

Retrospective Analysis of Endocrine Emergency Cases Admitted to the Emergency Department

Acil Servise Başvuran Endokrin Acil Vakalarının Retrospektif Analizi

Abstract

Objectives: Diabetes mellitus, thyroid diseases, and adrenal gland and pituitary gland diseases are endocrine emergencies that are the reason for admission to the emergency department (ED) and may result in mortality. Diabetic ketoacidosis and hyperosmolar coma, which are diabetes mellitus emergencies, are diseases that can be quickly diagnosed with high blood sugar, while difficulties may arise from ED conditions in other diagnoses. This study aims to retrospectively analyze the endocrine emergencies admitted to the ED.

Material and Methods: This study is a retrospective observational study. Ethical approval was obtained from the local ethics committee of the university. In this study, we included all patients over 18 years of age who were consulted to the Endocrinology unit, considering one of the endocrine emergencies in the ED. The complaints of these patients, their laboratory parameters, diagnoses and length of stay, hospitalizations in the intensive care unit, and outcome information were accessed through the system and recorded in the data record form. All data was used for statistical analysis.

Results: A total of 55 patients were included in the study, 32 of which were female. The mean age of the patients was 57±20. 39 of the patients applied as outpatients and 16 of them were brought by the 112 ambulances. The most common symptoms at presentation were abdominal pain (22%), nausea and vomiting (20), and fatigue (14.5%). The most common admission diagnoses were diabetic ketoacidosis (25.5%), hyperglycemia (25.5%), and hypoglycemia (16.4%). Of all patients, 22 (40%) were hospitalized in the ward, and 17 (31%) in the intensive care unit. While 50 of the patients were discharged from the hospital, 5 died. When the way of admission of the patients to the ED was compared in terms of discharge, service admission, and intensive care admission, a statistically significant difference was found, and this difference was due to the high intensive care admission rate and low discharge rate of the patients brought by 112 ambulances. However, when the patients were compared according to the way they applied, no significant difference was found between their complaints, admission diagnoses, and outcomes.

Conclusion: Endocrine emergencies should be considered in patients who present to the ED with complaints of abdominal pain, nausea, vomiting and fatigue. There is a need for caution in terms of the need for service and intensive care hospitalization for those brought by the 112 ambulances.

Keywords: Emergency Department , Endocrine Emergency, Diabetic Ketoacidosis

Özet

Amaç: Diyabetes mellitus, tiroid hastalıkları ve adrenal bez ile hipofiz bezi hastalıkları acil servise başvuru sebebi olan ve mortalite ile sonuçlanabilen endokrin acillerdir. Bu hastalıklardan diyabetes mellitus acilleri olan diyabetik ketoasidoz ve hiperozmolar koma kan şekeri yüksekliği ile hızlıca tanısı akla gelebilen hastalıklar iken diğer tanılarda acil servis şartlarından zorluklar meydana gelebilmektedir. Bu çalışmadaki amacımız acil serviste endokrinolojik aciller sebepli takip edilen hastaların retrospektif incelenmesidir.

Gereç ve Yöntemler: Bu çalışma retrospektif gözlemsel bir çalışmadır. Üniversite yerel etik kurulundan onay alınmıştır. Çalışmaya 18 yaş ve üzeri olup acil serviste endokrin acil tanılarında bir tanesi düşünülerek Endokrinoloji birimine konsulte edilen tüm hastalar dahil edilmiştir. Bu hastaların sistem üzerinden başvuru şikayeti, labarotuvuar özellikleri, tanıları ve yatış süreleri, servis- yoğun bakım yatışları ve sonlanım bilgilerine ulaşıp veri kayıt formuna not edilmiştir. Tüm veriler istatistiksel analiz için kullanılmıştır.

Bulgular: Çalışmaya toplam 55 hasta dahil edilmiş olup 32'si kadındı. Hastaların yaş ortalaması 57±20 idi. Hastaların 39'u ayaktan başvurmuş olup 16 tanesi 112 tarafından ambulans ile getirilmişti. En sık başvuru semptomları karın ağrısı (% 22), bulantı kusma (20) ve halsizlik (%14,5). En sık başvuru tanılar DKA (% 25,5), hiperglisemi (%25,5) ve hipoglisemiydi (%16,4). Hastaların 22'si (%40) servise, 17'si (%31) yoğun bakım ünitesine yatırılmış. Hastaların 50'si hastaneden taburcu olurken 5'i vefat etmiştir.

Sonuç: Acil servise karın ağrısı, bulantı, kusma ve halsizlik şikayetleri ile başvuran hastalarda endokrin aciller akla gelmelidir. Bu hasta grubundan 112 ile getirilenlere servis ve yoğun bakım yatışı ihtiyacı açısından dikkatli olunmalıdır.

Anahtar kelimeler: Endokrin Anabilim Dalı, Endokrin Acil, Diyabetik ketoasidoz

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INTRODUCTION

Medical emergencies are important diseases that can occur within minutes or hours and result in death (1). Disease diagnoses that cause medical emergencies are diverse. Cardiac emergencies, surgical emergencies, and internal emergencies are frequent reasons for admission, and the diagnosis can be made more easily, while delays may occur in the diagnosis of diseases such as endocrine emergencies, which are seen less frequently and have fewer ED admissions (1). Diabetes mellitus, thyroid diseases, and adrenal gland and pituitary gland diseases are endocrine emergencies that are the reason for admission to the ED and may result in mortality (2,3,4,5). Diabetic ketoacidosis and hypo-osmolar coma, which are diabetes mellitus emergencies, are diseases that can be quickly diagnosed with high blood sugar, while difficulties may arise from ED conditions in other diagnoses (6). These patients can be brought to the emergency service as an outpatient or by the 112 ambulance.

The frequency of endocrine emergencies admitted to the ED, the most common symptoms of endocrine emergencies, and the length of hospital stay after the ED is not clear in the literature. This study aims to help physicians working in the ED for pre-diagnoses by analyzing the rates and symptoms of endocrine emergencies that apply to the ED. In addition, it is to determine whether there is a difference between the patients who applied to the ED on an outpatient basis and the patients brought by the 112 ambulances in terms of admission complaint, diagnosis, hospitalization, and outcome.

MATERIAL AND METHODS

Study Design:

This observational retrospective study was conducted in the ED of an affiliated tertiary university hospital in the province of Izmir, Turkey, between November 2021 and November 2022. The study was initiated after getting approval from the local ethics committee of the University.

Patients and Setting:

In this study, we included all patients over 18 years of age who were consulted to the Endocrinology unit, considering one of the endocrine emergencies in the ED.

Data Collection:

The complaints of these patients, their laboratory parameters, diagnosis and length of stay, hospitalizations in the intensive care unit, and outcome information were accessed through the system and recorded in the data record form. All data was used for

statistical analysis.

Statistical Analysis:

The number and percentage were calculated for categorical variables, and mean and standard deviation for numerical variables. Histogram curves, kurtosis, skewness, and the Shapiro-Wilk test were employed to determine whether continuous variables were normally distributed. Student-t-test was used to compare the means of the two groups. All statistical calculations were carried out on SPSS 22.0 software and at a 95% confidence interval.

RESULTS

A total of 55 patients were included in the study, 32 were female and 23 were male. The mean age of the patients was 57 ± 20 . 39 of the patients applied as outpatients and 16 of them were brought by 112 ambulances. The most common symptoms at presentation were abdominal pain (22%), nausea-vomiting (20%), and fatigue (14.5%). The most common admission diagnoses; DKA (25.5%), hyperglycemia (25.5%) and hypoglycemia (16.4%). While 16 (29%) of the patients were discharged from the ED, 22 (40%) of them were hospitalized in the ward and 17 (31%) in the intensive care unit. While 50 of the hospitalized patients were discharged from the hospital, 5 died.

Considering the complaints of patients who were consulted for an endocrine emergency, abdominal pain, nausea-vomiting and fatigue, headache, syncope, and confusion are the most common causes. All admission reasons and frequencies of patients consulted for endocrine emergencies are presented in Table 1.

Considering the diagnoses of patients consulted for endocrine emergencies, the most common diagnoses are diabetic ketoacidosis (DKA), hyperglycemia, and hypoglycemia. These are followed by hyperosmolar non-ketotic coma (HONC), adrenal insufficiency, thyroid storm, and myxoedema coma. The frequency of the diagnoses is presented in Table 2.

A statistically significant difference was found when the way of admission to the ED was compared in terms of discharge, hospitalization, and intensive care admission. This difference is thought to be due to the high intensive care hospitalization rate and low discharge rate of the patients brought by 112 ambulances. The relationship between the form of application and hospitalization from the ED is shown in Table 3.

When the patients were compared according to the outpatient and 112 hospital admissions, no statistically significant difference was found between their admission complaints, admission diagnoses, and outcomes.

DISCUSSION

In this study, patients who applied to the ED and were consulted to the endocrinology unit were evaluated. The most common presenting symptom and most common diagnoses of these patients were analyzed. It also showed how many of these patients were hospitalized in the ward and how many were hospitalized in the intensive care units. It demonstrated the frequency of resulting mortality in this group of patients. It was analyzed whether there was a difference in terms of hospitalization and outcome between the outpatients who applied to the ED and the patients brought by 112 ambulances.

The mean age of the patients in the study was 57 ± 20 years. Endocrinology is a sub-division of internal diseases. In a previous study conducted by Aygencel et al. (7) in which patients consulted to internal diseases from the ED were evaluated, the mean age was found to be 60 ± 18 years, which is similar to our study. This can be explained by the fact that diseases related to internal diseases in Turkey occur at similar ages and the genetic structure is similar.

When the complaints of the patients on admission to the ED are examined, it is seen that the most common symptoms of admission are abdominal pain and nausea-vomiting. Previously, Polat et al. (8) in which the surveillance analysis of the patients admitted to the ED was performed, it was reported that the most common presenting symptoms were gastrointestinal system complaints such as abdominal pain, nausea, and vomiting. This result is in parallel with our study. In addition, the most common diagnoses in our study were hyperglycemia and DKA, and it is known that abdominal pain and nausea-vomiting are common symptoms in these patient groups. We think that this may be the reason for the frequent occurrence of these symptoms in our study.

The most common diagnoses seen in patients are hyperglycemia and DKA. Considering the prevalence of diabetes mellitus in our society, it is an expected result that the most frequent admission diagnoses are hyperglycemia due to uncontrolled diabetes and DKA. The least detected diagnosis is a pheochromocytoma attack. Serin et al. (9) and Çalapkulu et al. (10) also stated that a pheochromocytoma attack is one of the rare causes of admission to the ED. Our results are aligned with the literature.

CONCLUSION

Endocrine emergencies should be considered in patients who present to the ED with complaints of abdominal pain, nausea, vomiting and fatigue. The most common diagnoses are hyperglycemia, DKA and hypoglycemia. There is a need for caution in terms of the need for service and intensive care hospitalization for those brought by the 112 ambulances.

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Table 1. Frequency of presenting symptoms

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid stomach ache	12	21,8	21,8	21,8
nausea vomiting	11	20,0	20,0	41,8
weakness	8	14,5	14,5	56,4
Altered mental status	1	1,8	1,8	58,2
palpitation	4	7,3	7,3	65,5
polydipsia	1	1,8	1,8	67,3
headache	5	9,1	9,1	76,4
syncope	7	12,7	12,7	89,1
chest pain	2	3,6	3,6	92,7
itching	1	1,8	1,8	94,5
dry mouth	1	1,8	1,8	96,4
shortness of breath	1	1,8	1,8	98,2
diabetic foot wound	1	1,8	1,8	100,0
total	55	100,0	100,0	

Table 2. Frequency of diagnoses

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Hypoglycemia	9	16,4	16,4	16,4
DKA	14	25,5	25,5	41,8
HONC	6	10,9	10,9	52,7
myxedema coma	2	3,6	3,6	56,4
thyroid storm	3	5,5	5,5	61,8
adrenal insufficiency	4	7,3	7,3	69,1
feocromastoma attack	3	5,5	5,5	74,5
hyperglycemia	14	25,5	25,5	100,0
total	55	100,0	100,0	

DKA: diabetic ketoacidosis, HONC: hyperosmolar non-ketotic coma,

Table 3. The comparison between the form of application and hospitalization and discharge from the ED

		Hospitalization			Total
		Discharge d	Ward	Intensive care unit	
Presentation to the ED	Outpatient	15 38,5%	15 38,5%	9 23,1%	39 100,0%
	112 Ambulances	1 6,3%	7 43,8%	8 50,0%	16 100,0%
Total		16 29,1%	22 40,0%	17 30,9%	55 100,0%

ED: emergency department