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Prenatal Exposure to Drugs and Alcohol: A Case Report on Effects on Fetal Development and Postnatal Life

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ABSTRACT

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Background: Exposure to addictive substances such as heroin and alcohol, as well as the misuse of amphetamines during pregnancy, not only poses serious physical and psychological risks to the mothers but also exposes their unborn children to severe and irreversible dangers. This article examines the impact of fetal exposure to heroin and alcohol. It is evident that mothers who experience addiction during pregnancy face feelings of guilt, helplessness, and shame after birth, which can hinder them from seeking help for their addiction.

When a fetus is exposed to heroin and alcohol, at least two major ways can cause harm. First, the destructive effects of addictive substances on the placenta, which connects the mother and fetus. Second, addictive substances like heroin and alcohol, which can cross the placenta, directly impact the fetus.

Infants born to mothers addicted to heroin and alcohol face physical risks such as premature birth and its consequences, abnormalities known as FASD (Fetal Alcohol Spectrum Disorders), NAS (Neonatal Abstinence Syndrome), and ADHD (Attention Deficit Hyperactivity Disorder). They also suffer from emotional, behavioral, and psychological issues post-birth, including anxiety, depression, aggression, emotional regulation problems, and difficulties with trust and intimacy with others.(1,2)

Case presentation: In this article, we examine a 47-year-old male patient whose mother was addicted to heroin and alcohol during pregnancy. The patient, who was born prematurely, has faced various psychological and emotional disorders. He suffers from physical weakness, depression, and stress, and has been hospitalized multiple times in different psychiatric centers. Despite hospitalizations and receiving medication, the consequences of his mother's addiction to heroin and alcohol during pregnancy still affect him.

Conclusion: Addiction to alcohol and heroin in pregnant women, besides causing severe physical and mental harm to the mothers, can have devastating physical and psychological consequences on the fetus and newborn if it does not result in miscarriage or stillbirth. Treating these consequences is not easily achievable, even with medical and psychiatric care. Here, we conduct a detailed examination of the effects of alcohol and heroin consumption in pregnant women on the fetus and a person's life after birth. Separate studies are needed to investigate the conditions of addicted mothers during pregnancy and after that.

KEYWORDS:

Prenatal abuse, Fetus exposed to alcohol, Fetus exposed to heroin, Behavioral disorder, Psychological problems in children with addicted mother.

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INTRODUCTION

We will examine the general effects of exposure to heroin and alcohol on the fetus and examine each one separately.

Heroin:

When a pregnant woman uses heroin, especially through injection, heroin or its metabolites can easily and quickly reach the fetus. A study has shown that if a pregnant woman

injects heroin, it reaches the fetus within an hour. The metabolites of heroin, the most important being morphine, cross the placenta and enter the fetal bloodstream through passive transport.(3,4)

Heroin Impact on Placenta and Fetus, Long Term Effects on Child. This exposure can lead to a host of complications during pregnancy, including placental abruption, miscarriage, and stillbirth. Babies born to mothers who abuse heroin are often premature and underweight, increasing their risk of medical complications and developmental delays(5,6). One of the most well-documented consequences of perinatal heroin abuse is neonatal abstinence syndrome (NAS). NAS occurs when the newborn experiences withdrawal symptoms after being exposed to opioids in utero(7,8). These symptoms can include tremors, seizures, excessive crying, irritability, feeding difficulties, and respiratory problems(9,10). Babies with NAS may require specialized medical care, including medication to manage their withdrawal symptoms. In severe cases, NAS can lead to long-term health issues and developmental delays.

In addition to physical health complications, infants born to mothers who abuse heroin are at an increased risk of cognitive and behavioral problems later in life. Studies have shown that prenatal exposure to opioids can impact brain development, leading to deficits in cognitive functions such as attention, memory, and impulse control. Children exposed to heroin in utero are also at a higher risk of developing mood disorders, anxiety, and substance abuse problems in adolescence and adulthood(2,11).

The long-term effects of perinatal heroin abuse on the infant's life after birth can be profound and lasting. Children exposed to heroin in utero may struggle with learning disabilities, behavioral problems, and social issues that can impact their academic performance and relationships with peers. These children may also be more susceptible to engaging in risky behaviors, such as drug abuse and criminal activity, due to the neurological changes caused by prenatal opioid exposure(12).

Furthermore, the social and environmental factors associated with maternal heroin abuse can also have a significant impact on the infant's life after birth. Children born to mothers who abuse heroin are often exposed to unstable and unsafe living conditions, neglect, and abuse, which can further complicate their development and well-being. These children may lack the necessary support and resources to thrive academically, emotionally, and socially, leading to a cycle of intergenerational addiction and poverty(13,14).

Alcohol:

Addiction to alcohol during pregnancy can have detrimental effects on both the fetus and the newborn infant. Exposure to alcohol in placenta can lead to reduced placenta weight and increased risk of placenta abruption(15). Ethanol metabolism creates an oxidative environment that induces DNA damage while oxidizing lipids and proteins(16).And it can also lead to apoptosis by disrupting the function of mitochondria(17,18)

Alcohol is a teratogen, meaning it can interfere with the development of the fetus and lead to a range of physical, mental, and behavioral abnormalities. When a pregnant woman consumes alcohol, it crosses the placental barrier and enters the bloodstream of the fetus, affecting its growth and development. Additionally, babies born to mothers who are addicted to alcohol may experience neonatal withdrawal symptoms, which can have long-lasting consequences on their health and wellbeing(19).

One of the most well-known effects of alcohol addiction in pregnant women is fetal alcohol syndrome (FAS). FAS is a serious condition that can cause facial abnormalities, growth deficiencies, and intellectual disabilities in the affected child. Children with FAS may also have problems with impulse control, memory, attention, and social skills. These cognitive deficits can impact their academic performance and relationships with peers, leading to difficulties in school and later in life(20).

In addition to FAS, infants born to addicted mothers may also develop fetal alcohol spectrum disorders (FASD), which include a range of physical, mental, and behavioral problems. These may include heart defects, kidney abnormalities, vision and hearing impairments, poor coordination, and hyperactivity. Children with FASD may struggle with learning disabilities, speech delays, and emotional outbursts, making it challenging for them to function in everyday life(21). Furthermore, children born to addicted mothers may face challenges in their emotional and psychological development. Growing up in an environment where substance abuse is prevalent can have a lasting impact on a child's self-esteem, relationships, and mental health. They may struggle with feelings of guilt, shame, and abandonment, as well as difficulties in forming healthy attachments and coping with stress. These psychological issues can persist into adulthood and increase the risk of developing substance abuse problems themselves(21,22).

CASE PRESENTATION

The patient is a 47-year-old individual who was born at 31 weeks of pregnancy prematurely. Among the problems he had after birth were delayed speech (started making sounds and speaking at 1.5 years old) and motor skill disorders. Now, He weighs 51 kg and is 166 cm tall. This condition is attributed to his mother, who was addicted to heroin, amphetamine, alcohol. His mother abused heroin and alcohol throughout her entire pregnancy.

He never knew his parents. He was told that his mother died during childbirth and his father died due to a "golden shot." Initially, he was raised in an orphanage and believed he had

no close relatives. Later, he was adopted by a foster mother. He completed his education up to the end of junior high school and then received his diploma in vocational school. After that, he participated in a 2-years program known as Ausbildung to become a vehicle technician. At present, his overall physical condition indicates slightly diminished and weak general health and nutrition.

His first psychiatric hospitalization was in 1999. To date, he has been hospitalized several times in various psychiatric clinics and hospitals. His medical findings are as follows:

1. He suffers from occasional headaches, and an MRI revealed that he has a cerebral aneurysm.
2. He has a lower-than-normal IQ level. The patient's IQ was assessed using the Raven's
   Progressive Matrices method and was 79. Despite the patient's stepmother being very strict and the patient having to study and practice extensively to pass school exams, the patient managed to complete middle school education. After that, the patient pursued vocational training in technical schools to learn a profession for future employment.
3. Due to psychological issues and a tendency to escape himself, he has changed his name three times and his place of residence more than thirty times. Due to a lack of self-confidence, internal fears, and other problems, the patient often wanted to escape from himself and his surroundings. As a result, he repeatedly changed his name and place of residence in an attempt to flee from his mental issues and to achieve a relative sense of peace.
4. Fear of the future and fear of interacting with others. Due to an inability to establish effective relationships with others, he is incapable of forming friendships, which has led to:
   a) Although he wishes to marry, he has been unable to establish an effective relationship with a woman due to a lack of communication skills, and thus remains unmarried. He prefers to masturbate to avoid having sexual relations with a woman due to the fear of forming connections with others.
   b) He has no friends.
   c) He feels lonely and suffers from depression.
   d) Due to his inability to connect with others and his depression, he has been unable to maintain consistent employment.

He is currently unemployed and supports all his living expenses through government assistance(He receives a 100% disability pension).

And throughout his life, he developed a desire to learn more about his heritage and potential relatives, eventually hiring a genealogy company. About ten years ago, he actually discovered a maternal half-sister in America. After initially connecting through social media, he cut off contact with his half-sister about three years ago. Subsequently, he decided to travel to his hometown to gather information about his parents from marginal individuals and addicts. When this effort was unsuccessful, he decided to seek information from the local police. Eventually, he learned from them that his father is still alive.

He lives independently in an apartment and has a caregiver who visits his home once a week. He receives antidepressant and antipsychotic medications(Fluoxetine 20 mg and Clozapine 25 mg once daily, which help him achieve a relative calm, enabling him to handle daily life activities (shopping, cleaning the home, etc.).

RESULT

A 47-year-old patient suffers from congenital damage caused by maternal drug and alcohol use. In addition to physical issues and low IQ, they endure emotional instability, chronic paranoid schizophrenia, and personality disorders. All of these disturbances and hardships stem from prenatal exposure to alcohol and heroin. Indeed, parents must responsibly conduct themselves during pregnancy to prevent creating such suffering and problems for an innocent person. We recommend the following actions to help educate young people so their bodies, minds, and lives are not handed over to drugs and alcohol:

1. Education in Schools:
   - Include lessons on the harms of drugs and alcohol in the curriculum.
   - Provide educational programs and awareness workshops.
   - Invite experts and specialists for talks and information sessions.
2. Pre-marital Counseling:
   - Offer counseling sessions that cover the dangers of substance use and the importance of health during pregnancy.
   - Emphasize the responsibilities of parents toward the next generation.
3. Public and Media Programs:
   - Launch public awareness campaigns and utilize mass media to convey the message.
   - Produce content such as brochures, videos, and articles on the harms of substance use and risks during pregnancy.
4. Psychological Services and Social Support:
   - Provide access to psychologists and counseling for affected individuals and families.
   - Create support systems for pregnant women to keep them away from drugs and alcohol.

Increasing public awareness and enhancing individuals' knowledge on these issues can significantly reduce the occurrence of physical and psychological problems in future generations.

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