

Clinical features of emergency department patients with depression who had attempted to commit suicide by poisoning

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Abstract

Background: Many patients present to the emergency department (ED) complaining of intentional poisoning. Of those, some have major depressive disorder (MDD) in their medical history. The aim of this study was to investigate the prevalence of MDD patients who were treated for poisoning in the ED.

Materials and Methods: A retrospective review was performed on 268 patients who were treated with poisoning between July 2007 and November 2011. Of these patients, we only included those who were over 18 years of age. Information regarding age, gender, cause, time of ingestion, type of drug, history of attempting suicide, and outcome, among other characteristics, was collected and compared to patients who did not have MDD.

Results: A total of 244 patients were included in this study. Of those, 52 patients (21.3%) had a history of MDD. Compared to non-MDD patients, a majority (34.6% vs. 19.8%) of those in the MDD group had a history of suicide attempts ($P = 0.027$), and 34 (65.4% in the MDD group vs. 34.4% in the non-MDD group) took more than two types of drugs ($P < 0.001$). There were no differences in age, sex, time of ingestion or disease severity between MDD and non-MDD patients.

Conclusion: In poisoning patients with MDD, physicians in the ED must consider that they have a higher tendency to show suicidal behavior and to have ingested multiple types of drugs.

Key words: Depressive disorder, emergencies, poisoning, suicide

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Introduction

Suicide is defined as a death by a fatal act of the individual's own will for death.^[1] Suicide has become a serious social problem in Korea. According to a report from the Organization for Economic Cooperation and Development (OECD), the suicide rate in Korea in 2012 (29.1 people out of 1, 00, 000) was the highest among those of OECD-member countries and unlike the decreasing

suicide rate of Western countries, the rate has increased rapidly.^[2] The most commonly used suicidal methods are poisoning, stabbing, hanging, and jumping to fall, among others.^[3]

Severe depression is a serious condition that may cause serious consequences in the daily and social life of affected individuals. Depression causes various symptoms, such as feeling low, loss of interest, feeling guilty and worthless, and

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experiencing a sleep or an appetite disorder, among others.^[4] More than 90% of patients who commit suicide have a psychiatric problem including depression.^[5] In addition, individuals with major depressive disorder (MDD) attempt suicide 20 times more as compared to individuals without MDD, and four times more than patients diagnosed with other mental diseases. Therefore, MDD is known as a major risk factor for attempting suicide.^[6] A difference in the existence of depression among the patients presented with a history of poisoning, the largest portion of the patients who present to an emergency department (ED) for suicide attempts, is expected. Therefore, we investigated the prevalence of depression among the patients who presented to an ED with poisoning, with the aim of providing an appropriate treatment guideline to physicians performing the first medical examination to poisoning patients in the ED.

Materials and Methods

Among all of the patients visiting the Yeouido St. Mary's Hospital ED from July 1, 2007 to November 30, 2011, patients presented with poisoning to commit suicide were subject to review in this retrospective study. This hospital is a tertiary teaching hospital and is located in the capital of the Republic of Korea, where 35,000 patients were treated annually. The exclusion criteria were as follows: Patients under the age of 18, patients without a suicidal purpose, and patients with an unknown purpose. During the period of data collection, a total 276 patients over 18 years of age came to the ED due to drug poisoning. Of the excluded cases, 13 did not have a suicidal purpose, and 19 cases had an unknown purpose. A total of 244 cases were included in this study.

After obtaining hospital institutional review board approval, we retrospectively collected data and analyzed patient information. Information regarding the gender, age, existence of depression, reason of poisoning, time since ingestion of the substance, substance used for poisoning, previous history of attempting suicide, and treatment result were collected. MDD group was included only when clinical psychiatrist diagnosed or treated the patient with MDD before this event according to the Diagnostic and Statistical Manual of Mental Disorders-IV criteria. Previous suicide attempt was defined as the past self-injurious behavior with failed results, plan, idea that the patient intended to kill himself/herself. A history about the existence of MDD and previous suicide attempt was collected from the patient or their guardian (e.g., parent, friend, sister, brother, witness) during the ED visit.

The severity of acute poisoning is classified by poisoning severity score (PSS). PSS ranges from 0 to 4, with 0 presenting no symptoms or signs (none), (1) mild, transient and spontaneously resolving symptoms or

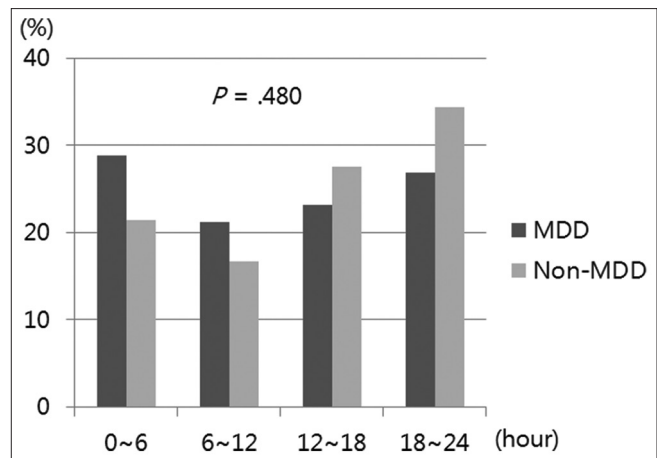


Figure 1: Distribution of time of poisoning incident

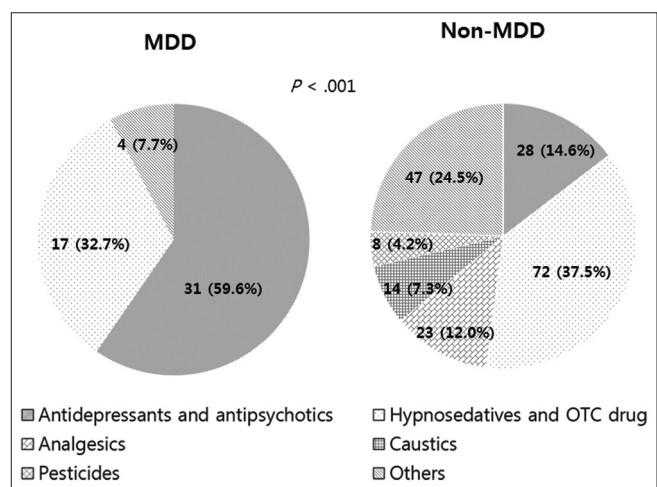


Figure 2: Types of ingested substances among poisoning patients. Antidepressant and antipsychotic medication was the most commonly taken in the MDD group

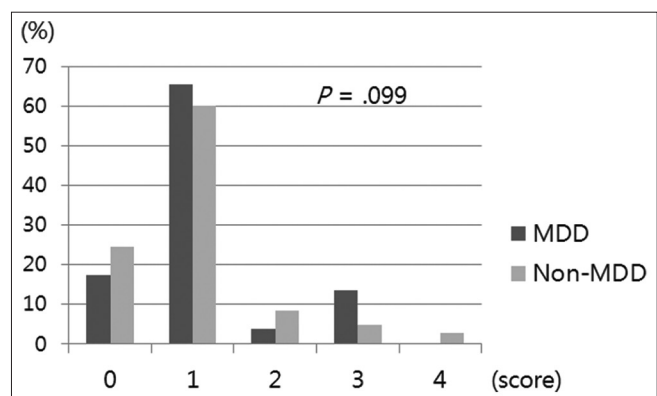


Figure 3: Initial poisoning severity score of poisoning patients in the emergency department. There were no significant differences between the MDD group and the non-MDD group (P=0.099)

signs (minor), (2) pronounced or prolonged symptoms or signs (moderate), (3) severe or life-threatening symptoms or signs (severe), and (4) death (fatal).

Using the SPSS 12.0 (SPSS Inc., Chicago, IL, USA) was used for the statistical analysis, cross analysis was performed for discontinuous variables, and a *t*-test was used for the continuous variable. $P < 0.05$ was considered to indicate a statistically significant difference.

Results

Among the patients, 52 (21.3%) were diagnosed with MDD before admission to the ED and 192 (78.7%) were not diagnosed. The average age of the patients in the MDD group was 40.5 ± 16.7 years and in the non-MDD group was 43.9 ± 18.6 years ($P = 0.226$). In addition, the number of females was higher than that of males (82.7%, 70.8%, respectively) in the both group ($P < 0.001$).

Regarding the types of substances taken in the poisoning event, 34 (65.4%) individuals with MDD took two or more types of substances, whereas only 66 (34.4%) of non-MDD individuals did so ($P < 0.001$). Regarding previous suicide attempts, 18 (34.6%) of MDD and 38 (19.8%) of non-MDD patients had attempted suicide ($P = 0.024$).

With regard to the time that the drug was taken, both groups showed evenly distributed data between day and night. More than half of both groups had

visited the ED within 3 h of poisoning ($P = 0.582$) [Figure 1 and Table 1].

Concerning the types of drugs ingested, antidepressant and antipsychotic medications were the most commonly used (31, 59.6%), hypnotosedatives and over the counter (OTC) drugs were the second common (17, 32.7%) in the MDD group. In the non-MDD group, hypnotosedatives and OTC drugs were the most commonly used (72, 37.5%), antidepressants and antipsychotics drugs were taken by 28 (14.6%), and analgesics by 23 (12.0%) [Figure 2].

In the disposition of the ED, 27 (51.9%) patients in MDD group were admitted and 18 (34.6%) were discharged. In the non-MDD group, 81 (42.2%) were admitted, 78 (40.6%) discharged, and 1 (0.5%) died in the ED. However, there was no significant difference between the two groups in regard to disposition in the ED ($P = 0.683$) [Table 2].

Evaluation of severity through the PSS by acute poisoning showed that there was no significant difference between the two groups ($P = 0.099$) but 5 deaths occurred in the non-MDD group, including the 1 patient who died in the ED [Figure 3].

Discussion

It is known that neuropsychiatric disorder incidence is closely related to suicide attempts, and MDD is known to be the major cause of such attempts.^[7-10] According to a report from a study conducted in Japan, mood disorder is common among the patients who visited an ED after a suicide attempt, and poisoning is a common suicide method.^[11] In addition, in Korea, 68.7% of the patients who visited an ED due to suicide attempts used poisoning for the suicide method.^[3] An overdose of antidepressants for suicide was common among patients who were undergoing treatment for depression who visited an ED after attempting suicide. An ED is the first medical center where a patient who uses poisoning to commit suicide can come; therefore, it is important that the clinical features of poisoning patients with MDD in EDs is investigated to better prevent suicide in the future.

Based on analysis of patients who came to an ED due to a deliberate self-poisoning in a study conducted in Korea, many of such patients had a past history of a psychiatric disorder, particularly depression. Furthermore, antidepressants were frequently taken as the poisoning substance.^[12] In this study, among the patients who visited the ED due to poisoning, patients in the MDD group more frequently had a history of attempted suicide (34.6%). In a previous study, it was reported that 12% of the patients who presented to the ED due to poisoning revisited the ED due to poisoning within 1-year.^[13] However, in Korea, a history of attempted suicide was not considered as a

Table 1: Clinical characteristics of poisoning patients who visited the emergency Department

	MDD (n=52)	Non-MDD (n=192)	P
Age, years	40.5 ± 16.7	43.9 ± 18.6	0.226
Female (n%)	43 (82.7)	136 (70.8)	0.086
Type of drugs (n%) ≥ 2	34 (65.4)	66 (34.4)	<0.001
Previous suicide attempt (n%)	18 (34.6)	38 (19.8)	0.024
Time from event to ED arrival (n%)			
< 1 hr	16 (30.8)	62 (32.3)	
1~3 hr	11 (21.1)	56 (29.2)	
3~6 hr	7 (13.5)	24 (12.5)	0.582
6~12 hr	7 (13.5)	27 (14.1)	
> 12 hr	11 (21.1)	23 (11.9)	

MDD=Major depressive disorder; ED=Emergency Department

Table 2: Comparison of disposition in poisoning patients in the emergency Department

	MDD (n=52)	Non-MDD (n=192)	P
Discharge (n%)	18 (34.6)	78 (40.6)	
DAMA (n%)	7 (13.5)	32 (16.7)	
Admission (n%)	27 (51.9)	81 (42.2)	0.683
Intensive care unit	17 (32.7)	59 (30.7)	
General ward	10 (19.2)	22 (11.5)	
Death (n%)	0 (0)	1 (0.5)	

MDD=Major depressive disorder; DAMA=Discharge against medical advice

critical factor for psychiatric referral for suicide attempters who present to the ED.^[14] It is known that a repeated failed suicide attempt is associated with a significant increase in morbidity and mortality.^[15] Accordingly, if patients who present to an ED due to suicidal poisoning have a past history of antidepressant treatment, they should be tracked and observed as a major object for national emergency medical suicide prevention monitoring systems, to actively prevent repeated suicide attempts. Furthermore, early MDD treatment and psychiatric intervention should be required for such patients.

According to the research result that selective serotonin reuptake inhibitor, an antidepressant drug, may cause suicidal impulses in children and adolescents as a side effect, The Food and Drug Administration has required a warning for suicide impulse on the medical instructions. This study, which was conducted in a group of patients over 18-year-old, showed that MDD patients more frequently had a past history of suicide attempt than the other patient group. However, factors including the type of antidepressant drug, duration of treatment, continuous drug use, and so on were not tracked and observed. Accordingly, the result of this study has little relation with suicidal impulse side-effects of an antidepressant drug. A recent study reported that proper treatment was not available in cases of patients in need of antidepressants and that the suicide rate appeared to increase in these cases.^[6,16]

There are several reports of high mortality in patients under treatment for depression by overdose of an antidepressant drug.^[17,18] However, there was no significant difference between MDD and non-MDD patients according to PSS and disposition in this study. Rather, in non-MDD patients in this study, one died by taking hydrochloric acid poisoning and four died by taking other drugs. However, this result is from the study of a single institution and is limited because an epidemiologic deviation cannot be disregarded. As a result, it is important not only to provide supportive treatment for clinical poisoning symptoms, but also early psychiatric co-treatment when a poisoning patient who has a past history of MDD visits the ED due to attempting to commit suicide. Furthermore, a systematic ED strategy is necessary for appropriate co-treatment and psychiatric intervention.

There are few studies on the MDD prevalence rate for all ages in South Korea. In Korea, Ohayon showed that there was very little difference in the MDD prevalence rate between male and female.^[19] However, according to a study on the features of patients who presented at an ED due to self-inflicted injury, the proportion of male to female was 1:1.38.^[3] It is known that the female may consider and attempt suicide more than male, but male have a higher suicide success rate and injury degree.^[20-22] Accordingly, female make up a higher percentage not only of the MDD group, but also the non-MDD group in this study.

In the result of the study, 59.6% of MDD group patients took psychiatric medication as the poisoning substances. It is presumed that patients who were diagnosed with depression can easily obtain many types of neuropsychiatric medication, and this is related to their admittance to an ED after taking more than two types of medicine for poisoning. However, in the non-MDD group, analgesics and OTC drugs, which people can easily obtain in a market in Korea without a prescription, were more prevalent as the poisoning substances. Accordingly, with regard to the instruction of MDD patients regarding depression medication, support and attention to not only themselves, but also their families, should be required to prevent overdoses.

The limitation of this study is that the research was performed in a single institution in Seoul of Korea. According to local differences in availability, common poisoning substances in poisoning patients may differ between rural areas and the Seoul downtown area. In addition, the clinical features of the poisoning patients who were diagnosed with depression may not be generalizable due to selection bias. We cannot evaluate impulsivity and severity of past suicidal attempt due to the limitation of the retrospective study. However, it is notable that this is the first study that specifies the clinical features and prevalence of poisoning patients with MDD. Additional studies are required because potential MDD cases, which have not been diagnosed by a physician, exist even in the non-MDD group. Further research through a multi-institutional prospective study, with a randomized trial design, about the relationship of suicide attempt and poisoning in patients with MDD is required.

Conclusion

This study demonstrated that patients who had been treated for depression in the past had a higher suicidal tendency and came to the ED after taking more types of substances than did other poisoning patients. Therefore, a physician performing the first medical examination in the ED should regard the poisoning patients who had been treated for depression as high risk for re-attempting suicide. In addition, it is necessary to implement an active psychiatric intervention based on a systemized psychiatric co-treatment strategy in the ED.

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