

# The clinical picture and therapy Inhalant Use Disorder in Adolescents in a pandemic of COVID-19

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## Abstract

**Objective:** The purpose of this study was a study of the contingent of Inhalant Use Disorder in Adolescents who suffered from COVID-19.

**Materials and Methods:** We study 100 patients Inhalant Use Disorder in Adolescents (80 men 20 women) a pandemic of COVID-19. The age of the patients ranged from 12 to 17 years. Inhalant Use Disorder impact on the clinical picture and therapy of the illness. The diagnosis is determined according to DSM-5 and ICD-10. The investigation were carried out in psychiatric at the Mental Health Center of the Ministry of Health of the Republic of Azerbaijan.

**Results:** The prevalence of inhalant use was 80% among boys and 20% among girls. In the clinical picture of the disease, a delirious syndrome with delusions of pursuit came to the fore. Inhalant users were gender-specific - significantly higher in boys. In all patients

**Conclusion:** Conducted therapy with antipsychotic and other drugs lasted one month and Cortexin 10 mg intramuscularly (for 10 days). After treatment, in 80 patients all symptoms disappeared and in 20 patients dementia.

**Keywords:** COVID-19; inhalant use disorder; clinical picture; treatment.

## Introduction

The ESTIMATED risk of initiation of inhalant drug use has increased 3-fold among adolescents aged 12 to 17 in the United States over the past decade, from 7.2 per 1,000 person-years in 1983 to 21.5 per 1,000 person-years [1].

Prevalence of Inhalant Use Disorder showed that since solvents, fuels, paints, and other substances that produce intoxicating gases are readily and legally available, inhalant use disorder is most prevalent amongst adolescents and young adults who do not have access to alcohol or other illegal substances. According to the DSM-5 approximately 0.4% of American teens age 12-17 meet the diagnostic criterion for inhalant use disorder, and approximately 10% of teens this age have used an inhalant at least once [2].

The following substances can be found in the most common inhalants:

- Toluene - found in aerosol paints, some types of glue;
- Chlorinated carbons - Found in dry cleaners for clothes, office correctors, etc.
- Hexane - adhesives, gasoline;
- Benzene - gasoline;
- Methyl chloride - a constituent element of solvents for paints and varnishes;
- Butane - cans for refilling lighters, air fresheners;
- Nitrous oxide - gas cylinders;

Current statistics on coronavirus as of COVID-19 outbreak as of February 27, 2022, 06:58 GMT. (Worldwide)

Total infections 434,978,898

Deaths: 5,963,930

Recovered: 365,048,282

Current statistics on coronavirus as of COVID-19 outbreak as of February 27, 2022, 06:58 GMT. (Azerbaijan)

Population 10,290,176 thous.

Total infections 782,748

Total Deaths 9,358

Recovered 757,892

COVID-19 Pandemic causes numerous mental disorders. In our early studies, we showed the mental disorders caused by the COVID-19 Pandemic [5-8].

## Materials and methods

We searched eight databases with search terms relating to COVID-19 and COVID-19 phobia:

MEDLINE

PreMEDLINE

Cochrane Library

<http://www.ema.europa.eu/ema/>

<https://scholar.google.com>

<https://www.rxlist.com/script/main/hp.asp>

<http://www.nejm.org>

<https://www.bmj.com>

The purpose of this study was study the clinical picture and therapy Inhalant Use Disorder in Adolescents in a pandemic of COVID-19.

Materials and methods

Patients were randomized as they applied to the Mental Health Center of the Ministry of Health of the Republic of Azerbaijan.

We study 100 patients (80 men 20 women) COVID-19 Inhalant Use Disorder and therapy of the illness. The investigation were carried out in psychiatric at the Mental Health Center of the Ministry of Health of the Republic of Azerbaijan. The study was carried out from December 2020 to December 2021. The age of the patients ranged from 12 to 17 years. The diagnosis was made using DSM-5 and ICD-10. All patients were prescribed clomipramine 150 mg per day, buspirone 10 mg per day, and Cortixin 10 mg intramuscularly (for 10 days). Prior to the present treatment, all patients had previously received drugs canceled two weeks earlier. All patients received informed consent to treatment.

## Results and Discussion

It is known that Inhalant Use r disorders are 2 times more common in men than in women. Depending on the condition of the patients, the following treatments were used:

### Correction of somatovegetative disorders

| International non-proprietary names (trade names) | Average daily dose       |
|---|--------------------------|
| Proroxan (pyroxan)                                | 90-135 mg orally, or i/m |
| Propranolol (anaprilin)                           | 60-100 mg orally         |
| <b>Hepatoprotector</b>                            |                          |
| <b>Vitamins and minerals</b>                      |                          |
| <b>Amino acids</b>                                |                          |
| Glutamic acid                                     | 2-3 g orally             |
| Gamma amino fatty acid                            | 2,0-3,75 g orally        |
| Glycine   | 0,6-1,0 q sublanguage    |

### Treatment of toxic encephalopathy

| International non-proprietary names (trade names) | Average daily dose            |
|---|-------------------------------|
| <b>Neuroleptic drugs</b>                          |                               |
| Tioridazin (sonapaks)                             | 300-400 mq daxilə             |
| <b>Antikonvulsantlar</b>                          |                               |
| Karbamazepin (finlepsin)                          | 400-600 mq daxilə             |
| <b>Antidepressantlar</b>                          |                               |
| Pirlindol (pirazidol)                             | 150-300 mq daxilə             |
| Fluoksetin (prozak)                               | 20-60 mq daxilə               |
| <b>Nootroplar</b>                                 |                               |
| Pirasetam (lyusetam, nootropil)                   | 10-12 q daxilə, ə/d və ya v/d |
| Serobrolizin                                      | 10 ml ə/d və ya v/d           |
| Qamma amino yağ turşusu                           | 2,0-3,75 q daxilə             |
| Corteksin   | 10 qm əzələ daxilə            |

## But little is known about Cortexin.

Additionally, the patients were assigned Cortexin® contains a complex of low-molecular water-soluble polypeptide fractions that penetrate through the BBB directly to nerve cells. The drug has a nootropic, neuroprotective, antioxidant and tissue-specific effect. The mechanism of action of the drug Cortexin® is due to the activation of peptides of neurons and neurotrophic factors of the brain; optimization of the balance of the metabolism of excitatory and inhibitory amino acids, dopamine, serotonin; GABAergic effects; a decrease in the level of paroxysmal convulsive activity of the brain, the ability to improve its bioelectrical activity; preventing the formation of free radicals (lipid peroxidation products). Active substance: polypeptides of cattle cerebral cortex. The drug is administered intramuscularly. Before injection, the contents of the vial are dissolved in 1 ml of a 0.5% solution of procaine (novocaine), water for injection or 0.9% sodium chloride solution and injected once daily: adults at a dose of 10 mg for 10 days; children from the neonatal period, with a body weight of up to 20 kg at a dose of 0.5 mg / kg, with a body weight of more than 20 kg - at a dose of 10 mg for 10 days. Before injection, the contents of the vial are dissolved in 1 ml of a 0.5% solution of procaine (novocaine), water for injection or 0.9% sodium chloride solution and injected once daily: adults at a dose of 10 mg for 10 days; If necessary, repeat the course in 3–6 months.

Inhalers are extremely affordable, inexpensive, and easy to hide; they are also addictive and deadly. Inhalants are especially attractive to teenagers for many reasons; they are legal, low-cost, and easy to obtain.<sup>7</sup> In addition, inhalants can give users a quick but short-term high price, which makes it easier for teens to use inhalers and hide their use.<sup>1, 7</sup> The use of inhalers is also related to this. With many negative consequences. Adolescents who use inhalants are at higher risk for crime, depression, suicidal ideation, drug and alcohol use.<sup>7</sup> there is a special risk that inhalers are lethal, even when used for the first time.

About 10% of 13-year-old American children report using inhalers at least once; this percentage remains stable until the age of 17. Adolescents between the ages of 12 and 17 who use inhalants are most likely to use glue, shoe polish, or toluene; gasoline or lighter liquid; or spray paint. Only 0.4% of adolescents aged 12-17 years develop an inhalation disorder; these young people tend to have many other problems. The decline in the prevalence of inhalation disorders after adolescence indicates that this disorder usually resolves in early adolescence.

Volatile hydrocarbon use disorders are rare in prepubertal children, most common in adolescents and young adults, and rare in the elderly. Calls to anti-poisoning centers for "intentional misuse" of inhalers are at an all-time low for people under the age of 14. About one-fifth of adolescent inhaler users develop an inhaler use disorder; some die from inhalation-related accidents or "sudden death by inhalation." However, in many people this disorder disappears after adolescence. In the 20s, the prevalence among people decreases sharply. Adults with inhalation use disorders and adults often experience serious problems: substance use disorders, antisocial personality disorders, and suicidal ideation.

## At the end of the article, we present 2 clinical observations.

### Clinical observations #1.

14 year old boy. Learn in the seventh grade. Every day before going to school, he sniffed the salt solution that stood in the yard. And at school during transfers in the toilet Hexane - glues, gasoline. The patient was examined in the psychiatric department. And the following symptoms were found: trembling in the limbs; hanging sweating; persistent headache; increased heart rate; sleep problems; nausea; vomit; convulsions; disturbance of consciousness on delirious type. After a new

therapy, the patient was discharged home after a month with a slight cognitive impairment.

### Clinical observations #2.

Daughter 16 years old. Study in the ninth grade. Every day before going to school, he sniffed a solution of gasoline at the rate of one liter per week. Tocre state continued for one. Dovichk lagged behind in his studies. Often unable to go to school. Due to developing dementia, she could not master the school program and was expelled from school. The patient was examined in the psychiatric department. And the following symptoms were found: trembling in the limbs; hanging sweating; persistent headache; increased heart rate; sleep problems; nausea; vomit; convulsions; disturbance of consciousness according to the delirious type and a sharp decrease in all cognitive functions. After the new therapy, there were no positive changes in the patient's condition. The patient after two months was transferred to the care of parents.

### Conclusion

Conducted therapy with antipsychotic and other drugs lasted one month and Cortexin 10 mg intramuscularly (for 10 days). After treatment, in 80 patients all symptoms disappeared and in 20 patients dementia. In the context of the COVID-19 pandemic, Inhalant Use Disorder in Adolescents is more severe, difficult to treat, the clinical picture is complex and sometimes ends with dementia. Most inhalants in circulation belong to the category of household and industrial chemicals, so it is almost impossible to effectively regulate their circulation as a pharmacological agent.

The limitation of our work is as follows: 1) it is necessary to carry out such studies in many centers; 2) similar research needs to be carried out on the in large numbers of female contingent; 3) on a large clinical material.

### Conflict of Interest Statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest

### Author Disclosure Information

The authors declare that the article is submitted on behalf of all authors. None of the material in the article has been published previously in any form and none of the material is currently under consideration for publication elsewhere other than noted in the cover letter to the editor. Authors declare no financial and personal relationship with other people or organizations that could inappropriately influence this work. All authors contributed to and have approved the final article. The authors declare no conflicts of interest. No sponsor provided funding for this study.

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