Case Report
Toxicology International, *Sept-Dec 2016 / Vol-23 / Issue-3, 282-284*
ISSN (Print) : 0971-6580
ISSN (Online) : 0976-5131
DOI: 10.22506/ti/2016/v23/i3/146728

Volatile Substance abuse in adolescents - a growing concern! Glue Sniffing- A Case Report

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Abstract

Volatile substance abuse, commonly referred to as glue sniffing, is quite prevalent. However, it is often overlooked form of substance abuse in adolescents. Most of the case reports stress on the psychosocial aspects of the substance abuse. Physicians are often unaware of the medical complications of inhalant abuse and thus the patients may present as diagnostic dilemma. Diagnosis of substance abuse is difficult and relies almost entirely on the history and a high index of suspicion. We report a 12 year old boy who had complications secondary to prolonged substance abuse and repeated history taking helped us to reach a diagnosis. The patient improved with supportive care and is undergoing rehabilitation with help of social worker.

Keywords: Volatile, abuse; complications; Glue sniffing; Diagnostic dilemma

Received: 16-06-2016 **Revised:** 03-09-2016 **Accepted:** 12-09-2016

1. Introduction

Volatile substance abuse is deliberate inhalation of volatile substance to achieve euphoric, disinhibiting, and exciting mental state. It includes aerosol glue, air fresheners, anaesthetic agents, and glues, typewriter correction fluids, typewriter diluent fluids, cleaning fluids, deodorant/ antiperspirant hair spray, industrial solvents and lighter fuel paint thinners. Toluene and n-Hexane are the most frequently involved neurotoxins [1,2]. Western data reports prevalence ranging from 7 – 1 0 percent among adolescents and still higher for street children. Data in India is relatively scarce. 92 cases of inhalant use over a period of ten years (2002-2011) were reported from Drug De-addiction and Treatment Centre of a major tertiary care hospital of north India[3]. Most of the case reports stress on the psychosocial aspects of substance abuse. Growing emergence of this addiction and easy availability of these substances to children and adolescents has become an issue of great concern. Physicians are often unaware of the medical complications of inhalant abuse and thus the patients may present as diagnostic dilemma. No specific laboratory test is available to confirm diagnosis. Diagnosis of substance abuse relies entirely on detailed family and personal history and a high index of suspicion .We report a 12 year old boy who had complications secondary to prolonged substance abuse.& repeated history taking helped us The patient improved with supportive care & is undergoing rehabilitation with help of social worker.

Case Presentation

A 12 year old boy presented with complaints of inability to stand and poor phonation for ten days, progressively increasing difficulty in breathing for one day and altered sensorium of a few hours duration. He had a history of weight loss, altered bowel habits with frequent loose stools and cough especially at night, on and off for past 1 year. He belonged to a low socioeconomic status family comprising of two adults, father and stepmother with 6 siblings.

At admission, he was drowsy with fretful behaviour. His weight was 25kg (62.5% of median) with Body mass index - 13.52 indicating severe under nutrition. He had aphonia, hypotension (Pulse rate – 140/min, BP – 80/60

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mm Hg) and severe respiratory distress (Respiratory rate – 60/minute). Pallor, perioral dermatitis and poor oral hygiene were present. Skin was dry, scaly but no scar or mark of injection, bruises or abrasions were seen. In chest, bilateral crepts & rhonchi were heard predominantly in the lower lung fields. Per abdomen-Bowel sounds were decreased. There was Generalised hypotonia, Power – 3/5, DTR were elicitable and Planters were bilateral flexor. Fine tremors were seen in upper limbs. No Cranial Nerve deficit or focal deficit was present. Fundus was normal. There was generalised hypotonia and fine tremors were seen in upper limbs. No cranial nerve deficit or focal deficit was present. Fundus was normal. Bowel sounds were decreased. Provisional diagnosis of sepsis with pneumonia with shock with hypokalemia (to rule out renal cause) cause was kept and child was stabilized with continuous oxygen, two crystalloid boluses, dopamine for 24 hours and i/v antibiotics

Laboratory parameters included haemoglobin 10.1 gm%, total leukocyte count 4400/Cumm with 52% neutrophils and 44% lymphocytes, platelet count of 39000/Cumm. Serum sodium was 136 meq/dl and serum potassium was 1.9 meq/dl. Blood urea was 47 mg% and serum creatinine 1.1mg%. Arterial blood gas analysis was suggestive of mixed respiratory and metabolic acidosis. Chest X-Ray was suggestive of consolidation in right lower lobe of lung.Aspartate and alanine transaminase were 93 U/l and 196 U/l, respectively. In urinary routine microscopy. Ultrasound abdomen revealed B/L kidneys enlarged with increased cortical echogenicity suggestive of renal parenchymal disease. In urine routine microscopy, RBC casts were seen and albumin was 2+. Cerebrospinal fluid examination was normal. Subsequently Blood, CSF and urinary cultures had no growth. HIV ELISA was negative.

HRCT chest was suggestive of consolidation in apical and posterior basal segments of right lower lung and focal consolidation in anterior basal segment of left lung. CECT brain and Nerve conduction velocity was normal. During hospitalisation leucocyte count,potassium & ABG showed serial improvement and normalized over 1 week. Patient improved significantly in two weeks but continued to be dyspnoeic on exertion. Pulmonary function test done revealed moderate restrictive airway disease.

In view of the multisystem involvement and no etiological cause identified patient's thorough history was revisited. Patient confided that he suffered maltreatment at the hands of his step mother, was repeatedly driven out of house, a school dropout and worked at a tyre puncture repair shop prior to presentation to our hospital. On repeated questioning, he gave a history of glue sniffing and occasionally bidi (nicotine) smoking since last 4 years; the frequency of which had increased in the weeks prior to presentation.

We reviewed the literature on substance abuse and were amused to discover that all the symptoms and signs - central nervous system manifestations, right lower lobe pneumonia with restrictive lung disease, glomerulonephritis, hypokalemia, and undernutrition represented a spectrum of toluene toxicity secondary to glue sniffing which was a sad result of child abuse and neglect in our patient.

2. Discussion

Volatile substances are inexpensive, readily available and create both rapid intoxication and rapid resolution; hence, they are popular among street children. [4,5] Highest prevalence is seen amongst 14–17 year olds. Inhalants account for the third most common cause of substance abuse, next only to nicotine & alcohol.[5] Victims of child abuse, street children, working children and those belonging to low socioeconomic status tend to be at greater risk for inhalant abuse due to low self-esteem and poor self image. Glue tends to be sniffed from bags. Liquids, including petrol, can be sniffed from a handkerchief or a coat sleeve. Gaseous preparations, such as butane and aerosols, can be sniffed from bags or sprayed directly into the mouth. [6]

Unfortunately no specific syndromes or clinical presentations confirm inhalant abuse though criteria for inhalant intoxication have been laid by American Psychiatric Association. [6] Symptomatology includes 'Rush' or 'High', loss of sensation of pain, cold and hunger. At high doses, slurred speech, poor coordination, confusion, tremor, headache, delusions, hallucinations, unpredictable behaviour.[5] Long term complications are Renal –nephrolithiasis, glomerulopathies, RTA; Hepatic - reversible hepatotoxicity; Pulmonary-pulmonary hypertension, restrictive lung disease, bronchial spasm; Cardiovascular system – VF, arrhythmias, hypotension, acute cardiomyopathy; Haematological – blood dyscrasias, leukocytosis; G.i.t – abdominal pain, vomiting,

hemetemesis, and diarrhoea. Volatile substance misuse can cause death by ventricular arrhythmias known as 'sudden sniffing death' or choking. [4]

Clues for detecting recent use are red, watery eyes, sneezing and coughing, chemical smell on breath, unusual spots, marks and rashes around nose or mouth and constantly sniffing. Our patient had perioral rash classically known as Glue-sniffer's rash. He has been rehabilitated and has abstained from substance abuse so far.

3. Conclusion

Inhalant abuse has shown a rapid rise in our country especially among the urban youth.[7]. Diagnosis of inhalant abuse is difficult and relies almost entirely on a thorough history and a high index of suspicion. Treatment is generally supportive, because there is no reversal agent for inhalant intoxication. Case reporting and research needs to be done to identify the real extent of the problem in our country and plan public health interventions.

4. Conflict of Interest

None Declared

5. References

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