

ARTICULO DE REVISION – REVIEW ARTICLE

Illicit drug use during pregnancy

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Abstract

The aim of this article is to review various effects of drug exposure during pregnancy and management of illicit drug use during pregnancy. The problem of substance use/dependence during pregnancy is of focal interest for physicians, researchers and the public health sector, independent of the general consumption of illegal drugs. Both the extent of drug consumption during pregnancy and the effects of maternal drug consumption on the fetus are frequently underestimated. Active substance - abusing pregnant women also experience a number of somatic consequences: they are at a high risk of developing a state of malnutrition and often lack adequate obstetric care.

Key Words: cannabis, amphetamines, heroin.

(source: DeCS Bireme)

Introduction

Substance abuse is a recurring pattern of alcohol or other drug use which substantially impairs a person's functioning in one or more important life areas such as familial, psychological, social or physical [1].

Nearly 90 percent of drug-abusing women are of childbearing age. The exact number of these people is unknown because the statistics relies heavily on voluntary patient disclosure. Some women tend to keep the use of street drugs from gynecologists for fear of stigmatization and discrimination, therefore, the symptoms induced by maternal dependence cannot always be recognized [2].

Substance abuse during pregnancy contributes to obstetric and pediatric complications, including Fetal Alcohol Spectrum Disorders, prematurity.

For women who require intervention for substance use, a team approach is recommended, including the primary provider, clinic nurse, social worker, public health nurse, chemical dependency treatment provider, and the client herself.

Epidemiology

The effects of chemicals, such as opiates, cocaine, on fetal development have been seriously studied only in the last 30 years. Therefore, documented maternal drug abuse prevalence varies [3].

It is estimated that each day about 250 - 650 fetuses are exposed to cocaine or other drugs.

Based on urine testing at birth and/or maternal history, some studies of inner city obstetric populations have reported cocaine use as high as 11.5% in pregnant women [4].

The incidence of methamphetamine use in pregnant women is unknown, but a 2002 study found that 3 percent of pregnant women in the United States had used illicit substances in the preceding month [5].

The number of heroin addicts of fertile age in Croatia has been estimated to be 4 500, of which some 250 give birth to 1 child per year. Heroin alone or in combination with methadone has been used during the past decade by approximately 80 percent of addicted mothers in worldwide.

Risk Factors

The most important risk factors are shown below:

- a) individual (e. g., antisocial behavior, teen parenthood, early sexual involvement);
- b) family (e. g., family history of problem behavior, family management problems);
- c) school (e. g., dropping out of school, inadequate school climate);
- d) community (e. g., use of drugs in neighborhood, high-crime neighborhood) [6].

Protective Factors

Researchers believe protective factors operate in three ways. First, they may serve to buffer risk factors, providing a cushion against negative effects. Second, they may interrupt the processes through which risk factors operate. Third, protective factors may prevent the initial occurrence of a risk factor, such as child abuse.

The most important protective factors are shown below

- a) individual (e. g., positive temperament, religiosity, optimism for the future);
- b) family (e. g., good relationships with parents, having a stable family);
- c) school (e. g., school motivation, high-quality school);
- d) community (e. g., safe and health-promoting environment, positive social norms, economically stable communities).

Pathophysiology of drug addiction: role of dopamine

Dopamine is believed to be the final common pathway for drugs such as cocaine, morphine. These drugs of abuse-induced changes in brain levels of dopamine are associated with feelings of well being and pleasure and provide positive reinforcement, contributing to the continued drug abuse.

Repeated drug administration produces sensitization of extracellular dopamine levels in the nucleus accumbens and behavioral sensitization in rats, as evidenced by an enhanced locomotor response and increased dopamine release in brain.

Withdrawal from chronic drug administration produced a reduction in dopamine outflow in the nucleus accumbens.

Drug-induced dopamine depletion in the mesolimbic system may represent the mechanism, at least in part, underlying dysphoria and anhedonia that accompanies drug withdrawal and might also contribute to the intense drug craving experienced by addicts [7].

Effects of heroin use during pregnancy

Heroin is made from morphine, a naturally occurring substance extracted from the seed pod of the Asian opium poppy plant. [8].

Maternal effects:

- a) abruptio placentae;
- b) sexually transmitted diseases (a local study in Hong Kong showed that narcotic addiction in pregnant women in the Chinese population was associated with higher prevalence of venereal disease and antepartum haemorrhage) [9];

c) risk of contracting human immunodeficiency virus, hepatitis B and C, endocarditis, psychiatric disorders;

d) fetal distress;

e) meconium stained amniotic fluid;

f) withdrawals;

g) antepartum hemorrhage;

h) prematurity;

i) malnutrition [10].

Fetal effects:

a) intrauterine growth retardation;

b) low birth weight;

c) small for gestational age;

d) congenital anomalies.

Effects of marijuana use during pregnancy

Marijuana is a green, brown, or gray mixture of dried, shredded leaves, stems, seeds, and flowers of the hemp plant [11].

Maternal effects:

a) marijuana's primary cannabinoid THC alters the normal ovulatory cycle [12];

b) an increased risk for premature birth.

Fetal effects:

a) no evidence exists that marijuana increases the risk of birth defects;

b) three studies have demonstrated a possible increased risk of nonlymphoblastic leukemia, rhabdomyosarcoma in children whose mothers reported using marijuana during their pregnancies;

c) some babies born to women who used marijuana during their pregnancies display altered responses to visual stimuli and a high-pitched cry, which may indicate problems with neurological development [13];

d) small birth size;

e) children born to cannabis-dependent parents may have some developmental problems, such as subtle differences in higher cognitive processes, sleep disturbances in 3-year-olds increased child hyperactivity, impulsivity and inattention at 10 years [14].

Effects of cocaine use during pregnancy

Cocaine is a powerfully addictive stimulant drug. The powdered hydrochloride salt form of cocaine can be snorted or dissolved in water and injected [15].

Maternal effects:

- a) spontaneous abortion during the first trimester;
- b) stillbirth;
- c) prematurity [16];
- d) higher incidence of poor weight gain and cardiac complications, such as hypertension, cardiac ischemia;
- e) uterine rupture,
- f) abruptio placentae (caused by vasospasm and hypoxia to the placental bed);
- g) spontaneous abortion [17];
- h) maternal seizures;
- i) uterine contractions are common;
- j) sexually transmitted disease;
- k) migraine headaches;
- l) dyspnea during pregnancy, which is due to a decreased tidal volume from the compression of the lower lung fields by the expanding uterus, may be indicative of "crack lung".

Fetal effects:

- a) fetal death;
- b) small head circumference;
- c) a piercing cry, which is apparently indicative of neurological dysfunction;
- d) irritability and hypersensitivity;
- e) high heart rates;
- f) visual abnormalities which may be associated with retinopathy or damage to the iris;
- g) an increased risk of malformations of the genito-urinary tract;
- h) a byproduct of cocaine metabolism inhibits the development of nerve cells by way of interfering with cyclin A, a protein involved in regulating cell division [18]
- i) cocaine – induced vasculopathy reduces the efficacy of the fetal blood – brain barrier.

Effects of amphetamines use during pregnancy

The term amphetamines covers several similar substances including amphetamine sulphate, dexamphetamine and methamphetamine [19].

Maternal effects:

- a) anorexic effects;
- b) women are shorter and lighter [20];
- c) fetal distress;
- d) meconium stained amniotic fluid;
- e) pre-eclampsia;
- f) antepartum hemorrhage;
- g) infection;

h) psychiatric behavior, hallucination;
i) seizures;
Fetal effects:
a) fetal hypoxia;
b) intrauterine growth retardation;
c) cranial abnormalities, cardiac anomalies, smaller head circumference;
d) amphetamine cause vasoconstriction via increasing circulating level of nor-epinephrine, serotonin and dopamine. If this effect occurred during the period of organogenesis of the embryo, malformation could be noted (cleft lip and palate, cardiac defects).

Screening tools for drugs

The 4 P's Plus© (table 1) is a screen for substance use in pregnancy that was developed and tested by Ira Chasnoff. He found that this screen effectively identified pregnant women at highest risk for substance use during pregnancy [21].

Table 1. The 4P's Plus©

Subjects and objects	Questions
Parents	Did either of your parents ever have a problem with alcohol or drugs?
Partner	Does your partner have a problem with alcohol or drugs?
Past	Have you ever drunk beer, wine, or liquor?
Pregnancy	1. In the month before you knew you were pregnant, how many cigarettes did you smoke? 2. In the month before you knew you were pregnant, how many beers/how much wine/how much liquor did you drink?

Signs and symptoms of drug abuse

It is important that the clinician be alert for clinical and historical cues that may indicate the possibility of drug abuse. Based on clinical observation, laboratory

testing for drug abuse may be indicated in order to provide information for the health care of the mother and newborn.

Behavior patterns:

- a) sedation;
- b) euphoria;
- c) agitation;
- d) paranoia and other.

Physical signs:

- a) dilated or constricted pupils;
- b) track marks or abscesses/injection sites;
- c) increased pulse and blood pressure;
- d) hallucinations and other.

Medical history:

- a) frequent hospitalizations;
- b) unusual infections (endocarditis, HIV);
- c) chronic mental illness and other.

Laboratory testing

Urine toxicology determines the presence or absence of a drug in a urine specimen. It may be useful as a follow up to a positive interview screen.

Benefits of laboratory testing:

- a) confirms the presence of a drug;
- b) determines the use of multiple drugs;
- c) determines if a newborn is at risk for withdrawal.

Limitations of laboratory testing:

- a) negative results do not rule out drug use;
- b) a positive test does not tell how much of a drug is used;
- c) a positive test does not identify user characteristics such as intermittent use, chronic use, or addiction;
- d) false positive results can be devastating for a drug-free client;
- e) urine toxicology has no value in identifying or minimizing the teratogenic effects that occur early in pregnancy.

Indicators for testing

If positive risk indicators are identified at any time during pregnancy, rule out other identifiable causes, re-screen, test, or provide assessment as appropriate.

High Risk Factors:

- a) no prenatal care;
- b) inappropriate behavior (e.g., disorientation, somnolence);
- c) physical signs of drug abuse or withdrawal;
- d) recent history of drug abuse or treatment.

Risk factors requiring further assessment before urine toxicology testing:

- a) history of physical abuse;
- b) mental illness;
- c) fetal distress;

- d) preterm labor;
- e) placenta abruptio.

Pregnancy management issues

A woman who uses drugs during pregnancy is at risk for a variety of complications. The following interventions should be considered in the course of her care (some examples):

- a) prenatal:
 - 1. obtain routine blood tests;
 - 2. periodically screen for sexually transmitted infections;
 - 3. schedule more frequent visits to identify medical and psychosocial problems early;
 - 4. monitor pregnancy and fetal development;
 - 5. discuss possible effects of drugs on the newborn;
- b) intrapartum:
 - 1. perform complete history and physical, including recent drug use;
 - 2. repeat hepatitis screen, serologic test for syphilis, and HIV (rapid test);
 - 3. repeat urine toxicology;
 - 4. intrapartum pain management.

Associated issues for pregnant women

Pregnant women who need treatment for substance abuse often have different issues than men and non-pregnant women. Issues to consider include:

- a) psychosocial Issues:
 - 1. family history of drug abuse;
 - 2. physical and/or sexual abuse as a child;
 - 3. domestic violence;
 - 4. history of sexual assault;
- b) medical Issues:
 - 1. sexually transmitted infections;
 - 2. psychological disorders such as depression, panic;
 - 3. other medical problems such as hepatitis, pancreatitis;
 - 4. unintended pregnancy.

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