

# A Surprising Situation Due to Icodextrin (Icodextrin Peritonitis)

## *Icodextrin'e Bağlı Şaşırtıcı Bir Durum (Icodextrin Peritoniti)*

### ABSTRACT

Peritoneal dialysis (PD) has been a successful modality for chronic renal replacement therapy for more than 30 years. Icodextrin has been a major addition to the management of ultrafiltration in peritoneal dialysis (PD). Currently, it is widely used in PD because of several long-term complications of solutions containing high glucose. Although the efficacy and safety of Icodextrin is well known, it may cause allergic reactions and aseptic peritonitis. We report an interesting PD patient with findings that do not correspond to the complications previously reported due to Icodextrin.

**KEY WORDS:** Peritoneal dialysis, Icodextrin, Peritonitis

### ÖZ

Periton diyalizi (PD) 30 yılı aşkın bir süredir kronik renal replasman tedavisi için başarılı bir yöntem olmuştur. Icodextrin periton diyalizinde (PD) ultrafiltrasyon yönetimi için büyük bir yeniliktir. Günümüzde, yüksek glükoz içeren çözeltilerin uzun vadeli komplikasyonları nedeniyle Icodextrin PD'de yaygın olarak kullanılmaktadır. Icodextrin'in etkinliği ve güvenilirliği iyi bilinmesine rağmen alerjik reaksiyonlara ve aseptik peritonit tablosuna neden olabildiği de bilinmektedir. Bu olgu sunumunda, Icodextrin kullanımına bağlı peritoniti taklit eden şiddetli ağrısı olan ve daha önce bildirilen komplikasyonlara uymayan ilginç bir PD hastası sunuldu.

**ANAHTAR SÖZCÜKLER:** Periton diyalizi, Icodextrin, Peritonit

### INTRODUCTION

Peritoneal dialysis (PD) has been a successful modality for chronic renal replacement therapy for more than 30 years (1). Icodextrin is produced as an alternative to high glucose containing solutions, for inadequate ultrafiltration (UF), and their long-term complications (2). Although allergic reactions and aseptic peritonitis connected to Icodextrin were reported previously, non-hazy peritoneal fluid, lower white blood cell count (WBC) and C-reactive protein level (CRP), and severe abdominal pain especially beginning within 1-2 hours and ending dramatically after drainage, has never been reported so far (3,4).

### CASE

We report a 53-year-old female patient with chronic renal disease secondary to diabetic nephropathy who had been undergoing PD treatment for 2.5 years. While she was using 4 x 2 liters of 2.27% glucose solution, the treatment was replaced with 3x2 liters of 2.27% glucose solution per day and 2 liters of Icodextrin 7.5% solution for 12 hours at night due to her hypervolemia and UF problems.

However, on day 1, the patient had abdominal pain and fever (38.2 °C) after 2 hours of treatment and she stopped the treatment. On day 2, the patient used Icodextrin again but the same symptoms

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recurred and she was admitted to our clinic. On physical examination, she had abdominal distension and abdominal tenderness. After the Icodextrin solution was drained from the patient's abdomen, her symptoms were dramatically improved. In the peritoneal fluid examination, the WBC count was 20/mm<sup>3</sup> and did not increase in the other follow-ups. CRP was in the normal range (1.1 mg/dl and 1.3 mg/dl). There was no pathological finding on abdominal ultrasonography. There was no history or physical examination finding compatible with ileus, or hypersensitivity reaction. Peritoneal fluid cultures were negative. Icodextrin-related abdominal pain was present in the patient's medical history. It was learned that she had begun Icodextrin treatment 1 year ago but she could not continue more than 2 days due to the same severe pain and fever. The treatment was replaced with glucose 3.86% 2-liter solutions and her symptoms did not recur.

### DISCUSSION

Icodextrin, a glucose polymer with an average molecular weight of 20000 Da, acts as a colloid osmotic agent. This iso-osmotic solution has many advantages compared with glucose-based PD solutions. Icodextrin provides a sustained, positive UF for 12-16 hours, making it useful for PD patients. It provides UF that is 3.5 to 5.5 times that obtained with 1.36% glucose solution and UF equivalent to that obtained with 3.86% glucose solution (5).

Allergic reactions to Icodextrin are rare but they usually occur as skin hypersensitivity reactions (6,7). These allergic reactions may be the result of Icodextrin's structural similarity to dextran, which is an allergic molecule. Although culture-negative peritonitis cases were defined in the literature, no case similar to ours has been defined so far. (3,4,8-10).

Ekart et al. reported 2 cases of peritonitis due to Icodextrin and observed an increase in WBC and haziness of dialysate fluid (3). They reported rapid improvement after starting prophylactic antibiotic therapy and terminating Icodextrin. An interesting aspect of these two cases was that the peritonitis clinical picture emerged in one case on the 70th day and in the other on the 412th day. In another study, Fatouma et al. reported 5 patients with aseptic peritonitis due to Icodextrin and compared them with 7 bacterial peritonitis patients. They found an explosive increase in intraperitoneally cytokine levels in Icodextrin-related peritonitis (4). In our case, severe abdominal pain and fever appeared twice and the pain started 2 hours after the first dose of Icodextrin treatment both times. Besides, the patient's CRP and WBC levels did not increase. There was no need for prophylactic antibiotic therapy as the symptoms were dramatically improved 30 minutes after the Icodextrin solution was drained from the patient's abdomen.

Our patient did not conform to the previous cases and other complications such as aseptic peritonitis. She had severe abdominal pain and fever beginning within 1-2 hours and ending dramatically after the drainage, with negative peritoneal fluid culture, non-hazy peritoneal fluid, low WBC count and CRP levels that showed no increase in the next few days' follow-up.

In conclusion, Icodextrin-linked hypersensitivity should be considered after peritonitis is excluded if a patient using Icodextrin has abdominal pain or discomfort.

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