Patients with Diabetes Detected Incidentally in the Emergency Department

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Abstract

Background: This study was conducted to determine the frequency and clinical features of patients who were diagnosed incidentally as having diabetes mellitus (DM) in the emergency department. Aim: Our aim was to investigate the frequency of DM in patients whose high blood glucose levels were detected, and to examine the subsequent treatment these patients. Methods: The participants were selected from among patients who had a glucose level of [?]200 mg/dL and admitted to emergency department with symptoms of hyperglycemia in the past 1 year. Age, sex, presence of chronic disease, and the laboratory blood parameter results of the patients were recorded. We divided the patients into three groups as those who had never been admitted to clinics for treatment, those who were admitted and given treatment, and not given treatment. Results: According to their sexes, 73 (52.1%) were male and 67 (47.9%) were female. It was determined that 86 of the 140 patients included in the study were admitted to clinics for treatment. It was determined that no medication was given to 50 of these patients, but treatment was initiated in 36. Patients with glucose level [?]300 mg/dL were found to be receiving more treatment significantly (p=0.031). Conclusions: In this study, diabetic patients whose blood sugar is between 200-300 mg/dL should be sent to the DM related clinic immediately when diagnosed in the emergency department.

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Conclusions: In this study, diabetic patients whose blood sugar is between 200-300 mg/dL should be sent to the DM related clinic immediately when diagnosed in the emergency department.

Keywords: Incidental, new diagnosis, diabetes, emergency department

What's known

Patients diagnosed with diabetes mellitus in the emergency department should be directed to the relevant clinic immediately after the first treatment.

What's new

Patients with diabetes mellitus with a glucose level of [?] 300 mg/dL receive more treatment than patients with lower glucose levels. Diagnosis and treatment at the right time in diabetes mellitus may be a protective factor from renal disease.

INTRODUCTION

Diabetes mellitus (DM) is a metabolic disease characterized by hyperglycemia caused by insulin release defects. [1]There are different types of DM; it is divided into four classes. Type 1 DM (T1DM): absolute insulin deficiency develops due to pancreatic beta cell damage. Type 2 DM (T2DM): progressive pancreatic beta cell damage and an insulin release defect develop on the basis of insulin resistance. Another type is due to genetic defects in beta cell or insulin function, endocrinopathies, exocrine pancreatic diseases, and drugs (drug-induced DM). Gestational DM (GDM): this is first diagnosed during pregnancy. [2] The majority of individuals with DM have T2DM and T1DM, T2DM being the most common. [3]

According to the International Diabetes Federation (IDF) 7th Diabetes Atlas, one in 11 people have been shown to have diabetes. Worldwide, the number of patients with diabetes aged 20-79 years is around 60 million, and this number is expected to reach 68 million by 2045.[4] In addition, it is estimated that one in two people with DM are undiagnosed and this corresponds to approximately 232 million people. [4] Therefore, preventive and emergency physicians in particular should be more careful in diagnosing DM. However, we think that DM is diagnosed late in our country, Turkey, because people do not prefer primary healthcare services enough and do not go to regular outpatient clinic checks. DM is a global health problem with high treatment costs and is considered to be the epidemic of the last century. [5] DM has inspired many studies because it is an important disease in many respects such as its complications, diagnosis, and financial burdens.

The diagnosis of DM is different according to the presence or absence of symptoms in patients. Most patients are asymptomatic and hyperglycemia is detected only in laboratory tests. The frequency of symptomatic diabetes gradually decreases with the increased use of early diagnostic tests. [6] In asymptomatic patients, some methods that are accepted by the American Diabetes Association (ADA), European Association for the Study of Diabetes (EASD) and IDF, are widely used in the diagnosis of diabetes. DM was previously diagnosed through fasting plasma glucose (FPG) and 2-hour 75 g oral glucose tolerance test (OGTT). Then, in 2009, ADA, the IDF, and EASD suggested using glycated hemoglobin (HbA1c) for diagnosis. [7] HbA1c [?] 6.5% was accepted as the threshold value for the diagnosis of DM. Diagnosing efforts have brought various difficulties to the healthcare system, such as loss of time for physicians and psychological stress in patients. Various symptoms of hyperglycemia such as polyuria, polydipsia, dry mouth, weight loss, and blurred vision are known. [6] In the presence of these classic symptoms of hyperglycemia, it was decided that no test repetition was required if the plasma glucose that was randomly examined was [?]200 mg/dL. [8] This method will make it easier for us to diagnose DM because it is not possible to perform OGTT or to look for HbA1c in emergency departments as in internal medicine or endocrinology outpatient clinics. Therefore, in our study, we preferred serum glucose levels to be [?]200 mg/dL in symptomatic patients as a diagnostic method.

Our aim was to investigate the frequency of DM in patients who were admitted to the emergency department in whom high blood glucose levels were detected, and to examine the subsequent treatment and follow-up of these patients.

MATERIALS and METHODS

Ethics statement

This study was approved by the Ethics Committee of Kafkas University Medical Faculty (Date: 29.05.2020 and number: 80576354-050-99/145).

Study design and the patients

Patients who were admitted to Kafkas University Research Hospital emergency department between January 1st, 2019, and December 31st, 2019, with symptoms of hyperglycemia (dry mouth, frequent urination, abdominal pain, weakness, blurred vision, fatigue and other additional symptoms) in whom serum glucose levels were [?]200 mg/dL were retrospectively analyzed. All data about the patients were obtained from the hospital registry system, the Ministry of Health e-pulse application, and patient files.

Exclusion criteria were applied after excluding patients who had previously been diagnosed as having diabetes (T1DM or T2DM). Accordingly, patients aged under 18 years, pregnant women, patients who used hormones or drugs to raise blood glucose levels, patients with exocrine pancreatic diseases, endocrinopathies or active infection, patients who were admitted due to major trauma, and patients with missing files were not included in the study.

Patients' age, sex, date of admission [month and hour (00-06/06-12/12-18/18-00)], whether there was disease in their history, blood parameter levels at the time of admission (hemoglobin, leukocyte, platelet, glucose, sodium, potassium, chlorine, calcium, urea, creatinine, blood gas) and ketone results in urine were investigated.

We included a total of 140 patients with newly diagnosed T2DM. We analyzed these patients under three groups: patients who had not been to an outpatient clinic for treatment (group 1), patients in whom drug treatment was started (group 2), patients in whom drug treatment was not started (group 3). When we examined the patients (n =86) who were admitted to the outpatient clinic for diagnosis and treatment, we found that the number of patients with glucose levels between 200-300 mg/dL was higher. We divided these patients into two groups: Patients with serum glucose level [?]300 mg/dL and <300 mg/dL.

Statistical analysis

Statistical analysis was mainly performed using the Predictive Analysis Soft Ware (PASW) program (version 18.0; SPSS, Chicago, IL). Data for quantitative variables were defined as mean ± standard error (SEM). Data on categorical variables were defined as numbers and / or percentages. If the continuous variables did not have normal distribution, they were evaluated using the Shapiro-Wilk test. All tests were two tailed and $p<0.05$ was considered significant. The Chi-square test or Fisher's exact test was used to compare categorical variables. The Kruskal-Wallis test was used in triple-group comparisons because the groups met nonparametric assumptions. In cases where a difference was observed, the Bonferroni-corrected Mann-Whitney U test was used to understand from which group this difference originated. In group comparisons, Bonferroni correction was used to avoid estimated type 1 errors and p values <0.017 were considered statistically significant

RESULTS

When the patients who were admitted to the emergency department were scanned in the last year, the total number of patients with serum glucose levels [?]200 mg/dL was 838. Of these, 616 patients who were previously diagnosed as having DM were excluded from the study. The remaining 222 patients did not know that they had DM. A total of 140 patients were included in the study after patients who met our exclusion criteria were excluded (Figure 1).

No patients were diagnosed as having T1DM, only one patient was diagnosed as having GDM and this patient was excluded (Figure 1**).**

The mean age of the patients was 64.77 +- 15.88 years. Seventy-three (52.1%) were men and 67 (47.9%) were women. Group 1 comprised patients whom had never attended any internal medicine or endocrinology

outpatient clinics for DM (n=54, 38.57%). When the outpatient clinic records of the remaining 86 patients were examined for DM treatment, it was determined that medication was not started in 50 patients (35.71%) (group 2), and that medication was started in 36 patients (25.71%) (group 3.) The male and female ratios of groups 1, 2, and 3 were close to each other (Table 1).

When the mean ages of all three groups were compared, a significant difference was detected ($p<0.05$). The mean age of group 1 was significantly higher than in group 2 and group 3 according to the Bonferroni-corrected Mann-Whitney U test. The mean ages of group 1, 2, and 3 were 69.6 +- 13.6 years, 61.1 +- 14.9 years, and 60.9 +- 17 years, $p<0.017$, respectively) (Table 1).

No statistically significant relationship was found between patients' sex, glucose levels, and other blood parameters ($p>0.05$). When the patients were examined according to their admission months, it was seen that the highest number of admissions (n=18, 12.9%) was in March. When the admission hours were examined, an increase was observed in the frequency of admissions in the afternoon and evening hours. However, when the admission months and hours were examined, there was no statistically significant relationship between the groups ($p>0.05$) (Data not shown).

When the medical histories of the patients were scanned, it was found that cardiovascular, respiratory, neurologic, psychiatric, digestive, endocrine, and renal system diseases were most frequent. When the groups with and without medication were compared in terms of additional diseases, no difference was found between the two groups in terms of non-renal diseases. There were significantly fewer patients with renal disease in the group in which medication was initiated than in the group for which medication was not initiated ($p=0.019$) (Table 2).

Patients who were admitted to outpatient clinics for treatment were compared in terms of serum glucose levels. Patients with glucose levels [?]300 mg/dL were significantly more likely to be on medication than those with glucose levels <300 mg/dL ($p=0.031$). Again, the 95% confidence interval (CI) value of the group with glucose levels [?]300 mg/dL was found as 1.08-7.76 (Table 3).

DISCUSSION

This study is the first and only pilot study on the incidental diagnosis of DM in emergency departments in Turkey. Although the priority of emergency departments is not to diagnose chronic diseases, they have an important role in the detection of DM. In studies conducted on the sex distribution of DM, it was observed that the distribution of women and men was very similar. [9,10] Sharma et al. found that the frequency of diabetes in both sexes increased in poor regions as the age progressed. Similarly, in our study, the male and female ratio was similar. [11]

The mean ages of the patients with DM were found as 61.0 +- 12.1, 62.1 +- 9.7, 65 +- 19, and 62.7 +- 19.4 years in the studies by Akaltun et al,[12] Ludovico et al,[13] Iglay et al,[14] and Layton et al,[15]respectively. Our study was compatible with the literature; we thought that our study performed in a region with low economic income and that the comorbid diseases increasing with age increased the incidence of DM in our study.

On the other hand, several studies have been conducted examining the relationship between DM frequency and seasonal change. In a study by Katsarou et al,[16] it was found that the blood glucose levels were the lowest in winter and the highest in summer. In the study where Bando et al., investigated the relation between seasonal variability and HbA1c in Japan, it was found that HbA1c increased in the summer months and decreased in the autumn months. [17]In another study, the seasonal changes and the length of the seasons were thought to be effective on the frequency of DM. Unlike the literature, the long period of winter in the Kars province caused approximately 40% of our patients to be detected in this season. We believed that the high number of patients in the winter months compared with other months was due to the effects of decreased physical activity, nutritional culture, consumption of foods rich in carbohydrates, and less exposure to sun rays on endocrine metabolism.

When studies investigating the hours of admission to the emergency department were examined, it was

found that 46% of patients were admitted between 08:00 and 17:00 in the study by Emet et al,[18]. In the study conducted by Kose et al,[19] it was found that the admissions between 08:00-17:00 constituted 60.5% of the total admissions. There is no study on admission hours of patients with newly diagnosed DM to the emergency department; our study is the first in this regard. Although newly diagnosed DM was more common between 18:01-00:00 compared with other hours, it was noteworthy that the admissions between 12:01-00:00 constituted 67.9% of all admissions.

GDM is the glucose intolerance that occurs for the first time during pregnancy. GDM can be seen in approximately 7% of all pregnancies.[20] It is not possible to diagnose GDM in emergency departments because GDM is diagnosed with OGTT. In our study, a patient was diagnosed as having GDM after being referred to an outpatient clinic. The number of patients with DM related to pregnancy was low in our study because pregnant women preferred outpatient clinics rather than emergency departments.

On the other hand, the presence of hyperglycemia may affect serum electrolyte concentrations in patients. These individuals may experience electrolyte disturbances due to osmotic variations, drugs used, acid-base imbalances, and renal dysfunction. [21] A negative correlation between serum glucose and serum sodium levels was detected, but there was no correlation between other parameters in a study on the relation between diabetes and electrolyte levels.[10] In our study, no significant relationship was found between glucose levels and electrolyte levels. We think that there is a need for more extensive research on this subject.

We observed that 38.5% of the patients that we sent to the outpatient clinic with a suspicion of DM did not make an outpatient admission. We thought that the most important reason for this situation was low health literacy, which includes planning lifestyle in chronic diseases, making informed decisions, and knowing when and how to access health services.[22] Studies have reported that health literacy is low among patients with diabetes. [23,24]

Late diagnosis and late starting of treatment creates irreversible complications as well as increased treatment costs and economic burdens. Studies on the increase in the economic burden caused by diabetes seem to be most prominent. Zhuo et al, [25] stated that the cost of lifelong medical treatment after a patient is diagnosed as having DM at the age of 50 would be $135,000.

A study was conducted on patients who were admitted to the emergency department with random finger-stick blood glucose value above 126 mg/dL. It was observed that 41% of the patients had a history of DM.[26] In our study, this rate was 26.49% among patients with a serum glucose level above 200 mg/dL. For the first time, we determined the frequency of incidentally diagnosed DM in the emergency department as 16.70%. It has become necessary to diagnose DM in emergency departments because diabetes is a serious health problem both for a country's economy and for patients.

4.3. Study limitations

The inability to measure HbA1C levels in the emergency department, inability to perform OGTT in the emergency department due to the intensity of work in the department, and limited time and personnel, limitations in reaching the electronic data of some patients, and missing examinations and tests were the limitations of the study. The population of Kars is small and our study sample was limited, resulting in a low number of patients.

CONCLUSIONS

This study we observed that patients with blood glucose levels [?]300 mg/dL received more treatment. We are in the opinion of that newly diagnosed diabetic patients with glucose levels between 200-300 mg/dL it gives less dangerous symptoms in patients in comparison with levels of [?]300 mg/dL but this patient population should be immediately sent to any internal medicine or endocrinology outpatient clinics in patients. Diagnosis and treatment at the right time in diabetes mellitus may be a protective factor from renal disease. When we reviewed the international study data, we found that prospective studies with more patients were needed.

ETHICAL APPROVAL

This study was approved by the Kafkas University Ethics Board and Commission (approval no: 80576354-050-99/145).

FINANCIAL SUPPORT

The authors have no relevant financial information to disclose.

DISCLOSURE

The authors have no potential conflicts to disclose.

AUTHOR CONTRIBUTIONS

L.S. designed and coordinated the study. L.S. and D.E. wrote the initial draft of the article. All authors critically reviewed and approved the present article.

REFERENCES

1.American Diabetes Association. Diagnosis and classification of diabetes mellitus. Diabetes Care. 2010 Jan;33 (1):62-69. doi.org/10.2337/dc14-S081

2. Atmaca A. Criteria for diagnosis and follow-up diabetes mellitus. Journal of Experimental and Clinical Medicine. 2012;29(1):2-6. doi: 10.5835/jecm.omu.29.s1.002.

3. Tanrıverdi MH, Çelepkolu T, Aslanhan H. Diabetes mellitus and primary healthcare. J Clin Exp Invest. 2013;4(4):562-567. doi.org/10.5799/ahinjs.01.2013.04.0347

4. International Diabetes Federation (IDF) Diabetes Atlas. 9th edition. Key figures. 2019.

5. Zheng Y, Ley SH, Hu FB. Global aetiology and epidemiology of type 2 diabetes mellitus and its complications. Nat Rev Endocrinol. 2018;14(2):88–98. doi: 10.1038 / nrendo.2017.151

6. Gizlici M, Çatak J. Diabetes Mellitus ve Çinko İlişkisi. Türkiye Diyabet ve Obezite Dergisi. 2019; 3(2): 113-107. doi: 10.25048/tjdo.2019.48

7. International Expert Committee. International Expert Committee report on the role of the A1C assay in the diagnosis of diabetes. Diabetes Care. 2009 Jul;32(7): 1327-1334. doi: 10.2337/dc09-9033

8. American Diabetes Association. Standards of medical care in diabetes-2011. Diabetes Care. 2011 Jan; 34(1): 11-61. doi: 10.2337/dc11-S011

9. Rashidi M, Genç A. Tip 1 ve Tip 2 Diyabetli Hastaların Diyabet Tutumlarının Değerlendirilmesi. IGUS-ABDER. 2020; 10: 34-49.

10. Özsan M, Yaprak M, Özcan O, Kiriktir E, Turgut F. Tip 2 diyabetli hastalarda elektrolit bozuklukları. Turk Neph Dial Transpl. 2017; 26 (3): 285-289.

11. Sharma M, Irwin N, Irene P. Trends in incidence, prevalence and prescribing in type 2 diabetes mellitus between 2000 and 2013 in primary care: a retrospective cohort study. BMJ open. 2016;6(1): e010210.

12. Akaltun H, Ersin F. Evde Bakım Hizmeti Alan Diyabetli Hastaların Diyabet Tutum ve Davranışlarının Belirlenmesi. Dokuz Eylül Üniversitesi Hemşirelik Fakültesi Elektronik Dergisi. 2016;9 (4).

13. Ludovico O, Carella M, Bisceglia L, et al. Identification and clinical characterization of adult patients with multigenerational diabetes mellitus. PloS One. 2015; 10(8). doi: 10.1371 / journal.pone.0135855

14. Iglay K, Hannachi H, Howie PJ, et al. Prevalence and co-prevalence of comorbidities among patients with type 2 diabetes mellitus. Current Medical Research and Opinion. 2016;32(7):1243-1252. doi: 10.1185/03007995.2016.1168291

15. Layton M. Routine glucose assessment in the emergency department for detecting unrecognised diabetes: a cluster randomised trial. 2019 Nov; 211(10):454-459. doi: 10.5694/mja2.50394

16. Katsarou A, Claesson R, Ignell C, Shaat N, Berntorp K. Seasonal pattern in the diagnosis of gestational diabetes mellitus in southern Sweden. Journal of diabetes research. 2016. doi.org/10.1155/2016/8905474

17. Bando H, Kato Y, Kanazawa H, et al. Glycemic control may be influenced by climate changes in type 2 diabetes mellitus (T2DM). Recent Research in Endocrinology and Metabolic Disorder. 2019; 1(1): 1-6. doi :10.33702/rremd.2019.1.1.1

18. Emet M, Uzkeser M, Eroğlu M, Aslan S, Çakır Z. The Rate of Annual Visits to the Emergency Clinic of a State Hospital and its Relationship with Time. The Eurasian Journal of Medicine. 2007;39: 119-23.

19. Köse A, Köse B, Öncü MR, Tuğrul F. Admission appropriateness and profile of the patients attended to a state hospital emergency department. Gaziantep Med J. 2011;17(2): 57-62. doi: 10.5455/GMJ-30-2011-27

20. American Diabetes Association. Standards of Medical Care in Diabetes. Diabetes Care. 2014; 37(1): 14-80. doi.org/10.2337/dc14-S014

21. Palmer BF, Clegg DJ. Electrolyte and acid-base disturbances in patients with diabetes mellitus. The New England journal of medicine. 2015;373(25):548-559. doi: 10.1056/NEJMra1503102

22. World Health Organization. Health Literacy: The Solid Facts. 2013.

23. Mohammadi Z, Banihashemi AT, Asgharifard H, Bahramian M, Baradaran HR, Khamseh ME. Health literacy and its Influencing Factors in Iranian Diabetic Patients. Medical Journal of the Islamic Republic of Iran. 2015 Jul; 11(29): 230.

24. Hussein SH, Almajran A, Albatineh AN. Prevalence of Health Literacy and its Correlates among Patients with Type II Diabetes in Kuwait: A Population Based Study. Diabetes Research and Clinical Practice. 2018 Jul; 141:118-125. doi: 10.1016/j.diabres.2018.04.033

25. Zhuo X, Zhang P, Barker L, Albright A, Thompson TJ, Gregg E. The lifetime cost of diabetes and its implications for diabetes prevention. Diabetes Care. 2014; 37(9): 2557– 2564. doi.org/10.2337/dc13-2484

26. Friedman SM, Vallipuram J, Baswick B. Incidental findings of elevated random plasma glucose in the ED as a prompt for outpatient diabetes screening: a retrospective study. BMJ open. 2013 Dec;3(12): e003486. doi: 10.1136/bmjopen-2013-003486

TABLES

TABLE 1. Comparison of demographic characteristics and laboratory results of patients with newly diagnosed DM by their treatment status

	Patients who do not go to control Group 1	Drug started Group 2	Drug not started Group 3	Total Patients	P*
Number of patients (n, %)	54 (38.5)	36 (25.7)	50 (35.7)	140 (100)	
Woman Man (n, %)	28 (51.9) 26 (48.1)	19 (52.8) 17 (47.2)	26 (52) 24 (48)	73 (52.1) 67 (47.9)	0.99
Age (yr)	69.6 ± 13.6	61.1 ± 14.9$^{\mu}$	60.9 ± 17 $^{\mu}$	64.77 ± 15.88	0.008
Glucose	298.8 ± 111.9	280.9 ± 71.3	257.6 ± 72.1	280.23 ± 90.84	0.058
Hemoglobin (g / dL)	13.9 ± 2.1	14.6 ± 1.9	14 ± 1.6	14.15 ± 1.92	0.109
Leukocyte (K / mm^3)	13.5 ± 25.8	9.3 ± 3.7	11.5±14.5	11.75 ± 18.30	0.345

	Patients who do not go to control Group 1	Drug started Group 2	Drug not started Group 3	Total Patients	P*
Platelets (K/mm3)	218.7± 96.6	212.8 ± 63.3	307.7 ± 514	249.00 ± 316.21	0.185
Urea (mg/ dL)	55.3 ± 43.8	43.5 ± 19	51 ± 29.4	50.76 ± 33.90	0.542
Creatinine (mg/ dL)	1.2 ± 0.68	1 ± 0.35	1.1 ± 0.54	1.15 ± 0.56	0.550
Na (mEq/L)	137.1 ± 4.7	135.6 ± 4.4	136.8 ± 4.8	136.66 ± 4.71	0.211
K (mEq/L)	4.5 ± 0.9	4.2 ± 0.4	4.2 ± 0.56	4.37 ± 0.75	0.422
Cl (mEq/L)	98 ± 14	98.1 ± 4.9	100.6 ± 5.74	99.01 ± 9.73	0.096
Ca (mg/dL)	8.8 ± 0.7	8.7 ± 0.7	8.7 ± 1	8.80 ± 0.82	0.958
:Pearson's chi-square, $^{\mu}$ P< 0.017, g1versus 2, g1versus 3; $^{\mu:}$ Bonferroni corrected Mann Whitney U test; Data are presented as the mean ± standart deviation	*:Pearson's chi-square, $^{\mu}$ P< 0.017, g1versus 2, g1versus 3; $^{\mu:}$ Bonferroni corrected Mann Whitney U test; Data are presented as the mean ± standart deviation	*:Pearson's chi-square, $^{\mu}$ P< 0.017, g1versus 2, g1versus 3; $^{\mu:}$ Bonferroni corrected Mann Whitney U test; Data are presented as the mean ± standart deviation	*:Pearson's chi-square, $^{\mu}$ P< 0.017, g1versus 2, g1versus 3; $^{\mu:}$ Bonferroni corrected Mann Whitney U test; Data are presented as the mean ± standart deviation	*:Pearson's chi-square, $^{\mu}$ P< 0.017, g1versus 2, g1versus 3; $^{\mu:}$ Bonferroni corrected Mann Whitney U test; Data are presented as the mean ± standart deviation	*:Pearson's chi-square, $^{\mu}$ P< 0.017, g1versus 2, g1versus 3; $^{\mu:}$ Bonferroni corrected Mann Whitney U test; Data are presented as the mean ± standart deviation

TABLE 2. Comparison of the group in which medication was initiated and the group in which medication was not initiated in terms of additional disease

Chronic system illness	Drug started **n, %**	Drug not started **n, %**	**P***
Cardiovascular	23(63.9)	31(62)	0.85
Respiratory	17(47.2)	21(42)	0.63
Neurological	11(30.6)	15(30)	0.95
Psychiatric	8(22.2)	5(10)	0.11
Endocrine	7(19.4)	6(12)	0.34
Digestive	10(27.8)	15(30)	0.82
Renal	0 (0.0)	8 (100)	0.019**
***:** Pearson's chi-square; **: Fisher's **exact test**	***:** Pearson's chi-square; **: Fisher's **exact test**	***:** Pearson's chi-square; **: Fisher's **exact test**	***:** Pearson's chi-square; **: Fisher's **exact test**

TABLE 3. Comparison of glucose levels between the group in which medication was initiated and the group in which medication was not initiated

			Drug started n, %	Drug not started n, %	P*	OR**	%95 CI***
Glucose level (mg/dl)		[?]300	14(60.9)	9(39.1)	0.031	2.89	1.08-7.76
		<300	22(34.9)	41(65.1)			
:Pearson's chi-square; **: Odds Ratio; ***: Confidence Interval	*:Pearson's chi-square; **: Odds Ratio; ***: Confidence Interval	*:Pearson's chi-square; **: Odds Ratio; ***: Confidence Interval	*:Pearson's chi-square; **: Odds Ratio; ***: Confidence Interval	*:Pearson's chi-square; **: Odds Ratio; ***: Confidence Interval	*:Pearson's chi-square; **: Odds Ratio; ***: Confidence Interval	*:Pearson's chi-square; **: Odds Ratio; ***: Confidence Interval	*:Pearson's chi-square; **: Odds Ratio; ***: Confidence Interval

FIGURE LEGEND

FIGURE 1. İncidental detected DM flow chart

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