**Effects of Marijuana on the Fetus and Breastfeeding Infants.**

Current studies indicate that approximately 4% of women in the USA use illicit drugs while pregnant. Seventy five percent of these cases report the use of marijuana. Despite the widespread use of this product, the public is not aware of the potential neurobehavioral effects of this drug on the fetus or the newborn infant.

THC is indicated for nausea and appetite stimulation during chemotherapy, and HIV patients. Chronic cannabis use may cause depression, anxiety, bipolar disorder in adolescents and adults

Cannabis, also known as marijuana, is a psychoactive drug with multiple effects including euphoria, mood changes and hallucinations. Its active ingredient is delta-9-THC (Tetrahydrocannabinol, THC), which acts on cannabinoid (CB1) receptor. THC is highly lipid-soluble which explains its high concentrations in brain and body tissues. Small to moderate doses are stored in tissues for long periods up to 2-3 weeks. Cannabis has enormous affinity for milk and produces a milk/plasma ratio of 8, although the levels in milk are generally considered subclinical. THC crosses the placenta readily, and there is increasing evidence that it may increase rates of growth retardation, adverse neurodevelopment following prenatal exposure. [1-3]

One report suggests that THC may produce changes in certain hormones by inhibiting prolactin, growth hormone and thyroid stimulating hormone secretions and stimulating the release of corticotropin.[4]

Effects of cannabis during pregnancy:

Recent longitudinal studies suggest an increased risk of motor, social and cognitive disturbances in offspring who were exposed to cannabis prenatally.

One study indicated a increased incidence of reduced head circumference in young adolescents (9-12years of age) who were exposed in utero to heavy marijuana use.10 Prenatal exposure resulted in a higher rate of low birth weight infants, and childhood leukemia. 5, 6,11 Recent studies have suggested a reduction in long and short-term memory retrieval and retention in children exposed to prenatal cannabis. These children were also weak in planning, integration and judgment skills.

In a study of 42 postmortem fetal brain samples from pregnant women at mid gestation (18-22 weeks of gestational age) who voluntarily underwent saline induced abortion, a decrease in dopamine receptor (D2) mRNA expression in amygdala with significant prevalence in male fetuses. 7 Extensive marijuana exposure in utero was associated with the lowest reported mRNA levels. Unfortunately, this study did not indicate whether this change is transient or permanent.[7 8]

Effects of Cannabis during Lactation:

Marijuana is secreted in milk with a reported milk/plasma ratio of 8.11 In one study of 27 women who used cannabis daily during breastfeeding, no differences in growth, mental and motor development were noted in this study population. Most studies suggest a significant absorption in infants following exposure via breast milk.

While a analysis of breast milk samples in chronic heavy users revealed an eight-fold increase in accumulation in breast milk compared to plasma, the dose obtained is still insufficient to produce clinical effects in the infant. It may be, however, sufficient to alter long-term neurobehavioral functioning. Infants exposed to marijuana through breast milk will test positive in urine screens for long periods of time (2-3 weeks). One study of 16 women indicated decreased plasma levels of prolactin especially in the luteal phase of the menstrual cycle.[9]

In summary, there is increasing concern about the use of marijuana or other similar products in pregnancy and in breastfeeding mothers. Data continues to suggest that cannabis may produce long-term sequelae, such as reduced cognition, and changes in mood and reward.8 Both human cohort studies, and studies in animals clearly suggest that early exposure to cannabis is not benign, and that cannabis exposure in the perinatal period may produce long-term changes in behavior and mental health.

While the effect of cannabis on infants from breastfeeding mothers is limited, cannabis use in breastfeeding mothers should be strongly discouraged. Thus in pregnant and breastfeeding mothers, this drug should no longer be viewed as safe.

Mothers should be strongly advised to avoid any form of THC while pregnant and breastfeeding. Mothers found positive for THC in urine screens should be strongly advised to avoid continued exposure to this drug while breastfeeding and should be counseled that continued exposure of their infants to cannabis may produce severe long-term neurobehavioral consequences.

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