Acil Tıp Kliniğinde İntiharAmaçlı Kardiyovasküler İlaç İntoksikasyonları

Suicidal Cardiovascular Drug Intoxication in Emergency Department

Harun AYHAN[a], Dogac Niyazi OZUCELIK[b], Halil DOGAN,[b]
Mehmet Ozgur ERDOGAN[c], Yavuz YIGIT[a]

Özet **Amaç:** Türkiye'de son yıllarda artan yaşlı popülasyonala birlikte kardiyovasküler ilaç kullanımında da kontrolsüz bir artış olmuştur. Bu çalışmanın amacı diğer suicidal ilaçlar arasında kardiyovasküler ilaçlar ile olan intoksikasyonları değerlendirmektir. **Gereç ve Yöntem:** Araştırmada iki devlet hastanesinin acil tıp kliniklerinde Temmuz 2009 – Haziran 2010 ve Mart 2013-Mart 2014 tarihleri arasında ilaç intoksikasyonu nedeniyle takip edilen 1399 hasta geriye dönük olarak incelenmiştir. Bunların içerisinde kardiyovasküler ilaç intoksikasyonu nedeniyle takip edilmiş olan 81 hasta araştırmaya alınmıştır. **Bulgular:** Kalp dışı ilaç intoksikasyonu nedeniyle takip edilen 1318 hastanın yaş ortalaması 25,9±10,8 (%80,3 kadın ve %19,7 erkek), kardiyovasküler ilaç intoksikasyonuyla takip edilen 81 hastanın yaş ortalaması 27,3 ± 13,6 (%27,2 erkek, %72,8 kadın) olarak bulunmuştur. Hastalar tarafından 10 farklı gruptan kardiyovasküler ilaç alınmıştır. Kardiyovasküler ilaçlar içerisinde en fazla ACE inhibitörü grubu (%39,5), sonra beta bloker (%37,0) ilaçlar alınmıştır. Kardiyovasküler ilaçlarla intoksikasyonlar en sık (%70,3) genç sağlıklı insanlarda (10-30 yaş) görülmüştür. Hastaların çoğu destek tedavisi ile taburcu olmuştur. Hastaların hastanede kalış süresi ortalama 16,6 ± 10.6 saattir (2-48 saat). Bir hasta beta bloker kullanımına bağlı kardiyojenik şok sonucu ölmüştür. **Sonuç:** Bu araştırma ACE inhibitörleri ile intoksikasyonlarda bir artış olduğunu göstermiştir. Son zamanlarda kardiyovasküler ilaçların kolay bulunması nedeniyle, özellikle genç intoksikasyon hastalarında aile de ilaç kullanım öyküsü daha detaylı sorgulanmalıdır. Kardiyovasküler ilaçların satışındaki kontrolün ve kısıtlamanın arttırılması bu ilaçlarla olan suicidal girişimleri azaltabilir.

Anahtar kelimeler: Kardiovasküler ilaçlar, zehirlenme, ilaçlı intihar, epidemiyoloji

Abstract **Objectives:** As elderly population in Turkey increases, patients using cardiovascular drugs increases. Access to these drugs for suicide attempt gets easier due to common use. Aim of the study is to evaluate the results of intoxication with cardiovascular drugs. **Methods:** Data of 1399 patients admitted to two level 1 hospital emergency departments for drug intoxication were reviewed from July 2009 to March 2014 retrospectively. Cardiovascular drug intoxication was diagnosed in 81 patients. **Results:** The average age of 1318 patients with other drug intoxication was 25.9± 10.8 years (72,9% female, 27,1% male); the average age of 81 patients (72,8% female, 27,2% male) with cardiovascular drug toxicity was 27,3± 13,6 years. Ten different group cardiovascular drugs were taken. The most common cardiovascular drug (39.5%) was found ACEI group. Beta blocker intoxication was 37%. Most of the patients required supportive treatment. Average length of stay was 16,6±10,6 h (range: 2–48 h). One patient died from cardiogenic shock due to beta blocker toxicity. **Conclusion:** Our study shows an increase in suicidal ACE inhibitor and beta blocker intoxication in cardiovascular drugs. All drug intoxications are more common between 18:00 and 02:00 o'clock. Seasonal distribution of suicide attempts showed a peak incidence in fall. Especially in young intoxication patients, physicians should take detailed information about the use of cardiovascular drugs by family members to rule out possible cardiovascular drug intoxication.

Key words: Cardiovascular drugs, poisoning, intoxication, suicide, epidemiology

Introduction

The suicide incidence is approximately 16/100000 annually, and 0.9% of all deaths are due to suicide. In the United States, 1 per 10.000 people dies from suicide every year. These rates have remained constant over the

Geliş Tarihi/Received:24.05.2015 /Kabul Tarihi/Accepted:17.09.2015
[a]Emergency Medicine, Istanbul Medeniyet University Goztepe Training and Research Hospital, Istanbul, Turkey.
[b] Emergency Medicine, Bakırkoy Dr. Sadi Konuk Training and Research Hospital, Istanbul, Turkey,
[c] Emergency Medicine, Haydarpasa Numune Training and Research Hospital, Istanbul, Turkey,
Corresponding Author: Halil Dogan, M.D. Bakırköy Dr. Sadi Konuk Eğitim ve Araştırma Hastanesi Acil Tıp Kliniği, Bakırköy, İstanbul, Turkey, e-mail:drhalildogan@gmail.com

last 20 years.[1] Total suicide number was found 2898 (72,8% male; 27,2% female) and crude suicide rate was found 4.02 per 100,000 people according to Turkish Statistical Instute in Turkey.[2]

Poisoning by cardiovascular drugs is rare. These drugs have serious adverse effects and may lead to high morbidity and mortality. Cardiovascular drug intoxication accounts for 1% of all drug intoxications.[3] The most common cardiovascular drug toxicity is digitalis toxicity.[4] Suicide attempts using calcium channel antagonists shows a significantly higher mortality.[5,6] Increasing elder population in Turkey, increased the number of patients using cardiovascular drugs. Hence, the need exists for studies regarding the incidence and features of cardiovascular drug toxicity. We investigated the features of suicidal cardiovascular drug intoxication in our ED's, and compared to other drug intoxication.

Materials and methods

ED records of 1081 suicidal intoxication cases in Bakırkoy Dr. Sadi Konuk Training and Research Hospital and 318 suicidal intoxication cases in Haydarpasa Numune Training and Research Hospital were revived. Data of 1399 patients admitted to two level 1 hospital emergency departments for drug intoxication were reviewed from July 2009 to March 2014 retrospectively. Forensic cases were examined. Accidental intoxications, overdoses, and patients with incomplete data, were excluded from the study. Suicidal cardiovascular drug intoxication was diagnosed in eighty one (61+20=81) patients. The data were analyzed using Statistical Package for the Social Sciences software (SPSS ver. 16.0, Chicago, IL, USA). P value less than 0.05 was accepted to be statistically significant.

Results

Average age of 81 patients (72,8% female and 27,2% male) with cardiovascular drug toxicity was 27,3±13,6 years (range: 11–75 years). The average age of 1318 patients (80.3% female and 19.7% male) with other drug intoxication was 25.9±10.8 years (range: 10–111 years). Age and gender had no significant difference between cardiovascular intoxication and other type of drug intoxication.

Cardiovascular drug intoxications (%70,3, n=57) were more common in 10 to 30 years old patients as other drug intoxications (70,3%, n=927). Demographic data is shown in figure 1.

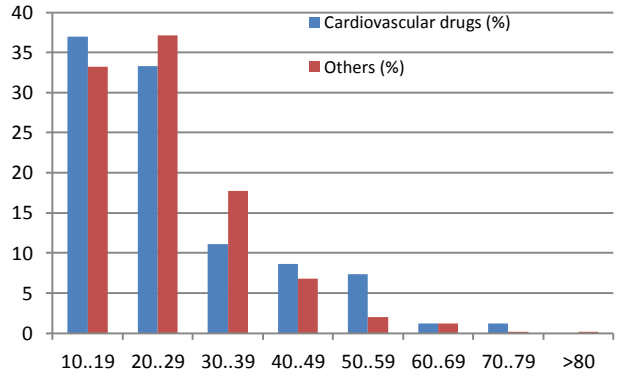

Figure 1. Age distribution of cardiovascular drug intoxications

Ten different group cardiovascular drugs were used in suicide attempts. The most common cardiovascular drug was ACE inhibitors (39.5%, n32). Beta blocker intoxication was noted in 30 (37%) patients. Beta blockers and calcium canal blockers were used by 37 (45,6%) patients together. Subgroups of cardiovascular drugs are shown in figure 2.

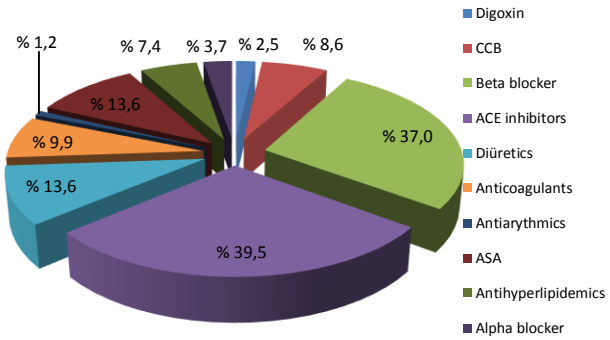

Figure 2: Percentage distribution of cardiovascular drug subgroups

The mean arterial pressure was 79.8±1.2 mmHg (range:59–112 mmHg), and heart rate was 81.3±10.3 beats per minute (range: 63–102 beats per minute). There was no significant difference between drugs and these vital signs (p>0.05).

All suicide attempts had a peak incidence between 18:00 and 02:00 o'clock. Seasonal distribution of suicide attempts showed a peak incidence in fall (%39.5, n=32).

One patient had a past medical history of a previous suicide attempt. Only one type of drug was used for suicide attempting 23 (28.4%) patients, and 58 (71.6%) patients attempted suicide using more than one type of drug. Toxic dose, drug types, pre-hospital treatment, use of activated carbon, nasogastric tube insertion, use of antidotes, monitoring, intensive care hospitalization, intubation and type of discharge showed no significant difference between single and multi-drug intoxications (p>0.05).

Most of the patient required supportive treatment**.** Vitamin K was administered for four of eight anticoagulant intoxications. N-acetyl cysteine protocol was administered to a patient because of combined diuretic and paracetamol intoxication. Only two patient required intubation.

Time to admission was 2.4±2.8 hour (range: 1–26 h) for cardiovascular drug intoxications. Within the first hour 39 (48.1%) and within two hours 19 (23.5%) patients were admitted to the ED.

Average length of stay (LOS) was 16,6±10,6 h (range: 2–48 h). LOS was 10.4±4.5 h (range: 3–16 h) for beta receptor blocker and calcium channel blocker intoxication. 18 (22,2%) patients were discharged from intensive care units.62 (%76,6) patients were discharged from ED. Eight patient (%9,9) left the hospital without physician's approval. One death (%1,2) was noted due to beta blocker related cardiogenic shock.

Discussion

Suicidal intoxication is a public health problem worldwide. Suicidal intoxications (85.7%) are more common than accidental poisonings (13.3%)[6]and their ED admission incidence is 0.2–0.9%.[7,8]

The suicide rate increases with increasing accessibility to suicide tools.[9] The female/male ratio of suicide attempts is 4/1 in the United States, 1.5/1 in Europe, and 2/1 in Turkey.[1,2,8-10] Previous studies [11,12] have revealed that cardiovascular drug intoxication accounts for 1–12.5% of all drug intoxications. In Turkey, this ratio was reported to be 4-4.1%.[6,13] In the present study, 5.9% of toxicities were caused by cardiovascular drugs. As in our study, previous studies [6,14] have revealed that females more commonly attempt suicide (69.0-77.3 %),(72.8%).

Drug suicide attempts are more common between the ages of 15 and 24 years in Turkey.[2,15] No age difference was found between cardiovascular drug intoxication and other types of drug intoxication in our study.[16,17]

In this study, cardiovascular drug intoxication was found to be more common in 10 to 30 years old patients. Cardiovascular drug intoxications are more common between 18:00 and 02:00. Seasonal distribution of suicide attempts showed a peak incidence in fall.

Our study showed that 71.6% of patients had multidrug intoxications, which are most likely related to nonselective suicidal use of drugs. A previous study reported that the most common suicidal cardiovascular drugs were beta-blockers and calcium channel blockers.[12] According to The American Association of Poison Control Centers, beta-blockers and calcium channel blockers accounted for 44.5% of all cardiovascular drug intoxications.[18] In our study group, beta blockers and calcium canal blockers were used by 37 (45.6%) patients together. The most common cardiovascular drug class was ACE inhibitors (39.5%) due to relatively high prescription of ACE inhibitors in our region.

Suicidal intoxication mortality varies between 0.3% and 27%. [15,19-21] A study [22] has shown that mortality is related to cardiogenic shock and resistant acute

respiratory failure. In our study group, one patient (1.2%) has died from cardiogenic shock due to beta blocker toxicity. All of the patients were observed with monitoring and early supportive therapy.

In Turkey, cardiovascular drugs are prescribed with medical reports and patients have drugs that will be used in months. These drugs are within easy reach of family members. Therefore physicians should be take detail family medical history from intoxication patients. Also, over-the-counter cardiovascular drug sales should be strictly controlled. Physicians should be aware of possible complications related to suicidal cardiovascular drug intoxication and start early supportive treatment.

Conclusion

Our study shows an increase in suicidal ACE inhibitor and beta blocker intoxication in cardiovascular drug. Cardiovascular drug intoxications are more common between 18:00 and 02:00. Seasonal distribution of suicide attempts showed a peak incidence in fall. Especially in young intoxication patients, physicians should take detailed information about the use of cardiovascular drugs by family members to rule out possible cardiovascular drug intoxication.

Conflict of Interest

The authors declared that there is no potential conflicts of interest.

Ethics Committee Approval

Due to the retrospective nature of this study ethics committee approval was waived**.**

Informed Consent

Due to the retrospective nature of this study informed consent was waived.

Financial Disclosure

The authors declare that this study has received no financial support.

References

1. Roy A. Psychiatric emergencies. Sadock BJ, Sadock VA (eds): Comprehensive Textbook of Psychiatry, 7.ed, Baltimore, Lippincott Williams &Wilkins, 2000, 2031-40.

2. Statistical Indicators 1923-2011**.**Turkish Statistical Institute. Turkish Statistical Institute, Printing Division, Ankara December 2012, p: 45.

3. Köppel C, Oberdisse U, Heinemeyer G. Clinical course and outcome in class IC antiarrhythmic overdose. J Toxicol Clin Toxicol. 1990;28(4):433-44.

4. De Graff ACJ. Digitalis Intoxication. Circulation 1954 Jan;9(1):115-26.

5. Satar S, Seydaoglu G, Akpinar A, Sebe A, Karakoc E, Gumusay U, Yilmaz M, Gokel Y. Trends in acute adult poisoning in a ten-year period in Turkey: factors affecting the hazardous outcome. Bratisl Lek Listy.2009;110 (7):404-11.

6. Kalkan S, Hocaoglu N, Oransay K, Unverir P, Tuncok Y. Cardiovascular medication exposures and poisonings in Izmir, Turkey: A 14-year experience. Hum Exp Toxicol 2011May; 30(5):347-53.

7. Hanssens Y, Deleu D, Taqi A. Etiologic and Demographic Characteristics of Poisoning: A Prospective Hospital-BasedStudy in Oman. J Toxicol Clin Toxicol 2001;39(4):371-80.

8. Litovitz TL, Klein-Schwartz W, Caravati EM, Youniss J, Crouch B, Lee S. 1998 Annual report of the American association of poison control centers toxic exposure surveillan cesystem. Am J Emerg Med 1999;17(5):435-87.

9. Shafii M, Steltz-Lenarsky J, Derrick AM, Beckner C, Whittinghill JR. Comorbidity of mental disorders in the post-mortem diagnosis of completed suicide in children and adolescents. J Affect Disord 1988 Nov-Dec;15(3):227-33.

10. Çayköylü A, Coşkun İ, Kırkpınar İ, Özer H. Özkıyım girişiminde bulunanlarda sosyodemografik özellikler ve tanı dağılımı. Kriz Dergisi 1997;5:37-42.

11. Repetto MR. Epidemiology of poisoning due to pharmaceutical products, Poison Control Centre, Sevile, Spain. European Journal of Epidemiology 1997 Apr;13(3): 353–6.
12. Vucinić S, Vucinić Z, Segrt Z, Joksović D, Jovanović D, Todorović V. Acut epoisoning with cardiovascular agents. Vojnosanit Pregl. 2003 Nov-Dec;60(6):691-6.
13. Ozkose Z, Ayoglu F. Etiological and demographical characteristics of acute adult poisoning in Ankara, Turkey. Hum Exp Toxicol 1999 Oct;18(10):614–8.
14. Gnyp L, Lewandowska-Stanek H, Sawiniec J. Analysis of cases of acute poisoning with cardiovascular drugs. Przegl Lek. 2003;60(4):286-8.
15. Aydın ŞA, Köksal Ö, Fedakâr R, Emircan Ş, Durmuş O.1996-2004 Yılları Arasındaki Erişkin Zehirlenme Olguları. Uludağ Üniversitesi Tıp Fakültesi Dergisi 2006;32(1):25-7.
16. Pach J, Polewka A, Zieba A, Kroch S, ChrostekMaj J, Mikołaszek-Boba M, Datka W, Rachel W. A trial for the complex risk assessment of repeated suicide predictors in patient safter suicidal poisoning attempts, hospitalized in the Department of Clinical Toxicology CM UJ in Krakow. II. Clinical predictors. Przegl Lek; 2001;58(4):330-4
17. Hatzitolios AI, Sion ML, Eleftheriadis NP, Toulis E, Efstratiadis G, Vartzopoulos D, Ziakas AG. Para suicidal poisoning treated in a Greek medical ward: epidemiology and clinical experience. Hum Exp Toxicol 2001Dec; 20(12):611-7.
18. Love JN, Litovitz TL, Howell JM, Clancy C. Characterization of fatal beta blocker ingestion: a review of the American Association of Poison Control Centersdata form 1985 to1995. Clinical Toxicology, 1997;35(4):353-9.
19. Viertel A, Weidmann E, Brodt HR. Cases of acute poisoning admittedto a medica lintensive care unit. Dtsch Med Wochenschr 2001Oct 19;126(42): 1159-63.
20. Juárez-Aragón G, Castañón-González JA, Pérez-Morales AJ, Montoya Cabrera MA. Clinical and epidemiological characteristics of severe poisoning in adult population admitted to an intensive care unit. Gac Med Mex 1999;135(6):669-75.
21. Joubert PH. Poisoning admission of Black South Africans. J Toxicol Clin Toxicol 1990; 28(1): 85-94.
22. Chodorowski Z, Anand JS, Waldman W. Suicidal poisoning with antihypertensive drugs. Przegl Lek 2003;60(4):233-5.