Effects of substance abuse during pregnancy

Substance abuse during pregnancy is common and, unfortunately, may have many adverse effects, particularly on the infant. These include an increased risk of fetal growth restriction and premature delivery. Infants may become dependent on drugs that they are exposed to in utero and after birth suffer withdrawal symptoms [neonatal abstinence syndrome, (NAS)]. Infants with NAS may require prolonged treatment and spend weeks or even months in hospital as a consequence. A variety of drugs have been used with the aim of alleviating NAS: these include morphine, methadone, chlorpromazine, phenobarbitone and diazepam. The limited evidence available suggests that opioids are the most appropriate treatment for NAS, but there are few data to determine the most appropriate management for the growing number of infants who have been exposed in utero to maternal polydrug abuse. Long-term neurodevelopmental and behavioural abnormalities are more common in infants exposed to substance abuse in pregnancy, and these include lower intelligence quotient scores, delays in motor skills, speech, perceptual and cognitive disturbances and behavioural problems. Affected children require long-term follow-up and assessment to identify and respond to their ongoing needs.

In the UK, urine screening demonstrated that up to 16% of pregnant women in an inner city area had taken at least one illicit substance and in the US, the prevalence may be as high as 44% in certain areas. It is important, then, to be aware of the adverse effects of substance abuse during pregnancy, particularly on the infant, and these will be described in this article. In addition, the efficacy of interventions aimed at reducing this morbidity will be discussed.

Pregnancy outcome

During the first weeks of pregnancy, abuse of substances that severely affect embryonic development can result in spontaneous abortion; later in the first trimester substance abuse can be associated with congenital malformations. Pregnancy complications, such as placental abruption and premature and prolonged rupture of the membranes, are more common in substance-abusing women, and as a consequence their infants are more likely to be born prematurely and/or of low birthweight. There is also an increased rate of stillbirth and growth retardation. Intratuternine growth retardation is more common in infants of women taking methadone, but even infants of women taking cannabis during pregnancy can suffer a reduction in birthweight. Cocaine and nicotine have their maximum effect on fetal weight in the third trimester; the reduction in birthweight is directly proportional to the number of cigarettes smoked.

Neonatal abstinence syndrome

Infants exposed to certain drugs in utero become physically dependent on them. After birth, the infants suffer ‘withdrawal symptoms’ or NAS. They have a high-pitched cry and suffer from restlessness, hyperreflexia, jitteriness, hypertonia, myoclonic jerks, convulsions, frequent yawning, sneezing, nasal flaring and tachypnoea, excessive sucking or rooting, poor feeding, regurgitation or projectile vomiting and loose or watery stools. Hyperphagia is a classical feature of NAS, which may be associated with poor weight gain but, less frequently, excessive weight gain. NAS occurs in between 50% and 80% of infants born to opiate-dependent mothers. Heroin has a short half-life and withdrawal occurs within 48 to 72 hours of birth, whereas methadone withdrawal occurs seven to 14 days after birth.

Long-term effects

Some children of women who abuse substances during pregnancy suffer long-term neurodevelopmental and behavioural abnormalities. There are often, however, factors other than the maternal addiction which could affect the developmental outcome of such children. A high proportion of drug abusing women are in relationships with men who also abuse drugs and up to two-thirds are subjected to physical and sexual abuse. Mental health problems are also frequent among drug-abusing individuals. Poor developmental outcomes have been associated with poverty, unstable home conditions and domestic violence.

Neurodevelopmental abnormalities

In utero substance abuse can result in a variety of neurodevelopmental abnormalities.

Cocaine exposure in utero increases the risk of cerebral palsy and has been associated with significantly lower intelligence quotients and poorer language development. Some studies have reported that in utero opiate-exposed children functioned in the normal and others the lower range of development; such conflicting findings may reflect differences in type, dosage or duration of drug exposure and the influence of other factors, for example obstetric complications. Poor developmental outcomes, however, are more likely if there is ongoing maternal cocaine and/or heroin abuse. Speech, perceptual and cognitive disturbances have been noted in toddlers who were opiate-exposed and children of cocaine-abusing mothers have been reported to lack spontaneous vocalisation and babbling, and demonstrate a lack of imitative vocal play. Serial assessments up to five-and-a-half years have highlighted delays in language development of children of polydrug (cocaine, heroin and methadone) abusing mothers. Visual problems can occur following certain substance abuse exposure; microphthalmia and optic atrophy have been described following maternal cocaine abuse and fetal exposure to marijuana can result in delay in maturation of the visual system.

Behavioural problems

Opiate-exposed children have lower levels of...
of learning and adapt more slowly to new situations; as toddlers they are highly energetic, talkative and easily distracted. Cocaine-exposed pre-schoolers can have irritability, agitation, aggression and poor social skills.

Management during pregnancy

If interventions to improve outcome are to be successful, it is essential to accurately identify women who are substance abusing during pregnancy. This is not reliably achieved by maternal interview alone; 40% of women who denied substance abuse in one series had positive urine tests for non-prescribed drugs. There is a high false negative rate of urine screening dependent on the time of sampling to the time the mother last abused drugs. The most accurate screening method is to examine meconium: this substance and its composition reflects current and past drug abuse.

The rationale for using substitution therapy is to prevent relapse in those misusing opiates, as otherwise cycling between withdrawal and intoxication may occur and the resulting wide variations in opiate levels increase fetal stress. In addition, pregnant women maintained on substitution therapy may be more likely to comply with antenatal monitoring than those who have been instructed to abstain. Methadone is the substitution therapy usually administered; methadone, compared to the illicit use of heroin, has been associated with greater take-up of antenatal care and a reduced risk of preterm delivery and low birthweight. NAS, however, is more common in infants exposed in utero to methadone than heroin, and as a consequence other possible substitution therapies have been assessed. In one study, buprenorphine, a partial opiate agonist, was associated with fewer infants requiring treatment for NAS and there were no adverse effects; the sample size, however, was small and there is no specific licence for its use in pregnancy.

Postnatal interventions

Between 30% and 80% of infants exposed to opiates in utero require treatment for NAS. A variety of agents have been used to treat NAS, including opioids, clonidine, chloral hydrate, chlorpromazine, diazepam and phenobarbital. Few agents have been examined in appropriately designed randomised trials. The limited information available suggests that opioids are the most effective treatment in controlling NAS related to in utero opiate exposure. There are, however, few data to inform appropriate treatment of infants exposed to maternal polydrug abuse. Strategies to promote infant ‘relaxation’ should be instituted while drug exposed newborns are still in the hospital. The strategies include avoidance of excessive handling and encouragement of the use of positioning techniques to improve posture and movement. Infants may require prolonged treatment for NAS and, as a consequence, spend weeks or even months in hospital. The duration of stay can be reduced in such infants, who are otherwise healthy, if they are discharged from hospital once stable on treatment. A concern regarding such an approach is that parents who substance-misuse may not have competent organisational skills to comply with the follow-up schedules. It is, therefore, essential that resources are identified to ensure appropriate follow-up and therapy for these families. Following hospital discharge, specialised treatment programmes, coupled with family support and parent education services, have been demonstrated to ameliorate at least some of the negative effects of prenatal drug exposure.

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Substance abuse during pregnancy

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Keeping the needs of teenage parents at the heart of services

The setting of targets to provide impetus to specific activity and as a performance management tool has played an increasing role in healthcare planning over the last ten years. Whilst the process has provided a useful framework for planning and resource allocation, there is a concern that it represents a move away from a model that has individual clients’ needs at its heart. The establishment of teenage conception targets and targets relating to expectations of young parents are a case in point.

The Government outlined its commitment to the needs of pregnant teenagers and teenage parents in the Teenage Pregnancy Strategy published in 1999 and in the subsequent funding of 20 Sure Start Plus pilot programmes in areas with high conception rates. The aim of these pilot programmes was to ‘reduce the risk of long-term social exclusion and poverty from teenage pregnancy’.

Running through the Government’s social exclusion agenda has been a belief in the powerful preventative effect of engagement in education and a concern to eradicate the cycle of deprivation that has, in this context, been seen to contribute to the high rates of teenage parenthood amongst those who were themselves the children of teenage parents. Consequently the targets set to establish the effectiveness of work with teenage parents focused on ensuring that teenage parents remain engaged with education whilst at the same time bond with their children and develop good parenting skills.

The underpinning rationale for these targets is well argued by the Government and seemingly convincing; the problem is that having established that the underlying causes are essentially structural and societal, the targets are based on individual agency and efficacy. If they were seen as targets for services to meet, this would be less problematic, but they are seen as targets to be delivered by young people and any failure to meet them is seen as a lack of commitment or application. There is a lack of recognition of the vulnerability and disadvantage of some of these young women who we know to be disproportionately likely to come from deprived communities, to have been excluded from school and to have unstable family backgrounds. In this context, the pressure to return to an education system of which they have scarcely been a part and to be good parents when their experiences of being parented is negative or non-existent, is likely to do little more than exacerbate an existing sense of failure relating to being pregnant in the first place. In this case the targets are not only an additional pressure, but are potentially contradictory with the young woman feeling the pressure to achieve both academically and as a parent, when attendance at school may impinge on their time and ability to parent, and where the time and energy needed to parent effectively prevents attainment or attendance at school.

The solution to this conundrum relies on a commitment to develop services in line with two key principles. The first is to ensure that the pressure to meet targets lies with services. Services must recognise the complex needs of the client group, acknowledge where practice and approach constitute a barrier and commit to making appropriate change. They must take responsibility for working towards the targets and accept that failure to meet them is a collective issue, not the fault of individual young women. Secondly, in recognition of the complexity of the issues facing teenage parents and their greater likelihood to be vulnerable and disengaged from services, interventions need to be unequivocally ‘client-centred’ with specific, individualised packages of support. Agencies should work with individual young women to help them identify their own needs and solutions, enable them to develop confidence and self-esteem and advocate alongside them with key service providers.

By ensuring that services take on their responsibilities and that young women are empowered to take control of their own development, means that holistic packages of support can be developed in genuine partnership. It also means that targets can play their proper role - as a means to an end, rather than an end in themselves.

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