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RESEARCH ARTICLE

EVALUATION OF GERIATRIC PATIENTS WITH SUICIDE ATTEMPTS ADMITTED TO THE INTENSIVE CARE UNIT OF A TEACHING HOSPITAL CENTER: A TEN-YEAR RETROSPECTIVE REVIEW.

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Abstract

Objective: With the increasing population of seniors in Turkey and rest of the world, the prevalence of suicidal tendencies and suicide attempts has also increased, thereby becoming a public health issue for older adults. The data regarding the clinical features and outcomes of suicide attempts in the Turkish geriatric population are lacking. This study aims to evaluate the cases of suicide attempt in geriatric patients treated in the intensive care unit(ICU).

Patients and Methods: We retrospectively analyzed medical records of geriatric patients admitted to our ICU because of a suicide attempt. We evaluated the age, gender, methods of suicide attempt, Glasgow Coma Scale(GCS), treatments, duration of hospitalization, medical history, and the prognosis of patients admitted to ICU because of a suicide attempt between June 2007 and June 2017.

Results: We examined 51 geriatric patients, who were admitted to the ICU. The median age of patients was 66.13 ± 10.33 (range, 67–76) years. A majority of geriatric patients attempted suicide by drugs, with tricyclic antidepressants being the most common drug. The median ICU stay was 10.44 ± 11.8 days. The analysis of prognosis revealed that 33 patients were discharged after initial treatment and 18 patients were deceased.

Conclusion: An increasing geriatric population is presenting an increase in the incidence rate of geriatric suicide attempts and their subsequent hospitalization in ICUs. While GCS score during admission is a predictor of poor outcome, suicidal attempts by geriatric people are leading to a significant mortality rate.

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Introduction:-

Recent years have witnessed a profound increase in the population of older adults worldwide, with more older people alive nowadays. With growing elderly people each year, the psychogeriatric old age period defines "old" as

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people aged 65 and older and "very old" as people aged 85 and older (1,2). In verification of the growth of old population worldwide, the number of seniors in Turkey is also rapidly growing.

Suicide is the act of intentionally terminating life by causing one's death. An unsuccessful attempt at ending one's own life is called as "suicide attempt" (3). Today, various psychological, economic, cultural, and sociological factors, irrespective of one's mental status, have exacerbated the problem of suicidal tendencies, thereby making suicide or suicide attempt at any age a major social problem for the community prevalent in almost all regions worldwide. The death statistics of the United States reveal that more than 34,500 deaths each year are caused by suicides, suggesting more than 1 million a year worldwide (4). Undoubtedly, the number of suicide attempts is far more than deaths.

Although most of the suicide cases are reported in younger and middle-aged adults, the augmentation of the aged population has shot the number of suicide attempts in the elderly in recent times. Reportedly, the latest developments in healthcare and increase in the average life expectancy have also increased the number of suicides or suicide attempts with every passing year. At present, the elderly population faces a significant risk of suicide as compared with any other age group (5,6). Also, clinicians lack the necessary knowledge about suicide attempts in seniors (7). Thus, this study aims to retrospectively investigate geriatric patients who attempted suicide in an integrative intensive care unit (ICU).

Materials and Methods:-

We retrospectively examined patients aged >65 years who attempted suicide and received follow-up treatment at the University of Health Sciences Kartal Dr. Lutfi Kırdar Education and Research Hospital's integrative ICU between June 2007 and June 2017. This descriptive study was approved by the Institutional Ethics Committee of our hospital.

Based on the inclusion and exclusion criteria, we enrolled 51 patients diagnosed with a suicide attempt in this study. Clinical and demographic data of all patients, such as age, gender, primary hemodynamic parameters, Glasgow Coma Scale(GCS) values, mechanical ventilation demand and duration, hemodialysis, the methods of attempting suicide, reagents of intoxication, hospitalization time, discharge rate, and sociodemographic characteristics (e.g., comorbid physical illness and past psychiatric illness), were collected from ICU medical charts. Also, patients' suicidal intent was confirmed from the history obtained from their relatives and bystanders. Of note, patients who died before hospital admission, those under 65, those poisoned accidentally, and those with incomplete medical records were excluded from this study.

Statistical analyses were performed using Statistical Package for Social Science, 20.0 software (IBM, Chicago, IL). Quantitative variables were expressed as the mean \pm standard deviation(SD), and qualitative variables were expressed as percentages. Categorical variables were reported as proportions. Also, the chi-square test was used for statistical analysis, and the percentage distribution was calculated along with the odds ratios. We considered $P < 0.05$ as deemed statistically significant.

Results:-

Of the 2352 patients hospitalized in our ICU between June 2007 and June 2017, 51 were geriatric patients with suicide attempts (30 males, 58.8%; 21 females, 41.2%). The mean age of patients was 66.13 ± 10.33 years (males: 67.12 ± 9.62 years; females: 65.05 ± 10.55 years) (Table 1). Table 2 presents the mean basic hemodynamic parameters at admission (i.e., pulse, mean arterial pressure, and respiratory rate), GCS values, additional medications, duration of hospitalization, and prognosis of patients. The mean arterial pressure at the time of admission was 89.13 ± 17.11 mmHg, the mean pulse was 109.65 ± 23.31 /min, the mean respiratory rate was 12.43 ± 6.78 /min, and the mean GCS value was 9.27 ± 3.12 . Furthermore, the mean hospitalization duration was 12.54 ± 15.5 days.

All patients had one or more additional medical problems such as hypertension (n=27), diabetes mellitus (n=24), heart failure (n=18), chronic obstructive pulmonary disease (n=12), depression (n=9), chronic renal failure (n=3), colon cancer (n=3), and epilepsy (n=3). Also, six male and six female patients had attempted suicide previously. In this study, previous suicide attempts rate was 23.52% (n=12). Table 3 shows the distribution of geriatric suicide patients according to the method of suicide.

The most common method of suicide was drugs ($n=42$; 82.3%), and 78.6% ($n=33$) of these patients had multiple drugs. These drugs were tricyclic antidepressant drugs ($n=18$), analgesic ($n=12$), nontricyclic antidepressant ($n=4$), amitriptyline ($n=3$), acetazolamide ($n=2$) and verapamil ($n=3$) (Figure 1). The remaining 17.7% patients opted other methods of suicide such as firearm injury ($n=2$), CO intoxication ($n=2$), organophosphate intoxication ($n=3$) and hanging ($n=2$). All patients attempted suicide at their home and were discovered by their relatives.

No statistically significant difference was found according to the pulse, mean arterial pressure, and respiratory rate parameters in patients on admission ($P=0.413$, 0.318, and 0.457, respectively). Of 21 patients (40.6%) who exhibited loss of consciousness, 80% presented with GCS values <7 . The mean GCS value in patients was 8.27 ± 3.12 . While the mean GCS value in living patients was 10.23 ± 3.18 , it was 7.17 ± 3.01 in dead patients, representing a statistically significant difference in GCS values ($P < 0.01$). In addition, common clinical presentations on admission were loss of consciousness ($n=18$), seizure ($n=3$), and restlessness ($n=3$).

In this study, 18 patients (35.29%) required endotracheal intubation and invasive mechanical ventilation. The mean duration of mechanical ventilation was 5.43 ± 2.81 days. Also, 21 patients (41.18%) required vasopressors for hemodynamic stability during their ICU stay. While three patients reported acute renal failure because of metformin, three patients said chronic renal failure; however, hemodialysis was performed in all these patients.

Regarding patients' education levels, 49% had primary school degree, 34.6% had high school degree, 19.7% had a university degree, and 3.6% of them were literate. The education levels did not significantly vary between males and females ($P=0.432$).

Regarding the prognosis, 33(64.7%) patients were discharged after initial treatment, and 18(35.3%) patients died. All alive patients were referred for inpatient psychiatric treatment.

Table 1:- The distribution of suicide patients according to the gender and age

Age(years)	Female ($n=21$)	Male ($n=30$)	Total ($n=51$)
65–70	12	15	27
70–75	6	9	15
75<	3	6	9

Table 2:- The distribution of suicide patients according to the different parameters (ort \pm SD)

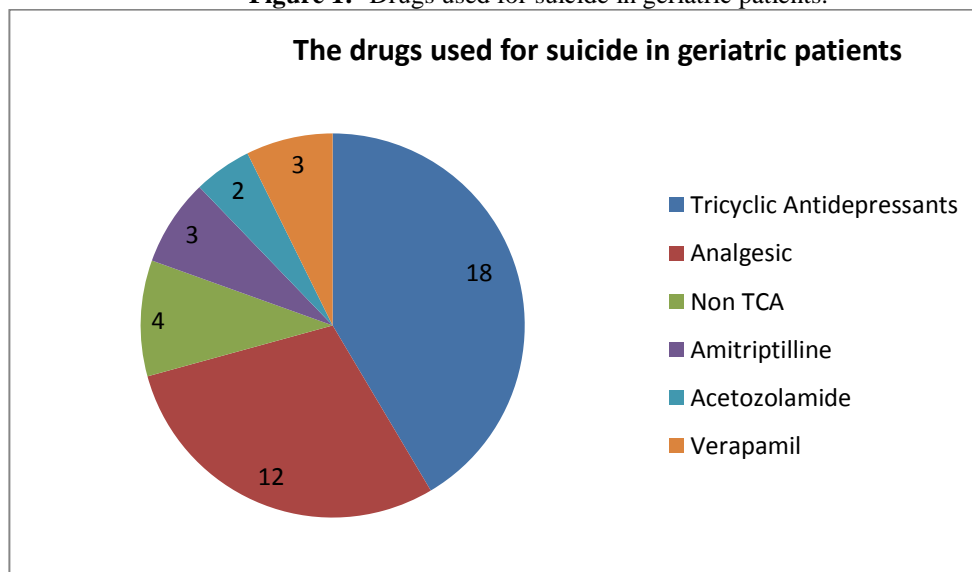
Mean arterial pressure(mm/Hg)	Female	96.11 \pm 13.02
	Male	97.13 \pm 14.13
Mean pulse rate(/min)	Female	87.25 \pm 22.46
	Male	88.24 \pm 21.78
Mean respiratory rate (/min)	Female	12.38 \pm 5.32
	Male	13.57 \pm 6.81
Glasgow Coma Scale (GCS)	Female	7.23 \pm 3.81
	Male	7.44 \pm 3.56
Hospitalization time(day)	Female	11.53 \pm 12.1
	Male	10.44 \pm 11.8
Mechanical ventilation	Female, n (%)	9(17.64%)
	Male, n (%)	9(17.64%)
Hemofiltration	Female, n (%)	3(5.88%)
	Male, n (%)	3(5.88%)
Discharged/Exitus	Female, n (%)	18(35.29%)/9 (17.64%)
	Male, n (%)	15(29.41%)/9 (17.64%)

Table 3:- The distribution of suicide patients according to the method of suicide

The method of suicide	Female ($n=30$)	Male ($n=21$)	Total ($n=51$)
Drug	27	15	42
Organophosphate	3	–	3

Firearm injury	—	2	2
Hanged	—	2	2
CO	—	2	2

Figure 1:- Drugs used for suicide in geriatric patients.



Discussion:-

Suicide is defined as the act or an instance of taking one's own life voluntarily and intentionally under the effects of helplessness, resentment, self-loathing, and deprivation stress(8). When examined regarding life periods; one of the stages in which suicide intensifies is the period of old age. The completed suicide rate has been reported to increase with age (9). For all geriatric patients admitted to the ICU because of suicide attempts, we provided airway patency, opened intravenous access, monitored vital data, and conducted the neurological and systemic examination. Medications prescribed to patients were vasopressors (e.g., norepinephrine, epinephrine, and vasopressin) and inotropes (e.g., dobutamine). Also, we obtained necessary consultations for patients with additional medical problems and notified hospital police about these legal cases.

Based on the investigation of statistical reports worldwide and the World Health Organization, suicide rates tend to increase with age for both males and females, peaking in old age. Among various age groups, the incidence rate of suicide in adults aged 50–74 years has demonstrated a continuous increase over the years; the highest risk group for suicide comprises elderly white males aged 85 years or older (10). Fung et al. determined that patients with three physical illnesses had an approximately three-fold increase in the estimated relative risk for suicide compared to those who had no diagnosis; however, older adults who had seven or more illnesses had nearly nine times greater risk for suicide (11). In this study, a majority of patients were in the 65–70 age group and no significant difference was observed according to the gender in this age group ($P>0.05$).

The most common cause of suicide is an illness for both males and females were reported as chronic illness, depression, heart disease, neurological disease, and cancer. Suicidal thoughts have declined with age in our country, and rates of suicidal ideation and suicide attempts have decreased compared to other countries. It is reported that this is due to strong family ties, religious (the effect of the belief that suicide is a sin in the Islamic religion) and cultural factors (12). Also; low level of education, is living alone, widowed or divorced, low socio-economic level and having suicide attempts in the past have been identified as risk factors for suicide in elderly patients. A multicenter study revealed that 71% of older deaths resulted from psychiatric diseases, and more than 50% of patients were clinically depressed during the suicide attempt (13,14). The effects of physical illness on the elevated risk for suicidal acts in some older individuals but not in others is still unclear.

In approximately half of the suicide deaths, the cause is unknown. This kind of death is seen mainly in females. Only 13% of the elderly who attempted suicide did not have any psychiatric disorder (15). In this study, nine female

patients had been diagnosed with depression previously and were monitored by psychiatry clinics. The diagnosis of a previous psychiatric disorder was significantly higher in female than male patients ($P=0.02$).

A psychiatry consultation performed for all patients upon discharge from the hospital revealed that 11.62% ($n=6$) of patients were diagnosed with depression and 5.81% ($n=3$) were diagnosed with anxiety disorder.

Regarding the effect of the gender, older males were at a higher risk of committing suicide than older females. One study reported that white men aged 85 years and older were at the highest risk among all older adults (16). In this study, the number of males (58.1%) was higher than the number of females (41.9%), but this difference was not statistically significant ($P>0.05$).

The number of suicide deaths varies according to educational level ($\chi^2=575.3$; $P<0.001$). 8(%) of the suicide victims had no more than primary or secondary education.

The most common method of suicide among adults is drug abuse (17,18). Likewise, the most common method of suicide in this study was drugs in 80% of patients ($n=42$), 80% ($n=33$) of whom had multiple drugs. All females ($n=21$; 41.2%) and 24 males (47.1%) were under drug treatment for medical problems. The rate of the suicide attempt by drugs was higher in females ($n=27$; 52.9%; $P=0.02$).

Although the mean hospitalization rate for suicide attempters in Turkey is 17.3%, this rate increases to 31% for elderly patients with chronic diseases (19). We identified similar rates in our patients and those who were hospitalized in ICUs. Globally, the mortality rate from suicide among men aged ≥ 65 years, in the 1990s was around 41 deaths per 100 thousand inhabitants, reaching higher values when considering only those aged ≥ 75 years (50 deaths/100 thousand inhabitants). The mean length of stay time was 10.44 ± 11.8 days for males and 11.53 ± 12.1 days for females. We observed no significant difference in both groups ($P<0.05$).

In this study, while 42 (82.3%) patients had attempted suicide for the first times, 9 (17.7%) had a history of suicide attempts. We observed no statistically significant difference in previous suicide attempt numbers between males and females ($p>0.05$). Research has shown that previous suicide attempts were the most critical risk factor in suicides that resulted with deaths, and the repeated suicide attempt rate was 24% (20,21), which was 17.7% in our study.

Study limitations:-

This study has some limitations. First, it is a single center study with a short period of 10 years. Second, there may be several cases referred to other hospitals because of lack of beds in the ICU unit of our hospital after admission to the emergency department.

Conclusions:-

This study highlights that drug abuse is the most prominent method of suicide in geriatrics worldwide. Hence, careful administration of medications to older adults and collecting the unused medicines might be helpful in preventing suicide attempts in the elderly. Furthermore, careful recording of cases and additional education of physicians about appropriate and aggressive care in geriatric suicide attempt cases is imperative. Finally, precautions for risk of psychiatric disorders and new suicide attempts warrant a careful review. Mainly, supporting the elderly group with physical dependence, disability, and depression, continuing their life and maintaining their productivity are essential applications in preventing their suicide.

It should not be forgotten that hopelessness and suicidal thoughts decrease with the reasons for the survival of older people.

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Contribution Details:- All authors have participated sufficiently in the intellectual content, conception and design of this study as well as in the writing of the manuscript.

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