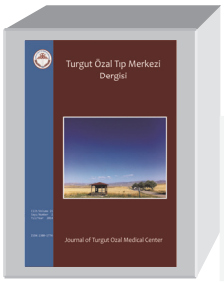

ORİJİNAL MAKALE/ORIGINAL ARTICLE
J Turgut Ozal Med Cent 2014:21(2):126-9

Journal Of Turgut Ozal Medical Center
www.jtomc.org

Plant Related Poisonings in Children: An Evaluation of 23 Cases

Habip Almış[1], Hamza Karabiber[2], Cengiz Yakıncı[3]

[1]Adıyaman University, School of Medicine, Department of Pediatrics, Adıyaman, Turkey
[2]Inonu University, School of Medicine, Department of Pediatric Gastroenterology, Malatya, Turkey
[3]Inonu University, School of Medicine, Department of Pediatrics, Malatya, Turkey

Abstract

Aim: Many plants and plant originated products cause poisonings in children in Turkey. This study aims to study 23 plant-derived poisoning cases admitted to Inonu University, Turgut Ozal Medical Center, Pediatrical Emergency Service in terms of agents of toxication and the clinical features in order to decrease the number of poisonings.

Materials and Methods: Twenty three patients who applied to Pediatrical Emergency Service due to plant-derived poisoning between January 2010 and May 2012 were analyzed retrospectively. Cases were evaluated in accordance with their age, sex, cause of poisoning, symptoms at application, seasonal distribution, and prognosis.

Results: There were 23 herbal poisoning cases, 1.9% of all cases admitted to the service due to poisoning, within eighteen months. Thirteen of these cases were males and 10 were females. Thirty-nine percent of plant originated poisoning cases were between 0-6 years of age; 34% of cases were between 13-17 years of age; and 26% of cases were between 5-12 years of age. The most common agents for plant originated poisoning were apricot seeds and sprouted potato. Mortality was not observed in our patients. However, as far as morbidity is concerned, one of our patients (4.3%) had to undergo liver transplantation due to cocklebur (Xanhti strumarium) poisoning.

Conclusion: Like all the other types of poisonings, plant-derived poisonings appear as a significant problem during childhood. Preventive precautions, having a knowledge about the flora of the region and common toxic plants, and increasing the level of literacy in the community by educating the society may minimise mortality and morbidity.

Key Words: Plant; child; poisoning.

Çocuklarda Bitkisel Kaynaklı Zehirlenmeler: 23 Olgunun İncelenmesi

Özet

Amaç: Ülkemizde pek çok bitki ve bitkisel kaynaklı ürünler erişkinlere benzer şekilde çocuklarda da zehirlenmelere sebep olmaktadır. Çalışmamızdaki amaç; İnönü üniversitesi Turgut Özal Tıp Merkezi Çocuk Acil Servisi'ne başvuran bitkisel kaynaklı zehirlenme olgularının incelenmesi, bu zehirlenmelerde sık saptanan etkenlerin ve klinik özelliklerinin belirlenmesidir.

Gereç ve Yöntemler: Ocak 2010-Mayıs 2012 tarihleri arasında çocuk acil servisine bitkisel kaynaklı zehirlenme nedeni ile başvuran 23 çocuk hastanın dosyası geriye dönük olarak incelendi. Olgular yaş, cinsiyet, zehirlenme nedeni, başvuru sırasında gözlenen semptomlar, mevsimsel dağılım ve prognoz yönünden değerlendirildi.

Bulgular: Bir buçuk yıllık süre içerisinde 23 bitkisel zehirlenme olgusu, çocuk acil servisine başvuran zehirlenme nedeniyle başvuran hastaların %1,9'unu oluşturuyordu. Olguların 13'ü erkek, 10'u kızdı. Bitkisel zehirlenme olgularının %39,1'i 0-6 yaş grubunda, %34,8'i 13-17 yaş grubunda ve %26,1'i ise 5-12 yaş grubundaydı. Bitkisel zehirlenmeler arasında, en sık görülen etkenler kayısı çekirdeği ile filizlenmiş patates zehirlenmeleriydi. En az izlenen bitkisel zehirlenmenin ise 2 olgu ile sarmaşık zehirlenmesi olduğu belirlendi. Olgularımızın hiç birinde mortalite gelişmedi. Ancak morbidite açısından bakıldığında pıtrak (Xanhtium Strumarium) zehirlenmesi ile başvuran olgularımızdan birine (%4,3) karaciğer nakli yapılması gerekti.

Sonuç: Çocukluk çağında tüm zehirlenmeler gibi bitkisel zehirlenmeler de önemli bir sorun olarak karşımıza çıkmaktadır. Yaşanılan bölgenin bitki örtüsünün tanınması, sık rastlanan zehirli bitkilerin bilinmesi ve toplumun bilgi düzeylerini arttırılması bitkisel kaynaklı zehirlenmelere bağlı morbidite ve mortalitenin azalmasında yararlı olacaktır.

Anahtar Kelimeler: Bitki; çocuk; zehirlenme.

INTRODUCTION

Mineral, plant, animal oriented or synthetically derived ingredients that are capable of impairing human health are called "poison." Likewise, poisoning is the emergence of some signs and symptoms following oral, respiratory, epidermal or parenteral intake of these substances in such amounts as to harm the organism. Frequent in both developed and developing countries, childhood poisonings require urgent intervention and are possible to prevent. Although poisonings can affect all age groups, they are more common and more fatal in childhood (1, 2).

Plants and plant-derived products may contain toxic substances. These toxic agents may lead to results starting from mild intoxication in humans to death. The severity of poisoning may vary according to the type of herbs and the characteristics of the poisoned person. Plant-derived products that can adversely affect human health are associated with the vegetation of region as well as the region's cultural and socioeconomic properties (2). Again, food preferences and the

alternative medicine practices in the food culture of the region are among the main causes of plant-derived poisoning (3, 4).

Although the plant-derived food poisonings constitute a small part of overall poisonings, because they cannot be perceived as the cause of poisoning, its incidence rate cannot be determined exactly. In developed countries, accidents and poisonings rank first as the causes of death among 1-14 age group (5, 6).

In Turkey, mostly reported in the form of case reports, the number of clinical studies are few though there are numerous cases of plant-origined poisoning. First clinical studies that involve plant-derived poisonings simply touch upon the subject in-passing by briefly mentioning it under general intoxication. Plant-derived food poisonings constitute about 1-3% of all poisoning cases (7-11).

In this study, cases admitted to Inonu University, Turgut Ozal Medical Center, Pediatric Emergency Department with plant-origined were examined. The basic aim of our study is to control plant-derived poisonings by determining clinical and epidemiological characteristics of these poisonings and to discuss preventive measures.

MATERIAL AND METHODS

We have conducted a retrospective examination on 23 cases among the 0-17 age group who were admitted to Inonu University, Turgut Ozal Medical Center, Paediatric Emergency Department due to plant-derived poisoning between January 2010 and May 2012. Throughout the study, we have evaluated the data such as the age and sex of patients, herbal poisoning agents, symptoms observed during hospital admission, time of onset and prognoses of the poisonings.

The data obtained were statistically analysed on SPSS, version 16.0; the results were presented as "n" and in percentages.

RESULTS

Twenty-three patients in the 0-17 age group admitted to the paediatrics emergency service due to plant poisoning between January 2010 and May 2012 constituted 1.9% of all poisonings. 10 of these patients (43.5%) were females while the remaining 13 (56.5%) were males; the male/female ratio was, thus, 1.3. The median age of all the 23 cases was 9.3. The youngest was 2 and the eldest was 17 years old. The gender distribution of the patients is shown in Table 1. In terms of age groups, 9 of the plant-derived poisoning cases (39.1%) were in the 0-6 age group, 8 (34.8%) in the 13-17 age group, and 6 (26.1%) were in the 5-12 age range, respectively.

Considering the factors of herbal poisoning cases, we have observed high toxicity rates due to sprouted potatoes (21.7%) and apricot kernel (21.7%) poisoning. Cocklebur, bitter melon, chamomile tea, and ivy were among other factors for poisoning. Table 2 shows the incidence of poisonings of above mentioned plants.

Table 1. Gender distribution of the cases

	n	%
Female	10	43,5
Male	13	56,5
Total	23	100,0

Table 2. Plant-originated factors

	n	%
Coclebur (Xanhtium Strumarium)	4	17,4
Apricot seed (Prunus armeniaca)	5	21,7
Sprouted potato (Solanum tuberosum)	5	21,7
Bitter melon (Ecballium elaterium)	4	17,4
Chamomile tea (Asteraceae)	3	13,0
Ivy (Hedera helix)	2	8,7
Total	23	100,0

With 91.3% of frequency rate, fatigue was the most common symptom in 21 patients. As observed in 18 cases, nausea and vomiting were the second most common symptom (78.3%). Other findings and frequency rates are given in Table 3. Evaluating the plant-derived poisoning cases in relation to seasons, we have found out that spring, with eight cases (34.8%), was the time of the year when poisoning frequency reached its maximum. In the summer months, six cases (26.1%) were admitted to the clinic as a result of herbal poisoning.The number of cases was five (21.7%) in autumn. The number of applications was lowest in the winter with only four cases (17.4%).

Table 3. Findings and complaints

	n	%
Fatigue	21	91,3
Perspiration	9	39,1
Nausea and vomiting	18	78,3
Stomach ache	15	65,2
Diarrhea	10	43,5
Hyperthermia	3	13
Tachycardia	4	17,4
Bradycardia	1	4,3
Urticaria	5	21,7
Oedema	4	17,4
Sensory loss	1	4,3
Leucocytosis	3	13
Hypoglycemia	2	8,7
Elevated Transaminase	4	17,4
Acidosis	5	21,7

Considering the treatment and follow up processes of the herbal poisoning cases, it has been noted that 15 cases (65.2%) were treated with supportive approaches in the emergency, 4 patients (17.4%) were consulted to the clinic, and the remaining 4 patients were monitored in the intensive care service.

Mortality did not develop in any of our patients. However, as far as morbidity is concerned, one of our patients (4.3%) had to undergo liver transplantation due to cocklebur (Xanhtium Strumarium) poisoning.

DISCUSSION

Although most plants are beneficial, consuming some harmful plants can lead to death. Sometimes, as it happened in one of our cases, irrepairable consequences may arise such as the need for a liver transplantation. Despite their rarity, the incidence and types of plant-derived poisonings may vary depending on many factors like geographical location, vegetation, and seasons.

In our study, consistent with the literature data, the most common herbal poisonings were observed in the first five years of age (39.1%) and more often in boys (56.5%) (16, 17). In this age group, because of the increased motor activity and the sensory curiosity for all objects in the environment, poisonings may occur frequently.

Ağın et al.'s 2002 study shows that plant-derived poisonings constitutes 1.1% of all poisoning cases in Turkey. In line with this study, Kondolot et al.'s study conducted in 2009 reports that herbal poisonings composed 1.8% of all cases of poisonings. In our study, in a similar manner, the rate was 1.9%.

Apricot farming is common in Malatya region. Amygdala, which is found in apricot (Prunus armeniaca) kernel, creates toxicity by metabolising into cyanide in the body. In potato sprouts (Solanum tuberosum), on the other hand, it is solanine that brings about intoxication. The number of children poisonings due to apricot (Prunus armeniaca) kernel is known to have increased in recent years in Turkey (7, 12-15).

In our study, the most common cause of poisoning in the region was the consumption of apricot (Prunus armeniaca) seeds and sprouted potatoes (Solanum tuberosum). It has been observed that potato-related poisonings were mostly from families with lower socioeconomic status, which made us think about adequate storage conditions as the reason of poisonings. As for the cocklebur (Xanhti strumarium), seeds of which look very much like sunflower seeds and which is quite common in the vegetation of the region, it is very probable that they may have been mistaken for sunflower seeds by children and, thus caused poisoning.

Many preceding studies show that most common findings in poisoning cases were nausea, vomiting, fatigue, and hyperaemia in the mouth (19-23). In this regard, our results are similar to earlier studies. Ergür et al's study conducted in Sivas province (24), along with Orbak et al.'s research in Erzurum region (25), has similarly concluded that spring and summer times are the times when there is a rise in the frequency of herbal poisonings. Similar studies report a rise in the incidence rate of plant-derived poisonings in the spring (16, 26, 27). Analysing the distribution of cases according to the seasons, spring is the busiest month in terms of admittance to clinic due to poisoning. These findings are comparable with the literature data. The reason behind this rise is the fact that children spend more free time outside their homes and that there is an increase in plant diversity in rural areas in the spring.

Because of the small number of cases and its retrospective quality, our study is a limited one. There is a need for more studies conducted on more people in different regions. Each region is different from the others in terms of vegetation and, accordingly, types of poisonous plants. It is our firm belief that having a decent knowledge about region's vegetation and common poisonous plants, and increasing the literacy in the society through education may reduce the morbidity and mortality caused by plant-origined poisonings.

REFERENCES

1. Sarıkayalar F. Çocukluk çağında zehirlenme. Katkı Pediatri Dergisi 1990;3-11.
2. Dökmeci İ. Bitkisel Kaynaklı Zehirler. Dökmeci İ, Dökmeci AH, editör. Toksikoloji- Zehirlenmelerde Tanı ve Tedavi. 4.Baskı. İstanbul: Nobel Tıp Kitapları; 2005.p.528-31.
3. Çalışkan V. Çanakkale ilindeki bitkisel kaynaklı sağlık risklerinin değerlendirilmesi. Fırat Üniversitesi Sosyal Bilimler Dergisi 2010;20:55-82.
4. 4.Güven H. Çevresel toksinler: bitkisel ilaçlar ve zehirlenmeler. T Klin J Pharmacol 2003;1:58- 61.
5. Riordan M, Rylance G, Berry K. Poisoning in children 1: general management. Arch Dis Child 2002;87:392-6.
6. Jepsen F, Ryan M. Poisoning in children. Curr Pediatr 2005;15:563-68.
7. Şen TA, Köken R, Demir T, Doğru Ö, Bahçeli Ö. Kayısı çekirdeği yendikten sonra ortaya çıkan akut siyanür zehirlenmesi. Türkiye Çocuk Hast Derg 2009;3:38-41.
8. Konca Ç, Kahramaner Z, Boşnak M, Kocamaz H. Bir çocuk hastada baldıran otu (Conium Maculatum) zehirlenmesi. Turk J Emerg Med 2014;14:34-6
9. 9.Şişmanlar T, Onganlar YH, Derinöz O, Kula S, Kanbur ŞM, Vurallı D. Evdeki yeşil tehlikeler "Difenbahya zehirlenmesi". Gazi Tıp Dergisi 2010;21:51-2.
10. Kondolot M, Akyıldız B, Görözen F, Kurtoğlu S, Patıroğlu T. Çocuk acil servisine getirilen zehirlenme olgularının değerlendirilmesi. Çocuk Sağlığı ve Hastalıkları Dergisi 2009;52:68-74.
11. Akbay-Öntürk Y, Uçar B. Eskişehir bölgesinde çocukluk çağı zehirlenmelerinin retrospektif değerlendirilmesi. Çocuk Sağlığı ve Hastalıkları Dergisi 2003;46:103-13.
12. Doğan M, Yılmaz C, Kaya A, Çaksen H, Taşkın G. Cyanide intoxication with encephalitis clinic: A case report. EJM 2006;11:22-5.
13. Yılmaz HL, Derme T, Yıldızdağ D, Alhan E. Çukurova bölgesindeki çocukluk çağı zehirlenme olgularının değerlendirilmesi. Nobel Medicus 2009;5:35-44.
14. Demirci Ş, Doğan KH, Deniz İ, Erkol Z, Günaydın G. Konya'da 2000-2007 yılları arasında beş yaş ve altında ölümle sonuçlanan kaza orijinli zehirlenmeler. Turkiye Klinikleri J Foren Med 2009;6:47-52.
15. Suchard JR, Wallace KL, Gerkin RD. Acute cyanide toxicity caused by apricot kernel ingestion. Ann Emerg Med 1998;32:742-4.
16. Hoffman RJ, Osterhoudt KC. Evaluation and management of pediatric poisonings. Pediatr Case Rev 2002;2:51-63.
17. Andıran N, Sarıkayalar F. Hacettepe Üniversitesi İhsan Doğramacı Çocuk Hastanesinde son 6 yılda izlenen akut zehirlenme vakaları. Katkı Pediatri Dergisi 2001;22:396-408.
18. Ağın H, Çalkavur Ş, Olukman Ö, Ural R, Bak M. Çocukluk çağında zehirlenmeler: son 2 yıldaki olguların değerlendirilmesi. T Klin Pediatri 2002;11:186-93.
19. Uçar B, Ökten A, Mocan H. Karadeniz Bölgesinde çocuk zehirlenme vakalarının retrospektif incelenmesi. Çocuk Sağlığı ve Hastalıkları Dergisi 1993;36:363-71

20. Tunç B, Örmeci AR, Dolgun A, Karaca H. Isparta Bölgesinde çocukluk çağı zehirlenme nedenleri. Çocuk Sağlığı ve Hastalıkları Dergisi 1995;38:211-8.
21. Aygün AD, Güvenç H, Türkbay D, Kocabay K. Hastanemizde izlenen zehirlenme olgularının değerlendirilmesi. MN Klinik Bilimler 1995;3:48-51.
22. Anarat A, Altıntaş G, Gali AE, Aksaray N. Çukurova bölgesindeki çocukluk çağı zehirlenmelerinin değerlendirilmesi. Çukurova Ün Tıp Fak Derg 1988;13:30-6.
23. Totan M, Sancak R, Küçüködük Ş. Ondokuz Mayıs Üniversitesi Tıp Fakültesi Çocuk Acil Servisi'ne başvuran intoksikasyon hastalarının değerlendirilmesi. Türkiye Klinikleri Pediatri 1999;8:126-9.
24. Ergür AT, Sütçü İ, Tanzer F. Pediatri servisimizdeki zehirlenme olgularının değerlendirilmesi: 1990-1998. Türkiye Klinikleri Pediatri 1999;8:9-14.
25. Orbak Z, Selimoğlu MA, Alp H. Erzurum bölgesinde çocuklarda zehirlenme vakalarının değerlendirilmesi. Çocuk Sağlığı ve Hastalıkları Dergisi 1996;39:497-504.
26. Çıtak A, Soysal DD, Yıldırım A, Karaböcüoğlu M, Üçsel R, Uzel N. Çocukluk yaş grubu zehirlenmelerinde tehlikeli değişim. Çocuk Dergisi 2002;2:116-20.
27. Hallaç İK, Poyrazoğlu MH, Aydın K, Kurtoğlu S, Üstünbaş HB. Çocukluk çağı zehirlenmeleri: Son 10 yılın değerlendirilmesi. İst Çocuk Klin Derg 1996;31:337-9.

Received/Başvuru: 19.11.2013, Accepted/Kabul: 26.11.2013

Correspondence/İletişim

Habip ALMİŞ
Adıyaman University, School of Medicine, Department of Pediatrics, ADIYAMAN,TURKEY
E-mail: drhabipalmis@yahoo.com

For citing/Atıf için

Almis H, Karabiber H, Yakinci C. Plant related poisoning in children: evaluation of 23 cases. J Turgut Ozal Med Cent 2014;21:126-9 DOI: 10.7247/jtomc.2013.1493