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Clinical characteristics and outcomes of pregnant women admitted to the emergency department

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Abstract

Aim: To evaluate the demographic and obstetric characteristics, complaints, and outcomes of pregnant patients who presented to the emergency department (ED).

Materials and Methods: Pregnant women aged 18 years and over who presented to the ED of our hospital between September 30, 2020, and September 30, 2021, were retrospectively included in the study. The clinical data of the patients were obtained from the hospital's electronic database. The patients' age, gestational week, complaints at the time of presentation to ED, distribution of diagnoses, and outcomes (admission and discharge) were recorded.

Results: A total of 561 pregnant patients were included in the study. The mean age of the patients was 27.6±5.7 years, and 42.6% were in the third trimester. We found that 59.8% of the cases presented to ED for obstetric reasons and 40.2% for non-obstetric reasons. While 55.5% of the patients with obstetric presentations underwent emergency delivery, 51.3% of the those with non-obstetric presentations had respiratory tract infections. In addition, 90.7% of the patients with obstetric presentations were hospitalized. The hospitalization rate of those with obstetric presentations was statistically significantly higher than the non-obstetric presentation group ($p<0.001$).

Conclusion: We found that the ED visits of pregnant women mostly occurred during the third trimester and for obstetric reasons. The early detection of life-threatening complications in pregnant women is critical for the health of both the mother and fetus. It is important to increase the awareness of clinicians concerning obstetric emergencies due to the special nature of this patient population and frequency of emergency surgical interventions.

Introduction

Pregnancy and childbirth are considered a normal phase in life. However, during pregnancy, women may face various complications that threaten their own and their babies' lives and may require urgent interventions [1]. Most complications that occur in pregnancy can be prevented or treated [2]. Therefore, risky situations during pregnancy should be taken under control without threatening the health and life of the mother or the fetus. Thus, the early detection and treatment of life-threatening complications in pregnant women who present to the emergency department (ED) are critical [3]. In recent years, there has been an increase in the number of patients admitted to ED, which has resulted in a reduction in the special attention and care provided for pregnant patients.

Anatomical and physiological changes related to pregnancy can complicate diagnosis and treatment. In addition, emergency clinicians must simultaneously manage both the mother and the fetus. Clinicians should be aware that they take responsibility for two individuals, and the best treatment for the fetus is to treat the mother. It is of great importance to raise awareness concerning pregnancy emergencies in emergency clinicians due to the special nature of this patient population and frequency of emergency surgical interventions. Therefore, in this study, we aimed to evaluate the demographic and obstetric characteristics, complaints, and outcomes of pregnant patients who presented to ED.

Materials and Methods

This is a retrospective descriptive study, so it does not test any hypotheses. The study was carried out with the ap-

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proval of the Clinical Research Ethics Committee of Aksaray University with the decision dated 07.04.2022 and numbered 2022/07-10. Pregnant patients aged 18 years and over who presented to the ED of our tertiary hospital between September 30, 2020, and September 30, 2021, were included in the study. The clinical data of the patients were obtained from the electronic database of the hospital and by retrospectively screening the patient files. The patients' age, gestational week, complaints at the time of presentation to ED, distribution of diagnoses, and outcomes (admission and discharge) were recorded. Patients aged under 18 years, those whose records could not be reached, those that were transferred to another hospital, and those without unconfirmed pregnancy were excluded from the study. The primary outcome was discharge disposition after admission to the ED. The secondary outcomes were ED visit characteristics and presentation to ED for obstetric and non-obstetric reasons.

Statistical analysis

According to previous studies [4,5] the rate of ED use during pregnancy was estimated as 21%, and power analysis was performed by calculating the estimated rate as 5% lower and 5% higher than the actual population rate. The sample size was found to be at least 448 with 80% power, 95% confidence interval and α=0.05 margin of error. The Statistical Package for the Social Sciences v. 22.0 (SPSS Inc., Chicago, IL, USA) was used for statistical analyses. Descriptive statistics for continuous variables in the study group were presented as mean ± standard deviation and median (minimum–maximum) values, and categorical variables as numbers (n) and percentages (%). The conformity of continuous data to the normal distribution was evaluated with the Kolmogorov-Smirnov test. Pearson's chi-square test was used in the analysis of categorical data. A p value of <0.05 was considered statistically significant.

Results

The mean age of the 561 pregnant patients included in the study was 27.6 ± 5.7 years. When the frequency of presentations was evaluated according to the age groups of the patients, it was found that the most common age group was 25-29 (32.4%) years. Of the patients, 37.8% were in the first trimester, 19.6% were in the second trimester, and 42.6% were in the third trimester. The most common symptoms were fever (40.3%), abdominal pain (38.3%), and urinary symptoms (18.7%). Table 1 shows the demographic and clinical characteristics of the patients. We determined that 59.8% of the patients presented to ED for obstetric reasons and 40.2% for non-obstetric reasons (Table 2). While 55.5% (n = 186) of the patients with obstetric presentations underwent emergency delivery, 51.3% (n = 116) of those with non-obstetric presentations had respiratory tract infections. In addition, 90.7% (n = 304) of the hospitalized patients were due to obstetric causes, 4.0% (n = 9) were due to non-obstetric causes. The rate of hospitalization among the patients with obstetric presentations was statistically significantly higher compared to the non-obstetric group ($p < 0.001$) (Table 3).

Table 1. Maternal characteristics and patients' clinical presentation.

Age group (years)		
Mean ± SD: 27.6 ± 5.7	Frequency	Percentage
<20	35	6.2
20–24	158	28.2
25–29	182	32.4
30–34	103	18.4
>35	83	14.8
Gestational trimester		
First trimester	212	37.8
Second trimester	110	19.6
Third trimester	239	42.6
Complaints		
Abdominal pain	215	38.3
Nausea and vomiting	72	12.8
Amniotic fluid leakage	21	3.7
Reduced fetal movements	45	8.0
Vaginal bleeding	74	13.2
Fever	226	40.3
Headache	90	16.0
Vertigo/dizziness	16	2.9
Diarrhea	18	3.2
Chest pain	27	4.8
Urinary symptoms	105	18.7
Pregnancy and traffic accident	3	0.5
Pregnancy and falling	9	1.6
Other	34	6.1

Discussion

The level of maternal and infant mortality is accepted as an important development indicator that shows the quality of health services provided in a country. Pregnancy is a physiological process in which complications that may require urgent interventions may develop for the mother and the fetus [6]. A potentially life-threatening complication requiring professional care develops in approximately 15% of pregnancies [7,8]. Therefore, it is critical for emergency physicians to detect complications that may occur during pregnancy at an early stage. In our study, we found that ED visits among pregnancy women were most common in the third trimester (42.6%). Fever (40.3%), abdominal pain (38.3%), and urinary symptoms (18.7%) were the leading indications for ED visits. We determined that 59.8% of the patients presented to ED for obstetric reasons and 40.2% for non-obstetric reasons. We also found that the hospitalization rate of pregnant women with obstetric reasons was statistically significantly higher than those with non-obstetric presentations.

Anatomical and physiological changes that occur during pregnancy may delay the emergence of specific symptoms and signs of clinical conditions that will require surgical interventions in patients. This can complicate early diagnosis and treatment. In a study conducted in the United States of America, it was shown that the rate of ED visits varied between 21 and 58% among pregnant women, and

Table 2. Diagnosis of obstetrics and non-obstetric causes.

Obstetric presentation (n = 335)	Frequency	Percentage	Non-obstetric presentation (n = 226)	Frequency	Percentage
Emergency delivery	186	55.5	Respiratory tract infection	116	51.3
Complete/incomplete abortion	103	30.7	Lower urinary tract infection	64	28.3
Hyperemesis gravidarum	29	8.7	Pyelonephritis	5	2.2
Ectopic pregnancy	15	4.5	Acute gastroenteritis	18	8.0
Hypertension	2	0.6	Others	23	10.2

Table 3. Distribution of inpatients and outpatients with obstetric or non-obstetric presentations.

Variables	Obstetric presentation	Non-obstetric presentation	P-value
Outpatient treatment	31 (9.3%)	217 (96.0%)	<0.001
Hospitalization	304 (90.7%)	9 (4.0%)	

the rate of ED revisits in this group was higher than that of non-pregnant women [9,10]. In a retrospective cohort study, Vladutiu et al. reported that 99,843 (58.1%) of 171,909 pregnant patients presented to ED [11]. The authors determined that approximately 28% of all visits took place in the first trimester, 28% in the second trimester, and 44% in the third trimester. The most common reason for presentation to ED was the initiation of labor and abdominal pain. In another study, it was reported that 39.4% of pregnant patients visited ED, with the most common reason for this visit being threatened abortion (7.7%), followed by unspecified hemorrhage in early pregnancy (6.4%), and spontaneous abortion (4.5%) [12]. In our study, we found that the pregnant women most commonly visited our ED in the third trimester and mostly due to fever and abdominal pain. Hormonal changes during pregnancy and the growing fetus can cause various discomforts in the abdomen as pregnancy progresses. This may have been the reason why pregnant women mostly presented to ED with abdominal pain as a general symptom. We also consider that the high frequency of fever complaint in our study may have been due to the effect of the COVID-19 pandemic during our study period.

Pregnant women may visit ED for many reasons related to pregnancy or non-pregnancy. In a retrospective study including 696 pregnant women, Nekkanti et al. reported that 65.9% presented to ED with obstetric and 34.1% with non-obstetric symptoms [13]. The authors found that the most common reasons for obstetric presentations were threatened abortion (16.8%) and hyperemesis gravidarum (12.7%), while non-obstetric presentations were mostly related to respiratory tract infections (10%), and 39.7% of all these patients required hospitalization. In the current study, 55.5% of the patients with obstetric presentations underwent emergency delivery, while 51.3% of those admitted with non-obstetric presentations had respiratory tract infections. Of the patients with obstetric complaints, 90.7% required hospitalization, while 96% of those with non-obstetric presentations received outpatient treatment. We consider that the most important reason for the number of patients presenting to our ED for emergency delivery is the poor organization of outpatient services. This study has certain limitations. First, due to its retrospective nature, data were limited to the records that could be access from the hospital database. Second, the hospital where we conducted the study being a tertiary care center in the region may have led to the accumulation of women in a single center for delivery through referral from external centers. Third, some of the patients had recurrent visits, but only their first visit was included in the evaluation. Finally, the study was conducted in a single center. However, we consider that the findings obtained from this study are important in terms of guiding future research.

Conclusion

In conclusion, we found that ED visits during pregnancy mostly occurred in the third trimester and for obstetric reasons. Pregnancy is a physiological and long process that concerns the life of both the mother and the fetus. In this process, it is critical for the health of the mother and the fetus to identify life-threatening complications in the early period. It is extremely important for clinicians to be aware of the individual and clinical characteristics of pregnant women in obstetric emergencies to prevent possible risks. There is a need for further scientific studies to evaluate pregnant cases in emergency health services.

Ethics approval

The study was carried out with the approval of the Clinical Research Ethics Committee of Aksaray University with the decision dated 07.04.2022 and numbered 2022/07-10.

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