Becton Dickinson, Sparks, USA). Treatment with ciprofloxacin 500 mg tablets was initiated. Besides high value of CRP (Image 800, Beckman Coulter Inc., CA, USA), which is observed in the patient, the detection of C. jejuni in the stool sample, which is collected in the second day of the patient’s hospitalization makes us consider myocarditis, which may be resulted from C. jejuni. After approximately 1 week of hospitalization, general condition of the patient improved. Electrocardiogram, hsTroponin I test results and CRP levels returned to normal, and the patient was then discharged.

### Discussion

The diagnosis of patients with elevated cardiac enzymes and troponin and not supported by myocardial infarction diagnosis has always been a challenge in emergency departments. In most cases, viral infections, drugs and toxic conditions are emphasized in the diagnosis of these patients, or they are classified as idiopathic cases. Since bacterial infections are quite rare, they are seldom considered among these classifications. Among bacterial infections, the most common cause of myocarditis is...
Salmonella spp. and Shigella spp. On the other hand, myocarditis cases caused by C. jejuni were observed in a total of 20 cases according to the literature data of 2016, and all of these cases were male [7]. In Turkey, no case of myocarditis caused by C. jejuni has been reported so far. Therefore, this is the first reported case in Turkish literature. Furthermore, although the detection of C. jejuni in stool in this case does not indicate directly that it causes myocarditis C. jejuni, the onset of symptoms, detection of C. jejuni in stool sample and the patient’s recovery as a result of a specific treatment make us consider that C. jejuni may be associated with myocarditis.

The pathophysiology of C. jejuni causing myocarditis in myocardium is not fully elucidated. Suggested pathophysiological mechanisms focus on the direct invasion of C. jejuni into myocardium or pericardium, and the effect of toxins or cytotoxic T cells formed during bacteremia [8, 9]. It is remarkable that all cases reported in the literature including this case are male patients. It can be argued that myocarditis caused by C. jejuni is coincidentally seen in males; however, various mechanisms should also be considered. These may include environmental factors, social habits, and lifestyle, and more comprehensive studies are needed on this topic.

Conclusion

Although myocarditis is one of the rare complications of C. jejuni, bacterial myocarditis should be considered in patients admitted to emergency departments with diarrhea and chest pain, particularly in male patients with no chronic disease and elevated troponin and cardiac enzyme levels. Although the exact pathophysiology of C. jejuni infection in the myocardium is still not known, it will be beneficial to focus on this area in future studies. Furthermore, studies on why C. jejuni causes myocarditis only in male patients can shed light on the uncertainty of pathophysiology.

Ethical considerations: Informed consent was obtained from patient to participate in the case report.

Conflict of interest statement: The authors declare no conflict of interest.

References