

Research Article / Araştırma Makalesi

Ogilvie Syndrome in Patients Under Debrines After Earthquake  
Deprem Sonrasında Enkaz Altında Kalan Hastalarda Gelişen Ogilvie Sendromu

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**Abstract:** Ogilvie syndrome is a rare disease defined as pseudo-obstruction of the colon without anorganic cause and can cause ischemia and perforation in the colon if left untreated. In this study, the diagnosis, treatment, and follow-up results of patients diagnosed with Ogilvie syndrome who were rescued from under the rubble and referred to our hospital after the earthquake in Kahramanmaraş, the epicenter of which occurred on February 6, 2023, were evaluated. A total of 23 patients referred to our hospital from the earthquake area and diagnosed with Ogilvie syndrome during their follow-up were retrospectively examined. The patient's age, gender, diagnostic method, complete blood count at diagnosis, liver function tests, kidney function tests, electrolyte levels, concurrent additional pathologies, follow-up process, and treatments were examined. Of the 21 of 23 patients diagnosed with Ogilvie syndrome, were treated conservatively, and 2 were operated on. Of the 23 patients, 12 (52.17%) were male and 11 (47.83%) were female. When the patients were diagnosed, the average leukocyte count was  $14.11 \pm 5.41$ , above the normal value. The average ionized calcium value was determined as  $0.95 \pm 0.14$  mmol/L and was below the normal value. In addition to fractures that may develop in multi-trauma disasters such as earthquakes, immobility under debris and exposure to hypothermia facilitate the development of Ogilvie syndrome. The success rate of conservative treatment is high with early diagnosis.

**Keywords:** Colon pseudoobstruction, Earthquake, Ogilvie syndrome, Surgery,

**Özet:** Ogilvie sendromu organik bir neden olmaksızın kolonun psödoobstrüksiyonu olarak tanımlanan nadir görülen ve tedavi edilmediğinde kolonda iskemi ve perforasyona neden olabilen bir hastalıktır. Bu çalışmada 6 Şubat 2023 tarihinde meydana gelen Kahramanmaraş merkez üssü olan deprem sonrası enkaz altından kurtarılıp hastanemize sevk edilen ve Ogilvie sendromu tanısı konulan hastaların tanı, tedavi ve takip sonuçları değerlendirildi. Deprem bölgesinden Mersin Şehir Eğitim ve Araştırma Hastanesine sevk edilen ve takiplerinde Ogilvie sendromu tanısı konulan 23 hasta retropektif olarak incelendi. Hastaların yaş, cinsiyet, tanı yöntemi, tanı sırasında tam kan sayımı, karaciğer fonksiyon testleri, böbrek fonksiyon testleri, elektrolit düzeyleri, eş zamanlı ek patolojiler, takip süreci ve tedavileri incelendi. Ogilvie sendromu tanısı konulan 23 hastanın 21 tanesi konservatif olarak tedavi edildi. 2 hasta opere edildi. 23 hastanın 12 (%52,17)'si erkek, 11 (%47,83)'i kadındı. Hastaların tanı konulduğunda lökosit ortalaması  $14,11 \pm 5,41$  olup normal değer in üstünde idi. İyonize kalsiyum değeri ortalaması  $0,95 \pm 0,14$  mmol/L olarak tespit edildi ve normal değer in altında idi. Deprem gibi multitraumaya sebep olacak felaketlerde gelişecek fraktürler yanında enkaz altında immobil kalması ve hipotermi maruziyeti Ogilvie sendromu gelişimini kolaylaştırmaktadır. Erken tanı ile konservatif tedavi başarı oranı yüksektir.

**Anahtar Kelimeler:** Kolon psödoobstrüksiyonu, Deprem, Ogilvie Sendromu

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## 1. Introduction

Ogilvie syndrome, known as pseudoobstruction of the colon, is an excessive dilatation of the colon without an organic cause. Autonomic nervous system dysfunction is blamed for its pathogenesis. Although its etiology is not known exactly, anticholinergic drugs, diabetes mellitus, metabolic disorders, respiratory failure, hyperparathyroidism, Parkinson's disease, orthopedic surgery, blunt abdominal trauma, decreased intestinal motility after surgery, and immobilization can be counted among the causes (1). Diagnosis is based on clinical findings and radiology. Tomography and direct radiography are used in radiologic diagnosis (2). Ogilvie syndrome has dilated loops of large bowel with normal-appearing small bowel(3). Early diagnosis and treatment are essential to reduce life-threatening complications such as colonic ischemia and perforation and to improve outcomes (4).

The treatment of the disease is primarily a conservative approach and, if possible, colonoscopic decompression. Surgical intervention is performed in patients who have signs of peritoneal irritation and do not benefit from colonic decompression (5,6,7).

We found that Ogilvie syndrome developed during the follow-up of some patients who were trapped under the rubble during the earthquake, whose epicenter was in Kahramanmaraş, Turkey. We aimed to report the diagnosis, treatment, and follow-up process of these rescued individuals and then referred to our hospital.

## 2. Materials and Method

Approval from the institutional review board was obtained for this study. After the earthquake, whose epicenter was in Kahramanmaraş, Turkey, on February 6, 2023, earthquake victims were referred to our hospital from the earthquake area. Patients who were trapped under the rubble were rescued and were referred to our hospital. Patients diagnosed with Ogilvie syndrome radiologically and clinically were evaluated retrospectively. Ogilvie syndrome is defined as marked colonic distension without

mechanical obstruction and is diagnosed based on clinical and radiological findings. In Ogilvie's syndrome, the colon is the main affected part and the small intestine is not affected much.

The patients' data were examined from their computer records and epicrisis. Patients whose data could not be accessed, who were under 18 years of age, who had other pathologies causing mechanical intestinal obstruction, and who had previously undergone abdominal surgery were excluded from the study. 23 patients who met the criteria and were diagnosed with Ogilvie syndrome were identified.

The patients were evaluated in terms of age, gender, diagnostic method, leukocyte, creatine, potassium, chloride, and ionized calcium values at diagnosis, concurrent additional pathologies, follow-up process, and treatments. However, the duration of the patient's stay under the rubble could not be obtained.

## Statistical Analysis

Study findings were evaluated using SPSS(Statistical Package for Social Sciences) v. 21.0 statistical software. Descriptive statistical methods, such as mean, standard deviation and percentage, were used to evaluate data.

## 3. Results

A total of 23 patients who met the criteria were examined retrospectively. Of the patients, 12 (52.17%) were male and 11 (47.83%) were female. The mean age was  $46.78 \pm 19.17$  years. Radiological diagnosis was performed by computerized tomography (Figure 1) in 18 patients and by direct radiography (Figure 2) in 5 patients. The patients' blood values (leukocyte, creatine, potassium, chloride, ionized calcium) were evaluated at the time of diagnosis.

When the patients were diagnosed, the average leukocyte count was  $14.11 \pm 5.41 / \text{mm}^3$ , above the normal value. The average ionized calcium value was determined as 0.95

$\pm 0.14$  mmol/L and was below the normal value.

All patients had fractures that prevented their mobilization. The patients were diagnosed on average  $6 \pm 4.77$  days after the earthquake. The complaints of 21 patients were resolved with medical treatment, and two patients were operated on (Table 1). All patients had complaints of constipation and abdominal distension, and six patients had complaints of nausea and vomiting. In the conservative treatment of the patients, liquid electrolyte therapy was arranged, oral intake was stopped in vomiting patients, a nasogastric tube was inserted, enema and rectal tube were applied when necessary, and the procedures were repeated until the patient's distension subsided and spontaneous gas and stool discharge occurred.

Dilated colon and free air in the abdomen were observed in the tomography findings of the first patient who was operated. There were signs of acute abdomen in the examination findings. He was operated on with the preliminary diagnosis of perforation. Still, no perforated area was observed, the colon was extremely dilated, no mechanical obstruction was observed, and it was thought that there was intra-abdominal air secondary to thoracic trauma. The patient's colon was decompressed. A perioperative diagnosis of Ogilvie syndrome was made. This patient's complaints regressed during follow-up, but the patient died due to compartment syndrome and additional traumatic pathologies. The other patient was operated on because his complaints did not subside despite conservative treatment. Colonoscopic decompression was not performed because the cecum diameter of this patient was 13 cm (Figure 3). Colotomy evacuated the intestine in this patient, but no ostomy or resection was performed (Figure 4). The patient's complaints were resolved during follow-up, and no additional surgical procedure was required.

### 3. Discussion

The severe form of ileus, also known as Ogilvie syndrome, can develop in hospitalized patients and is associated with a wide variety of medical and surgical conditions. Long-term

bed rest, high doses of narcotic drugs, sepsis, surgery, hypokalemia, and other electrolyte and metabolic imbalances are associated with the development of Ogilvie syndrome (8).

All of the patients we included in our study were rescued from under the rubble, and all of them had fractures that prevented immobilization and mobilization due to being under the rubble. Due to the winter season and weather conditions, the patients trapped under the rubble were exposed to the cold. It is known that hypothermia causes a slowdown in bowel movements (9). Hypothermia is inevitable in winter disasters and leads to a poor prognosis(10).

We believe that the combination of many factors, such as hypothermia, immobilization, orthopedic fractures, and surgical interventions, facilitates the development of Ogilvie syndrome. One study showed that acute colonic pseudo-obstruction may develop after trauma(11). Although many patients with similar pathologies were followed, Ogilvie syndrome developed in 23 patients. This shows that other individual mechanisms are also effective in developing Ogilvie syndrome. Since the duration of the patient's stay under the rubble is unknown, its effect on the development of the syndrome could not be investigated.

A study observed that ionized calcium levels were low in patients followed up with a diagnosis of Ogilvie syndrome (8). In our study, the patients' blood tests followed by the diagnosis of Ogilvie syndrome were evaluated, and it was determined that the ionized calcium level was low in most of them. It was thought that low calcium might lead to the development of this syndrome. It shows the importance of electrolyte monitoring and replacement in patients' follow-ups.

In our study, the average leukocyte value was above normal when the patients were diagnosed. In similar studies, leukocytosis was present during diagnosis (1). In Ogilvie syndrome, conservative treatment is primarily recommended. Many retrospective studies have evaluated the results of conservative

treatment, with effectiveness ranging from 35% to 96%. (12,13,14,15).

The patients we followed were treated with an enema and rectal tube. Colonoscopic decompression and Neostigmine were not applied to any patient. In our study, the success rate of conservative treatment was 91.3%. Although colonoscopic decompression and Neostigmine were not applied, the reason for such high success is the early diagnosis and early intervention due to close follow-up of the patients. In addition, we think this condition, which develops in all patients diagnosed with Ogilvie syndrome, responds to conservative treatments at a high rate since it is not due to a chronic cause but to pathologies secondary to a suddenly developing condition. In one study, patients were followed for up to 61 months. Conservative treatment was first given to patients diagnosed with Ogilvie syndrome, and an improvement was observed in the patients. Still, the syndrome relapsed during follow-up and at a high rate (58%), required surgical intervention (16). However, the patients we diagnosed do not have such a long follow-up period, so the long-term relapse status of the patients is unknown.

Colectomy and ostomy are recommended in cases resistant to conservative treatment (16, 17). However, only colonic decompression was performed on one of the two patients we operated. Although the complaints of the operated patient subsided, he died on the 5th postoperative day due to additional pathologies, so recurrence could not be evaluated. Our other operated patient underwent decompression only with colotomy. In order not to impose an extra

surgical burden on this patient due to additional pathologies, major surgery was not performed, and no recurrence was observed during follow-up. Treatment with colotomy is a procedure other than the recommended surgery, and we think it is effective because the patient has an acute condition, not a chronic disease. However, this method is applied only to one patient, and it is unsuitable for giving an idea about the treatment.

#### **Study Limitation**

The limitation of our study is that there is not enough information about the state of emergency due to the earthquake, the duration of being under the collapse, the transportation time and weather conditions.

#### **4. Conclusion**

Earthquakes are an inevitable disaster in countries like ours, located in earthquake zones. Earthquakes are an important cause of multi-trauma that affects the entire body. Many pathologies arise due to this. We found that one of them was Ogilvie syndrome. Trauma, being immobile under the collapse, and the ambient temperature under the collapse are factors that facilitate Ogilvie syndrome. In patients rescued from such disasters complain of abdominal swelling, pain, and vomiting, it should be kept in mind that Ogilvie syndrome may be present, and early intervention should be performed. With early diagnosis and intervention, complaints can be reversed with less invasive procedures and less need for surgical intervention.

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#### Ethics

**Ethics Committee Approval:** The study was approved by Mersin University, Medical Faculty Clinical Research Ethics Committee (Decision no: 818, Date: 29.11.2023).

**Informed Consent:** The authors declared they get consent from the patients.

**Copyright Transfer Form:** Copyright Transfer Form was signed by all authors.

**Conflict of Interest:** On behalf of all authors, I, as the corresponding author, accept and declare that; we have NO affiliations with or involvement in any organization or entity with any financial interest or nonfinancial interest in the subject matter or materials discussed in this manuscript.

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