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## Zatrucie alkoholem jako problem medyczny w oddziale klinicznym medycyny ratunkowej dla dzieci

## Alcohol poisoning as a medical problem at the clinical ward of children's emergency medicine

### Streszczenie

**Cel.** Celem pracy była analiza przypadków leczonych w ostatnim roku z powodu zatrucia alkoholem w Oddziale Klinicznym Medycyny Ratunkowej dla Dzieci USK nr 4 im. Marii Konopnickiej UM w Łodzi ze szczególnym uwzględnieniem urazów doznanych pod wpływem alkoholu.

**Material i metody.** Analizy dokonano w oparciu o dokumentację medyczną dzieci leczonych w Oddziale z powodu zatrucia alkoholem w okresie od czerwca 2008 do maja 2009.

**Wyniki.** W badanym okresie czasu przyjęto do oddziału 24 026 dzieci w tym z powodu upojenia alkoholem 64 (0,27%). W grupie tej odnotowano niewielką przewagę chłopców (37) nad dziewczynkami (27). Wiek dzieci wahał się od 8 lat do 17 roku życia, w tym blisko połowę stanowiły dzieci w wieku 14-16 lat (31 dzieci). Poziom alkoholu w powietrzu wydychanym wahał się od 0,5 do 4,4 promila. Podobne wysycenie alkoholem uzyskano określając poziom alkoholu w surowicy. U 49 dzieci stan ogólny określono jako średnio ciężki lub ciężki. Stan świadomości u 26 (ok.40%) oceniono w skali Glasgow poniżej 14 punktów. U 18 dzieci (28%) doszło pod wpływem alkoholu do urazu. W 9 przypadkach stwierdzono objawy potłuczenia ogólnego, w 6 przypadkach urazy głowy (w tym u 1 dziecka doszło do złamania kości skroniowej) i u 3 rany cięte przedramienia wskutek samookaleczenia. Dzieci te wymagały nie tylko diagnostyki laboratoryjnej ale i obrazowej (rtg czaszki, CT głowy, rtg układu kostno-szkieletowego). Leczenia szpitalnego wymagało 40 spośród 64 dzieci (35 w Oddziale Klinicznym Medycyny Ratunkowej, 3 w klinikach pediatrycznych, 2 w klinice chirurgicznej). Poza 3 dzieci, które wymagały opracowania chirurgicznego ran przedramienia pozostałe dzieci były leczone zachowawczo (ogrzewanie, płynoterapia, leki przeciwbólowo). Czasokres hospitalizacji w SOR nie przekraczał 8 godzin a w oddziałach szpitalnych 4 dob.

**Wnioski.** Zjawisko spożywania alkoholu coraz częściej dotyczy dziewcząt i obejmuje coraz młodsze grupy dzieci. Spożywanie alkoholu przez dzieci i młodzież łączy się z urazowością generując koszty związane z niezbędną diagnostyką. Działania prewencyjne winny być skierowane do dzieci z pierwszych klas szkoły podstawowej.

### Abstract

**Aim.** The aim of the study was the analysis of patients who, in the last year, were treated for alcohol poisoning at The Clinical Ward for Children's Emergency Medicine in the University Clinical Hospital No. 4 in Lodz, with special regard to injuries suffered while under the influence of alcohol.

**Material and the methods.** The analysis was based on medical history of the children treated for alcohol poisoning at the Emergency Ward from June 2008 to May 2009.

**Results.** There were 24,026 children admitted to the Emergency Ward during the examined time period, 64 (0.27%) of whom for alcohol intoxication. The number of boys (37) was slightly higher than that of girls (27). The age of the children was from 8 to 17 years, with almost a half of them between the age of 14-16 (31 children). The level of alcohol in the exhaled air ranged from 0.5 to 4.4 per mill. A similar amount of alcohol was diagnosed in the serum. In 49 of the children, the general condition was qualified as the moderately serious or serious. The consciousness level was below 14 points, at the Glasgow scale, for 26 of the children (approximately 40%). Injuries suffered under the influence of alcohol were observed in 18 out of 64 children (28%). The symptoms of the general contusion were noted in 9 of the cases, while 6 children had head injuries (including one child with the temple bone fracture) and 3 children had self inflicted incised wounds of the forearm. These children not only did require a laboratory diagnosis, but also radiography of the skull, computed tomography of the head, radiography of the osteo-skeletal system. Forty out of 64 children required hospital treatment (35 in The Clinical Ward of Emergency Medicine, three in the Pediatric Clinics and two in the Surgical Clinic). Only three of the children with the forearm wounds required surgical treatment and the remaining children were given conservative treatment (body warming, liquid therapy, painkillers). The time of the hospitalization did not exceed 8 hours at the Emergency Ward and 4 days in other hospital wards.

**Conclusions.** The alcohol consumption phenomenon becomes more frequent for girls and includes groups of younger and younger children. Alcohol consumption by children and teenagers can be linked to injuries, generating costs connected with necessary diagnosis. Preventive actions should be directed at children from the first levels of primary school.

**Słowa kluczowe:** zatrucie alkoholem, dzieci, urazy.

**Key words:** alcohol poisoning, children, injury.

## INTRODUCTION

The phenomenon of increasing alcohol consumption by minors in the last twenty years has become one of the main social problems not only in our country, but also in the world. Remedial actions included in the European Declaration on Young People and Alcohol, which were approved by the ministers of health during the 2001 conference in Stockholm, were undertaken as the research on this phenomenon progressed. The declaration assumed that, thanks to the remedial actions, the age of alcoholic initiation will increase and the frequency of alcohol consumption will decrease by 2006 [1]. Unfortunately, these principles were not carried through. The study carried out in Poland in the end of the 1990s showed that more than half of the VI-, VII- and VIII-form students from primary school drank alcohol, and adults not only sold them alcohol, but, in majority of cases, they also did not care about this fact [1-4]. The research carried out by Siniewicz and co-authors showed that more and more children from the Lodz area were admitted to hospital emergency wards or toxicology wards with the symptoms of alcohol poisoning [5]. The growing phenomenon of the alcohol poisoning among minors is often connected to trauma. American researchers pay attention to the high risk of trauma among alcohol-consuming teenagers, as well as the growing cost of the trauma treatment. The research carried out by Sindelar and co-authors shows that nearly 50% of youths between the age of 13 and 19, who report at the Emergency Ward because of an injury, abuse alcohol [9]. That is the reason why the aim of our study was the analysis of the child-cases treated last year at The Clinical Ward of Children's Emergency Medicine at the University Hospital No. 4 in Lodz because of alcohol poisoning, with special regard to trauma suffered while under the influence of alcohol.

## MATERIAL AND METHODS

The object of the study was the examination of medical records of 64 children aged 8 to 17, treated for alcohol poisoning at The Clinical Ward of Children's Emergency Medicine at the University Hospital No. 4 in Lodz, between June 2008 and May 2009.

The sex, age, degree of alcoholic intoxication, clinical symptoms, trauma coexistence and treatment method in these children were analyzed based on their medical history.

## RESULTS

There were 24,026 children admitted to the Emergency Ward during the examined time period, 64 (0.27%) of whom for alcohol intoxication. The number of boys (37) was slightly higher than that of girls (27). The age of the children oscillated from 8 to 17 years. Two of the children were under 10 years of age and 18 were under 13 years. The most numerous group of children treated for alcohol poisoning was between 14 and 16 years old (31 children) and over 16 years (15 children). (Fig. 1) The level of alcohol measured

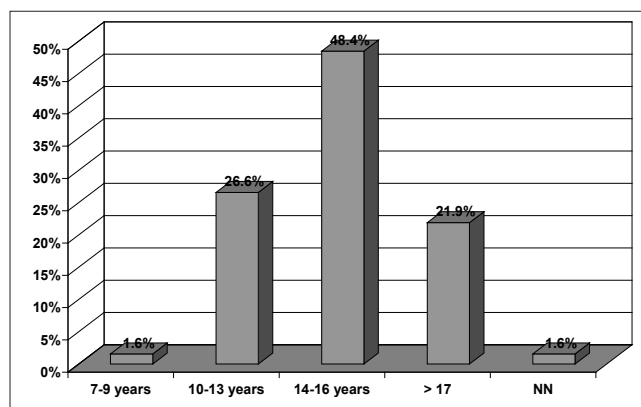


FIGURE 1. Age in the research group.

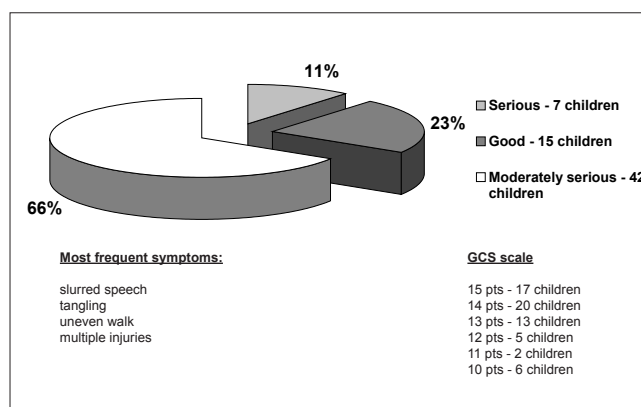


FIGURE 2. The general condition in the research group.

TABLE 1. Types of trauma in the research group.

Type of injury	Number of patients N=64
General contusion	9
Head injury	6 (including 1 fracture of the temple bone)
incised wounds of the forearm (self-inflicted)	3

in the exhaled air by a breathalyzer ranged from 0.5 to 4.4 per mill. A similar amount of alcohol was diagnosed in the serum. The general condition of the children under the influence of alcohol was estimated as good in 15 of the cases. In 42 of the children, the general condition was qualified as moderately serious, and in 7 as serious. The most frequently observed symptoms were: slurred speech, tangling and uneven walk. The consciousness level, noted on the Glasgow scale, estimated between 10 and 15 points at the moment of the child's arrival at the ward, and for 26 children (about 40%) it was below 14 points. (Fig. 2) Injuries suffered under the influence of alcohol were observed in 18 of the 64 children (28%). Symptoms of general contusion were noted in 9 of the cases, while 6 children had head injuries (including one child with the temple bone fracture) and 3 children had self inflicted incised wounds of the forearm (Table 1). The children who, apart from alcohol intoxication, were diagnosed with injuries, underwent radiological examinations such as radiography of the skull, radiography of the chest, radiography of long bones and computed tomography of the head. The other children underwent biochemical examinations, i.e., morphology, gasometry, glucose concentration, blood alcohol concentration, liver function tests, drug-testing. Only three of the children with the forearm wounds required surgical treatment and

the remaining children were given conservative treatment (body warming, liquid therapy, painkillers). The patient's general good health conditions together with the results of the objective examination, sometimes also with the results of additional examinations, allowed an immediate discharge of 24 children, whereas 40 children required hospital treatment (35 of them at The Clinical Ward of Emergency Medicine, three in the Pediatric Clinic and two in the Surgical Clinic). The time of the hospitalization did not exceed 8 hours at the Emergency Ward and 4 days in other hospital wards.

## DISCUSSION

Alcohol consumption is spreading more and more among children and teenagers, threatening their physical and psychological health. In recent years, there have been frequent reports on the increasing risk of trauma among children and youths under the influence of alcohol [5-9]. During this study, in a period from June 2008 to May 2009, there were 64 children under the influence of alcohol admitted to The Clinical Ward of Children's Emergency Medicine. Taking into account the fact that The Clinical Ward of Children's Emergency Medicine is one of three places in Lodz where children are treated for alcohol poisoning, it can be assumed that during the time of the research there were about 200 children hospitalized in Lodz for this very reason. The evaluation of the results of this study, in comparison to the number of children treated for alcohol poisoning in 2004, confirms the observations about an increased alcohol consumption among young people in the Lodz area [5]. While considering the phenomenon of alcohol consumption among children and youths with respect to sex, this study showed only a slightly higher number of boys in comparison to girls, which suggests that alcohol drinking by young people is a phenomenon independent from gender. Woynarowska and co-authors, who researched the health-oriented behaviours of school-children in Poland in 1998, also noted that the percentage of drinking boys and girls was similar [3]. The research carried out by the European School Survey Project on Alcohol and Other Drugs (ESPAD) showed that girls in Poland drank less than boys, but also less than girls in Denmark, Great Britain or Ireland [1]. On the other hand, Siniewicz and co-authors paid attention to a growing percentage of drinking girls in recent years [5]. Similar observations are coming from the United States [5-7]. This increase in the percentage of children and youths consuming alcohol may result in worsening of their health condition and worsening of the condition of their own offsprings' health in the future.

The dominant age of the children in the analyzed group was between 14 and 17, similarly as in the groups examined by other authors [4,5-9]. There were also two cases of children at the age of 8 and 9, which suggests that the age when children start consuming alcohol is going down. The observations of other authors also indicate that the age of alcoholic initiation is decreasing [2,4,7]. The influence of the media and alcohol advertisements, and, primarily, the influence of the family environment, are listed among the main causes responsible for this phenomenon [1].

Young people and children have a considerably lower alcohol tolerance than adults and that is why they get drunk more quickly [1,3,7]. Among the 64 children from the examined group, 64 were diagnosed with a moderately serious or serious general condition. The concentration of alcohol in the exhaled air ranged from 0.5 to 4.4 per mill, whereas the consciousness level, according to the Glasgow scale, was below 14 points for 26 of the children. The results of our study indicate that the consumption of alcohol by children and teenagers often leads to getting drunk. This occasional alcohol intoxication, which often begins at the age of 11-13, usually intensifies in a later period, leading to addiction together with all health and social consequences.

Injuries are one of the direct consequences of alcohol consumption by children and young people. The research conducted in a group of 726 children at the age of 12-17, who came to the Department of Emergency Medicine Albert Einstein Medical Center in Philadelphia because of an injury, showed positive blood alcohol concentrations in 93 of the children (12.8%). The research showed no differences between post-traumatic mortality among the youths who consumed alcohol and those who did not. However, an inversely proportional dependence between the seriousness of the trauma and the blood alcohol concentration was observed [8]. The observations of Sindelar and co-authors are contrary – they claim that the severity of the injury increases after alcohol consumption and, what is more, the costs of help also increase [10]. In another report, Sindelar emphasizes that children and teenagers who consume alcohol constitute a high-risk group when it comes to trauma [7].

We have observed that 28% of the children who were admitted to The Clinical Ward of Children's Emergency Medicine because of alcohol poisoning suffered from trauma. However, the seriousness of their general condition resulted mostly from the degree of alcoholic intoxication and not from the suffered injuries. Nine out of the eighteen children were diagnosed with superficial injuries like abrasion of the epidermis, small lesions and bruises. Six children experienced head trauma, including one with a fracture of the temple bone, but with no characteristics of intracranial bleeding. What is more, three children under the influence of alcohol had self-inflicted wounds. These children underwent, apart from the medical and biochemical examinations, also an X-ray examination or a computer tomography. Children with injuries or self-inflicted wounds were treated surgically. All the hospitalized children, regardless of the place of hospitalization, received liquid therapy and those with hypothermia an additional body warming. The time of the hospitalization was short and did not exceed 4 days, although patients with self-inflicted wounds were later transmitted to the Psychiatry Clinic for further treatment because of a high risk of depression and other destructive behaviours [1,6,9]. The self-conducted research clearly indicates the problems which result from alcohol consumption by children and teenagers. Similarly, as in other European countries, a considerable percentage of teenagers experience the physical and psychological consequences of drinking alcohol before they turn 16. This indicates a necessity to include children at the early school age in the preventive action.

## CONCLUSIONS

1. The alcohol consumption phenomenon begins to refer also to girls and covers younger and younger children.
2. The consumption of alcohol by children and teenagers is connected with trauma, generating costs related to necessary diagnostics.
3. The preventive activities should be aimed at children from the first levels of primary school.

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