EDITORIAL

Current Status and Future Diagnostic Trends of Prenatal Illicit Drug Exposure in the Neonate

With regards to opiate abuse, heroin has become the most common illicit drug in Taiwan. In pregnant women, opiate abuse contributes to adverse effects, such as low birth body weight, premature delivery, and life-long developmental consequences in the neonate.¹ Clinical characteristics for opiate or poly-drug exposure in utero, resulted in neonatal withdrawal syndrome, which required clinical observation and treatment for days or even weeks in hospital. The American Academy of Pediatrics published guidelines which include the monitoring and treatment of neonatal abstinence syndrome (NAS) following in utero opiate or poly-drug exposure. Among these patients, NAS was the most observed clinical finding, and included dysfunction of the central nervous system, autonomic nervous system, gastrointestinal tract, and respiratory system.¹ In some severe cases, NAS led to deleterious outcomes, such as diarrhea, fever, seizure, feeding intolerance, poor weight gain and even death. Moreover, poly-drug abusers, who used multiple illicit substances during pregnancy, declined; this obscured the clinical situation with regards to the treatment of their offspring.² Thus, the identification of illicit drugs, while the patient suffers during the perinatal period, could provide an imperative basis for clinical diagnosis and potential management. Practically speaking, this identification should be assessed in both mothers and their newborn. Samples used in newborn drug testing included urine, meconium, hair, and umbilical cord segment. Urine testing of the neonate for illicit drugs, revealed a low biological sensitivity, as this procedure can only detect recent drug exposure. In addition, since the earliest collection of the newborn’s urine with the highest concentration of an analyzed substance was often missed, due to practical clinical difficulties, meconium drug testing was more biologically sensitive and easier to perform.³ However, meconium passage in a newborn may take several days; this often delayed the clinical diagnosis. Su et al⁴ measured hairs of neonates; this method was potentially more biologically sensitive and more rapid in the identification of poly-drug use. Indeed, it has been reported that hair analysis was costly and good at detecting chronic exposure, but, although it exerted a high biological sensitivity for opiate, amphetamine, and cocaine, it showed a low biological sensitivity for marijuana exposure.⁵ In addition, hair analysis provided a possible duration of illicit drug exposure, by the measurement of the hair segment. Although this technique is not widely available at present, it is a potential survey tool for use in important aspects of clinical needs. It is worth considering for unsolved issues underlying illicit drug exposure in the neonate prenatally, such as the occurrence and severity of NAS, and neonatal psychomotor behavior after poly-drug exposure.

Treatment of prenatal substance use or abuse should be started before delivery. Since the 1970s, methadone, a synthetic opiate, has been recommended for opioid dependence in pregnant women, to improve maternal health and neonatal outcomes, such as lower birth weight and NAS.⁶ Buprenorphine, a partial agonist of the mu-opioid receptor and a partial antagonist of the kappa-opioid receptor, was first introduced in 1996 and is increasingly being used for opioid addiction treatment, due to fewer autonomic side effects, in non-pregnant women. Buprenorphine was also thought to be a better treatment for opioid abuse in pregnant women, due to the need for less morphine, shorter duration of treatment for NAS, and a shorter hospital stay of neonates with perinatal morphine exposure.⁷ The reason for the high attrition rate remains to be addressed in future research. Prospectively, there will be a trend to use buprenorphine as the first line medication for opioid dependence in pregnant women. Therefore, hair analysis in neonates for in utero illicit drug exposure should include buprenorphine as a future candidate.

The prevalence of illicit drug abuse has increased in pregnant and non-pregnant women recently. Although current medical technology and environment can provide a better treatment, decreasing drug abuse in pregnant women is more efficient. Thus, more attention and studies should be focused on a rapidly, widely available, cheap, and accurate survey for neonates with prenatal poly-drug exposure, in order to develop a suitable clinical and therapeutic strategy.
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