

The Onset of Type 1 Diabetes Mellitus After Systemic Exposure to Pseudomonal Bacteria After Appendectomy Case

Apendektomi Sonrası Pseudomonal Bakterilere Sistemik Maruziyet Sonrası Gelişen Tip 1 Diyabet Olgusu

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Özet

19 yaşında erkek hasta apendektomi sonrası pseudomonas türü bakterilere maruziyet ve postoperatif 42. günde diyabetik ketoasidoz kliniği ile acil servis başvurdu. Hastaya tip 1 diyabet tanısı konuldu. Makalemizde tip 1 diyabet etyolojisinde çok nadir görülen bu olguyu sunmayı ve literatür eşliğinde tartışmayı amaçladık.

Anahtar Kelimeler: Tip 1 diyabet, Enfeksiyon, Pseudomonas

Abstract

19 years old male patient taken to emergency service with exposure to pseudomonal bacteria after appendectomy and diabetic ketoacidosis presentation on a postoperative day 42. This patient got a type 1 diabetes diagnosis. In our article, we aimed to present this very rare case with the etiology of type 1 diabetes and to discuss it in the light of the literature.

Key words: Type 1 diabetes, Infection, Pseudomonas

Introduction

The incidence of acute appendicitis is almost 100 in 100.000 people per year (1). Perforation is found in 13 to 20 percent of patients diagnosed with acute appendicitis (2). Cultures of patients with perforated appendicitis include commonly found species *E. coli*, *Streptococcus spp.*, *Bacteroides fragilis*, *Enterococcus faecium*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, and *Proteus* species (3).

Studies exist on isolation and identification of bacterial DNA in blood serum in type 1 diabetes mellitus (DM) patients (4). Our aim is to present type 1 DM occurrence after bacterial exposure in consideration of new studies.

Case

19-year-old male patient; admitted to the emergency department with complaints of nausea, vomiting, fever, abdominal pain, and loss of appetite for 2 days. The patient has no diabetes or autoimmune disease in his personal and family history. In the physical examination right lower quadrant pain positive, direct rebound tenderness positive, involuntary guarding negative. Abdominal ultrasonography results were appendiceal diameter 8.5 mm, appendiceal wall enhancement, dirty surrounding tissues, intraabdominal free fluid. We recommended an emergency surgical procedure and performed laparoscopic appendectomy on this patient. In surgery, the findings are appendix is necrotic and perforated from the distal part. The appendectomy was completed and the operation was terminated by placing a drain. The patient was followed under Ceftriaxone and Metronidazole. The patient, who developed ileus in the postoperative follow-up, was re-operated

because bowel functions did not develop despite medical treatment. In the abdominal exploration performed on the 7th postoperative day, the floor of the cecum was found intact. It was observed that the small intestine and sigmoid colon made a bridge in the pelvis. Bridectomy was performed and the operation was terminated. The patient was discharged on the 14th postoperative day with remission. On the 42nd day of discharge, the patient applied to the emergency department with complaints of fever, nausea, vomiting, palpitations, and shortness of breath. Routine examinations were taken from the patient whose fingertip blood glucose was measured as 720. The acute phases are normal. The blood gas test is compatible with metabolic acidosis and pH:7.09. Keton 3+++ in urine test. Treatment for diabetic ketoacidosis was started and the patient was admitted to the endocrine service. In the secondary examination, wound infection and purulent discharge were detected in the abdominal incision. *Pseudomonas* growth was observed in the wound culture of the patient.

Discussion

According to the Peranevå L. and friends' research, the most common isolated bacteria species in type 1 diabetes mellitus patients are *D. acidovorans* and *S. maltophilia* both of them part of the *Pseudomonas* genus (4). Type 1 diabetes mellitus patients have significantly higher *S. maltophilia* colonies by comparison with a healthy control group (4).

According to the Sahar Radwan and friends' research, all DM group patients have significantly higher gram-negative and potential opportunistic pathogen colonies (*Pseudomonas*, *Prevotella*) in intestines microbiota by comparison with a healthy

control group (5). It has been claimed that lipopolysaccharide, a component of the gram-negative bacterial wall, can activate the local immune response and cause insulin resistance. *Pseudomonas* has a higher rate than normal microbiota in other microbiota studies about this subject (5, 6).

The development of type 1 diabetes after exposure to *Pseudomonas* is a very rare etiological cause. Such a clinical situation after acute appendicitis surgery is very interesting and is a clinical manifesto that needs to be investigated with larger patient series. There are no satisfactory studies on this subject in the literature. This case report is written upon clinical doubt and will be light the way for new studies.

In conclusion; there are not enough resources and studies in this case report, which we point out that there may be a relationship between type 1 diabetes and bacterial exposure. It should be kept in mind that type 1 DM may develop in patients with *pseudomonas* growth after surgical procedures.

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