Archives of Current Medical Research
Arch Curr Med Res 2024; 5(3):100-104

Received: 17 July 2024
Revised: 26 July 2024
Accepted: 14 August 2024
DOI: 10.47482/acmr.1518098

ORIGINAL ARTICLE

Adult Food Poisoning in a Tertiary University Hospital: Retrospective Evaluation of Emergency Department Visits and Outcomes

Serhat Örün[1] **Dilek Doğan**[2] **Habibe Selmin Özensoy**[2]
Batuhan İlbey Başol[3]

1 Tekirdağ Namık Kemal University, Faculty of Medicine, Department of Emergency Medicine, Tekirdağ, Türkiye
2 Ankara Bilkent City Hospital, Department of Emergency Medicine, Ankara, Türkiye
3 Yüksekova State Hospital, Department of Emergency Medicine, Hakkari, Türkiye

Abstract

Background: The clinical diagnosis, which occurs with various symptoms resulting from consuming contaminated food, is defined as food poisoning (FP). A large number of people around the world experience FP each year. This report focuses on the clinical and descriptive characteristics of adult cases visiting the emergency department (ED) due to FP.

Methods: This study was planned as a retrospective examination of adult FP cases who visited a tertiary ED in a 4-year period. Complaints, vital signs, physical examination and laboratory data at the time of the visit were recorded. The treatment given for ED and the ways to recover from ED were also evaluated.

Results: 61 patients were included. 43 patients (70.5%) were male. Median age was 31 years (min: 18- max: 73). The most common symptom was nausea (n=27, 44.3%). No relationship was detected between length of hospital stay and descriptive data. Most of cases except two (96.7%), were discharged after the treatments administered in the ED.

Conclusions: FP cases are often young and male. They most often visit ED with complaints of nausea and are often discharged from ED after treatment. Descriptive data is not predictive of outcomes.

Key words: Poisoning; Emergency Departments; Nausea; Gastroenteritis; Abdominal Pain.

INTRODUCTION

Food poisoning (FP) is a diagnosis accompanied by a series of symptoms resulting from consumption of contaminated food (1). According to WHO (World Health Organization) data, 600 million people are affected every year due to FP after eating contaminated food, and 420,000 people die every year (2). The causes of FP include bacteria, viruses, and toxins (3). The most common source is bacterially contaminated foods (3). New pathogens are discovered every year, causing acute gastroenteritis (AGE). However, in cases of AGE, the etiological cause is often unidentified because stool samples are rarely collected or because many laboratories can detect pathogens, especially viruses (2, 3). Symptoms may include fever, headache, nausea, vomiting, abdominal pain, and diarrhea similar to AGE (4). To suspect FP in patients presenting with these symptoms, 2 or more people must consume the same food and have similar symptoms (4).

Cite this article as: *Selmin Özensoy H, Doğan D, Örün S, Başol B. Adult food poisoning in a tertiary university hospital: Retrospective evaluation of emergency department visits and outcomes. Arch Curr Med Res. 2024;5(3):100-104*

Corresponding Author:
Habibe Selmin Özensoy, MD Ankara Bilkent Şehir Hastanesi Acil Servisi
1604.Cadde No:9 06800 Ankara/ Türkiye
E-mail: habibeozensoy@gmail.com

Depending on the causative agent, cases of FP often persist for a long time; It can occur within a few hours to a few days after food intake. Cases can result in severe and life-threatening liver and kidney-related complications, disability, or death. Mild FP is usually self-limiting, and patients can recover without specific treatment. However, severe FP may require antibiotics, hospitalization, and hydration (5). It can cause crowding in hospitals, especially emergency departments (EDs), and lead to events that will block the healthcare system. Although EDs are these patients' first point of visit, they are also a public health problem. Therefore, food security is important for every region and country (6).

In EDs, patients with suspected FP are usually examined and treated based on their clinical characteristics; some patients are treated on an outpatient basis, depending on their clinical condition, without testing (2). This study examined patients who visited the ED with suspicion of FP. Thus, it aimed to present descriptive data about these patients' ED visits to emergency physicians and contribute them to the literature.

MATERIALS AND METHODS

Study Design and Collecting Patients' Data

This study was approved by Tekirdağ Namık Kemal University Faculty of Medicine Ethics Committee (Dated: 28.09.2022; Approval Number: 201416). It was designed retrospectively and conducted in a university hospital's tertiary-level ED. To create a patient group, A05.X diagnosis codes were scanned from the hospital electronic archive using the International Classification of Diseases, 10th revision, Clinical Modification (ICD-10-CM) diagnosis codes among the patients who visited ED during four years between January 01, 2018, and January 01, 2022. Inclusion criteria include being over 18 years old and diagnosed with A05.X. Patients whose information could not be obtained were excluded. By examining the electronic files of the patients included in the study, Complaints at the time of admission, vital signs, physical examination, and laboratory findings were recorded in the previously created case report form. In addition, the methods used to treat these patients and the need for ward or intensive care admission were recorded in the case form. The patients' microbiology results for the agent were examined, and no positive results were observed.

Statistical Analysis

The data obtained were recorded and analyzed in the database prepared in the statistical program called Statistical Package for the Social Sciences (SPSS) 18. In our study, four patients who applied to the ED and were diagnosed with FP were compared (female, male, outpatient treatment, treatment in inpatient services). Descriptive statistics for categorical variables were expressed as number (n) and percentage (%). The chi-square test was used to compare data between groups. The compliance of continuous variables with normal distribution was evaluated using the Kolmogorov-Smirnov test. Comparison of categorical variables when they comply with normal distribution will also be achieved with the Chi-Square Test. Descriptive statistics were expressed as median values (25–75%) when none of the variables followed a normal distribution. Mann-Whitney U-test was used for group comparisons. Between-group differences were analyzed using Fisher's Test or Chi-Square Test, depending on the nature of the data. A value of $P < 0.05$ was considered statistically significant.

RESULTS

Descriptive Data

A total of 61 patients were included in the study. Of these, 18 (29.5%) were female and 43 (70.5%) were male. The median age of the patients included in the study was 31 (min:18—max:73). No significant relationship was found between the patient's age, gender, and other descriptive data and length of stay in the ED (Table 1).

Symptoms, Biochemical Data, and ED Treatments

The most common reason for ED visits was determined to be nausea in 27 (44.3%) patients. Abdominal pain was detected in 18 (29.5%) and diarrhea was detected in 16 (26.5%) (Table 1).

It was observed that some biochemical tests were also performed on the cases included in the study. Accordingly, their average urea value is 37.43±40.6 mg/dl, average creatine value is 0.88±0.27 mg/dl, average AST value is 24.6±8.4 IU/L, average ALT value is 23.8±14.17 IU/L, mean LDH value was 244±122 IU/L, mean sodium was 137±2 mmol/L, mean potassium was 4.3 mmol/L. The mean CRP value was 4.2±0.4 mg/L, the mean WBC value was 10.1±2.7 10^3/uL, and the mean hemoglobin value was 14.3±1.7 g/dL. The average platelet value is 248±70

10^3/uL. When the laboratory data of the patients were compared with their hospitalization/discharge status, no significant relationship was found (Table 2).

Symptomatic treatments of the patients hospitalized in ED were also examined. 12 (19.6%) patients received hydration with physiological saline only. Metoclopramide HCL was administered to 36 (59%) of the patients, hyoscine-N-butyl bromide was administered to 19 (31.1%), and 5HT3 receptor antagonist was administered in addition to hydration to 4 (6.6%). No symptomatic treatment was applied to 21 (34.4%) patients (Table 1).

Outcome Data

According to the ED outcome, 59 cases were discharged from the ED after their symptomatic treatment was completed, and 2 cases were kept under observation in the ED. These two cases were hospitalized and discharged from the clinic after a full recovery (Table 1).

DISCUSSION

In this study, FP cases visiting a tertiary ED were examined. The median duration of the symptoms was 24 hours, the most common symptom was nausea, and the median duration in the ED was 30 minutes. Cases were largely discharged from the ED. The male gender was dominant. Metoclopramide HCl was the best ED treatment.

The low number of cases may be because we were exposed to a pandemic during most of the period between 2018 and 2022 when we collected data, and people paid more attention to food safety during the pandemic and avoided crowded places such as ED. In a study examining the incidence of AGE cases during the COVID-19 pandemic period, it was similarly observed that FP cases were lower in the pandemic years than in other years (6).

In the report of Elkhal et al., which examined 367 cases of patients visiting ED due to AGE, it was observed that the most affected patient group was women (7). In another study investigating food poisoning, Pardal et al. reported that men were most frequently affected (5). In our study, the male gender was dominant. However, when similar literature and the results of this study with a limited number of cases are evaluated, it does not seem possible yet to demonstrate a gender trend in FP cases.

It is noteworthy that in our study, the duration of stay of the patients in the ED was short. Additionally, no significant difference was found in treatments given, symptoms, age, and gender. The main reason for the short duration of these periods is the low need for symptomatic treatment after rapid evaluation in the ED and the fact that patients are treated with an outpatient prescription. In another study, 120 cases of FP were examined, and it was determined that the length of stay in the ED of 89.2% of the patients was 1-2 days (8).

We think hydration, antiemetics, analgesics, and spasmolytic agents are commonly used to relieve FP symptoms. Still, since each patient is different, the treatment plan should be shaped according to the patient's individual symptoms and clinical condition. For this reason, we think that there cannot be a standard treatment approach in FP. Studies suggest that antibiotics should not be given to patients unless necessary, even if bacterial etiology is detected (12). In our research, the most frequently used drug for treatment was metoclopramide HCl. Similarly, in the research conducted by Getie and Belayneh, which retrospectively examined food poisoning, one of the most frequently used drugs was metoclopramide HCl, followed by cimetidine (9).

The literature on food poisoning shows that the cases are caused mainly by bacterial contamination, and treatment and hospitalizations have been determined for this reason. A limitation of our study was that there was no growth in the microbiology results of the patients. Therefore, the pathogens are uncertain. However, only two patients required hospitalization, and the others were treated on an outpatient basis, suggesting that these cases may be in the mild poisoning category. In 2009, Bütün et al., in a retrospective study of food poisoning, microbiology examination was performed on 11% of the patients, and no growth was detected (10). A review published in 2021 emphasized that the pathogen generally cannot be detected in food-borne gastroenteritis (11). Researchers who are curious about the reason for this situation have turned to investigating whether bacterial or viral contamination or food allergy is the main cause in cases that we think of as FP (12). However, we believe that the clinical course of the patients should be prioritized since it is a problematic diagnostic group to distinguish.

The most important limitations were the small sample size and the lack of archive material for the current sample. No causative pathogen was found in the patients' microbiological examinations. Similarly, due to the lack of data, which foods cause symptoms is not known.

The young age of patients presenting to the ED with FP is noteworthy. The most common symptom in these cases is nausea. The cases are primarily relieved after the symptomatic treatment they receive in the ED and are discharged from there. The most common ED treatment is metoclopramide HCl. The descriptive data considered in this study is not predictive of clinical outcomes of FP cases.

Declarations

The authors received no financial support for the research and/or authorship of this article. There is no conflict of interest

This study was approved by the Tekirdağ Namık Kemal University Faculty of Medicine Ethics Committee (Dated: 28.09.2022; Approval Number: 201416).

Table 1. Complaints of food poisoning cases visiting the Emergency Department, the number and percentage values of drugs used in treatment, and the comparison of these parameters with the duration of stay in the emergency department

			Length of stay in ED
		n %	p
Median age, (min-max)		31 (18-73)	0.499
Median symptom duration in hours (min-max)		24 (1-48)	0.071
Length of stay in ED as hours (min-max)		30 (10-120)	
How to leave the ED	Discharge	59 (96.7%)	0.349
	Hospitalization to a clinic	2 (3.3%)	
Gender	Male	43 (70.5%)	0.182
	Female	18 (29.5%)	
Symptom			
Nausea/vomiting		27 (44.3%)	0.468
Abdominal pain		18 (29.5%)	
Diarrhea		16 (26.5%)	
Drugs Used in the Treatment of ED			
Metoclopramide HCl		36 (59%)	0.093
Hyoscine-N-butylbromide		19 (31.1%)	
Hydration with saline		12 (19.6%)	
None		21 (34.4%)	
5HT3 receptor antagonist		4 (6.6%)	

ED: Emergency department, n: Number, HCl: hydrochloric acid, $5HT^3$: 5-hydroxytryptamine-3

Table 2. Laboratory analysis data of food poisoning cases admitted to the Emergency Department		
Parameter	Mean ± SD	p (Discharge/Hospitalization to a clinic)
Urea (mg/dl)	37.4±40.6	0.857
Creatine (mg/dl)	0.88±0.27	0.286
AST (IU/L)	24.6±8.4	0.400
ALT (IU/L)	23.8±14.1	0.952
LDH (IU/L)	244±122.6	0.072
Sodium (mmol/L)	137±2	0.316
Potassium (mmol/L)	4.2±0.4	0.758
CRP (mg/L)	15±14	0.343
WBC (10^3/uL)	10.150±2,788	0.947
Hb (g/dL)	14.3±1.7	0.442
Plt (10^3/uL)	248±70	0.771
SD: Standard deviation, AST: Aspartate aminotransferase, ALT: Alanine aminotransferase, LDH: Lactate dehydrogenase, CRP: C reactive protein, WBC: White blood cells, Hb: Hemoglobin, Plt: Platelet		

REFERENCES

1. Aljamali NM, Najim M, Alabbasy A. Review on food poisoning (types, causes, symptoms, diagnosis, treatment). *Global Acad J Pharm Drug Res*. 2021;3(4):54-61.
2. Arr W, Smith A. Acute diarrhea. *Am Fam Physician*. 2014;89(3):180-9.
3. Lopman BA, Hall AJ, Curns AT, Parashar UD. Increasing rates of gastroenteritis hospital discharges in US adults and the contribution of norovirus, 1996-2007. *Clin Infect Dis*. 2011;52(4):466-74.
4. World Health Organization. Food safety. Available at: https://www.who.int/news-room/fact-sheets/detail/food-safety. Accessed April 17, 2024.
5. Pardal MPS, Bhalwar R, Mehta VK, Rajiva. *Epidemiological investigation of an outbreak of food poisoning in an officers' mess. Int J Community Med Public Health*. 2020;7(5):1912-5.
6. Filipello V, Bonometti E, Campagnani M, Bertoletti I, Romano A, Zuccon F, et al. Investigation and follow-up of a staphylococcal food poisoning outbreak linked to the consumption of traditional hand-crafted Alm cheese. *Pathogens*. 2020;9(12).
7. Elkhal A, Attarassi B, Aujjar N, S J, Lahmam M. Epidemiological study of food poisoning during the period 2001-2018 in the province of Kenitra. *E3S Web Conf*. 2021;319:01055.
8. Ameme DK, Alomatu H, Antobre-Boateng A, Zakaria A, Addai L, Fianko K, et al. Outbreak of foodborne gastroenteritis in a senior high school in South-eastern Ghana: a retrospective cohort study. *BMC Public Health*. 2016;16:564.
9. Getie A, Belayneh YM. A retrospective study of acute poisoning cases and their management at the emergency department of Dessie Referral Hospital, Northeast Ethiopia. *Drug Healthc Patient Saf*. 2020;12:41-8.
10. Bütün C, Beyaztaş FY, Engin A, Büyükkayhan D, Can M. Cumhuriyet Üniversitesi Tıp Fakültesi Adli Tıp Anabilim Dalı'na başvuran besin zehirlenmesi olgularının değerlendirilmesi. *Van Tıp Derg*. 2009;16(1):19-23.
11. Fleckenstein JM, Kuhlmann FM, Sheikh A. Acute bacterial gastroenteritis. *Gastroenterol Clin North Am*. 2021;50(2):283-304.
12. Patel P, Komorowski AS, Mack DP. An allergist's approach to food poisoning. *Ann Allergy Asthma Immunol*. 2023;130(4):444-51.