The Emergence of Maternal Drug Addiction as a Problem in Ireland 1981

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The Jervis Street Drug Advisory and Treatment Centre, Dublin, has recorded a 75% increase in attendance of drug addicted patients in 1980, 25% of these being women in the childbearing age.[1] As a reflection of this increase in the incidence of drug abuse in Dublin, we delivered nine heroin addicted mothers in 1981, whereas only six such mothers delivered in the previous eight years (Figure 1). Seventeen babies were born as two mothers were confined twice.

This report describes the profile of the drug addicted mother and the effect on the fetus and newborn infant. The high failure rate of the current methods of management emphasises the need for an increased awareness of the problem and the early involvement of the expectant mother in an active and organised programme.

Pattern of Drug Abuse

Thirteen of the fifteen mothers attended the Drug Advisory and Treatment Centre. Although they were heavily drug dependent by the time of first contact, the length of drug abuse was on average only two years. Twelve of the fifteen were taking opiates, usually heroin: other common drugs of abuse were barbiturates, cocaine, amphetamines and hallucinogens.

Maternal Data and Family Background (Table 1)

Maternal age ranged from 16 years to 30 years; the majority of mothers (69%) being less than 20 years. Ten of the

Table 1
Background data on 13 drug addicted mothers

	Number	Percentage
Unmarried at time of conception	10	76.9%
Social Class I and 11	4	30.7%
VI and VII	9	69.2%
Living at home	3	23.0%
Secondary education	4	30.8%
Psychiatric history	9	69.2%
Serum hepatitis	7	53.8%
Venereal disease	2	15.4%

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Table 2
Perinatal care and problems among 15 drug addicted mothers

	Number of Mothers	Percentage
Antenatal care	13	86.6%
Attended Jervis Street	13	86.6%
Motivation: Good	3	20.0%
Poor	2	13.3%
None	10	66.6%
Pre-eclampsia	1	6.6%
Fetal distress	3	20.0%
Emergency section	2	13.3%

fifteen were single at the time of conception. They came from families of widely varying social classes and a third of the parents had a nervous or psychiatric background. In only three of thirteen cases was the relationship between the girls and their parents described as good and only three were living at home at the time of contact. Educational attainment was low. Four attended secondary school and only one of these remained to pass the Leaving Certificate. Almost all had a history of truancy. As a result half were unemployed at the time of first contact.

As regards living conditions, the sample could be separated into a younger group w ho lived at home during their pregnancy and an older group who led a nomadic existence. Five of these were squatting in houses due for demolition. In all cases except two were the conditions for bringing up children said to be totally inadequate.

There was a high incidence of emotional and physical illness among the group, nine having received treatment for emotional or psychiatric disorders in the past. Seven of the mothers had hepatitis although only one was HBs Ag positive while pregnant. Two mothers had venereal disease. One had a positive VDRL slide test in her first pregnancy. The second was diagnosed as having gonorrhoea only when her infant developed gonococcal ophthalmia.

All but one of the fathers were drug addicts. Half of them were in trouble with the law, a quarter drank to excess and one-third were reported as being very violent. Only two gave the mother any support or assistance during pregnancy.

Perinatal Care (Table 2)

Two out of fifteen mothers had no antenatal care whatsoever. Overall, half had a good record of attendance. However, these were mainly of the previous decade and only three of the 1981 group were good attenders. Only three showed much determination to remain drug free while pregnant. Eight showed no motivation at all and two were ambivalent.

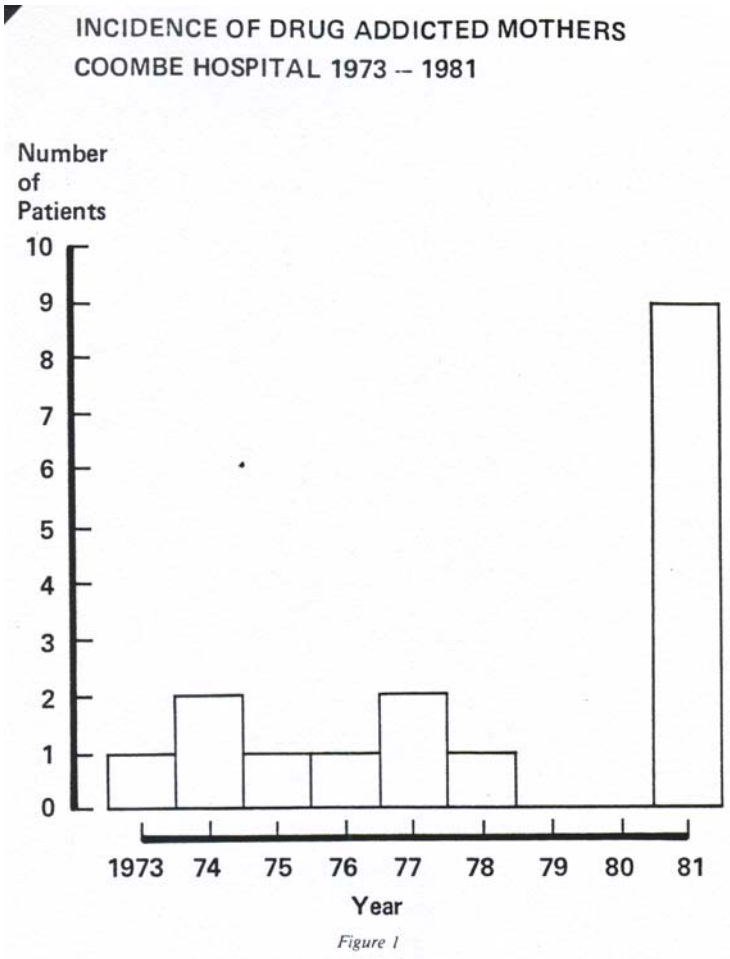

Figure 1

Only one patient had pre-eclampsia recorded and this was mild. Fetal distress, defined as meconium staining of the liquor or prolonged fetal bradycardia below 100/min, was recorded on three deliveries. Two of these had an emergency Caesarean section and both infants were born with normal Apgar scores. The remainder were spontaneous vaginal deliveries.

Newborn Data

There were seventeen infants in all. The average birth weight was 2.92 Kgs. None of our infants was under the 10th centile

Table 3
Significant postnatal problems in 17 infants born to drug dependent mothers

	Number of Infants	Percentage
Jaundice (SBR >170 mmol/1)	6	35.0%
Jaundice requiring phototherapy	4	23.5%
Hypocalcaemia (Ca^{++} <1.75 mmol/1)		
1973 - 1980	1	12.0%
1981	4	44.0%
Sepsis	2	11.7%
Congenital abnormality	1	5.9%
Withdrawal symptoms: Mild	3	20.0%
Moderate	3	20.0%
Severe	0	0%

on the Lubchenco growth chart.[2] Only two were less than 2,500 gms and both were appropriate for gestational age. The average gestational age was 37.8 weeks ranging from 35 to 40 weeks. There were eight male and nine female infants. All had normal Apgar scores although three had shown signs of intra-uterine asphyxia.

Neonatal Problems (Table 3)

Six of the seventeen babies had serum bilirubin of 170 mmol/1 or greater and four of these received phototherapy. None had hypoglycaemia. Five had hypocalcaemia (serum calcium less than 1.75 mmol/1). Four of these belonged to the 1981 group. This may reflect increased awareness of the high incidence of hypocalcaemia reported in these babies.[3]

Two babies developed sepsis. One had a congenital pneumonia requiring ventilation for six days – group B-*B* haemolytic streptococcus was isolated from the mother. This baby also had a partial plasma exchange transfusion for polycythaemia. The other baby had gonococcal ophthalmia. There were no cases of respiratory distress syndrome. Only one congenital abnormality was noted: a spina bifida occulta with a small overlaying skin defect. Withdrawal symptoms were recorded in six infants, three of the infants being moderately affected. There were no cases of severe withdrawal symptoms.

Outcome

All the infants survived and, apart from one baby who was adopted, all were discharged home to their mothers. Three, however, may now be going into care. These are cases where the mother is not considered fit to look after her child because of continuing drug abuse and associated psychiatric disorders.

As regards the mothers, only two are known to have coped well with their babies, attended a therapeutic community and are now drug free. Two others developed serious neurotic illnesses after withdrawal and another is in long-term hospitalisation with a drug-related psychiatric illness. The remainder are still addicted.

Discussion

Although the first reviews of neonatal drug addiction began to appear in the literature in 1956,[4] there have been no published reports on the condition in Ireland. This is probably because up to now there had been no serious problem. However, our experience during the year 1981 points to a marked rise in the number of pregnant addicts. We are now seeing approximately one case a month whereas previously more than one case a year was unusual.

The pregnant addict can be described only in general terms because population characteristics will vary from one hospital to another. In our experience they are usually under 20 years. Two out of three are single and in their first pregnancy. They come from a wide range of social backgrounds and many are from broken homes. All of our patients were smokers – usually heavy smokers – and a wide range of drugs was abused, heroin being the most popular.

The drug addict is greatly at risk for serum hepatitis. Half of our patients were infected in the past. Venereal disease, pulmonary infections, cardiac disease (e.g. bacterial endocarditis) and skin abscesses are also common.[5]

Most reports stress the high incidence of "small for gestational age" babies in mothers who are drug addicted. In one study,[3] the incidence of retarded intra-uterine growth among drug addicts was five times that for the whole newborn population at that hospital. The average duration of drug addiction in that series was 7.1 years. None of our infants was small for gestational age despite the fact that the aetiological factors usually associated with retarded intrauterine growth, i.e. heavy cigarette smoking, unmarried mothers and poor antenatal care were prominent in our patients. However, the average duration of drug addiction prior to pregnancy in our series was only two years and we may well see the emergence of fetal mal-nourishment and its sequelae as the problem of drug addiction becomes more entrenched. The fact that no cases of hypoglycaemia in the newborn occurred may also be due to the absence of retarded intrauterine growth in our infants.

Low serum calcium levels, said to be frequent in babies having withdrawal symptoms[3] were documented in nearly half of babies born in 1981. Respiratory alkalosis was not looked for in the babies. This is said to be present in nearly all infants of drug addicted mothers.[6] It would be important to document this in future cases to assess the contribution hypocalcaemia and alkalosis together play in the symptoms of withdrawal. It has been noted that infants born to drug addicted mothers are rarely jaundiced.[7] That heroin can stimulate liver enzymes has been shown by animal experiments[8] and indirect evidence has been obtained from human experiments.[9] Zelson, however, has reported an increased incidence of jaundice in infants born to mothers using methadone.[10] This may explain why nearly a quarter of our babies received phototherapy. A decreased incidence of respiratory distress has been reported in babies of drug addicts.[11] Heroin does indeed seem to have an accelerating effect on lung maturation.[12] However, the absence of hyaline membrane disease in our study can simply be explained by the fact that most of our babies were greater than 37 weeks gestation.

There were three cases of intrauterine asphyxia in our group, two requiring emergency Caesarean sections. This complication, along with aspiration pneumonia,[13] has been well documented in previous studies. The incidence of prematurity in our study was low compared to other series in which a high incidence has been reported.[3]

The management of this problem begins by involving the addicted mother in a methadone maintenance programme at an early stage in her pregnancy. These programmes, where methadone linctus is administered to the mother on a daily basis, have decreased the morbidity associated with addiction by reducing parenteral drug use. Entry into a programme also encourages better antenatal care and a more stable drug environment for the mother and child.[14] Methadone, a long acting narcotic agonist, is very well absorbed orally and need only be administered once daily because of its lone half life. It freely diffuses across the placenta, but because it is highly protein bound in the maternal serum, the cord blood levels average only half those found in maternal blood. It is secreted in the urine and bile and also in breast milk but no adverse effects have been reported in the infant as a result of breast feeding from a mother on methadone.

The current practice in the Jervis Street Drug Advisory Centre is to start the pregnant woman on low dose methadone linctus, approximately 25 mgs daily, throughout the course of her pregnancy. This may be increased if symptoms of narcotic withdrawal occur, but the daily dose should be kept as low as possible as the severity of neonatal withdrawal is related to the amount of methadone ingested by the mother.[15]

Signs and symptoms of withdrawal usually occur within 24 to 48 hours of birth. They consist of any or all of the following: irritability, jitteriness, tremors, sneezing, vomiting, diarrhoea, abnormal suck pattern, abnormal sleep pattern, fever and seizures. Fist sucking is a prominent sign of the withdrawing infant and seems to be a form of self sedation. Despite this, these infants have a reduced sucking rate and pressure. Finnegan suggested that the most significant sign of withdrawal in the neonate is sleep for one hour or less after feeding.[16] It is known that withdrawal from methadone is more severe than from heroin.[17] There is a longer recovery phase, there is an increased incidence of seizures and indeed some children will enter a second phase of withdrawal, referred to as the “late withdrawal syndrome”, which occurs at approximately two to four weeks of age. One notable point in this syndrome is that infants may take up to 1½: litres of formula per day at two to three weeks of age.

A quiet darkened environment may calm the infant, who should be swaddled but protected against skin abrasion. Dehydration may become very severe in infants who develop diarrhoea and vomiting. Drug treatment for withdrawal should be started in an infant who cannot be calmed and who cannot sleep when wrapping alone is used, in an infant who has loose stools or is vomiting. in an infant who has temperature elevation or in an infant who has seizures.[18] Four drugs are currently used in the treatment of withdrawal in the new born:

Paregoric (Camphorated tincture of opium). The longest experience has been with paregoric which, unlike phenobarbitone and other sedatives, seems to restore normal behaviour without

imposing depression or interfering with sucking performance. Treatment is usually begun with 0.2 ml every three hours. If symptoms are not controlled. the dose is raised by 0.05 ml every three hours until symptoms are abated; it is rarely necessary to exceed 0.7 ml per dose. The tapering process is begun once symptoms are controlled and proceeds as long as withdrawal symptoms do not appear. This may take up to 45 days. Mild tremulousness should not prevent further lowering of the dose. Paregoric can only be given orally which is a drawback in the vomiting neonate. In that situation morphine sulphate 0.06 to 0.1 mg/kg can be given as an emergency initial dose.

Diazepam (1-2 ma intramuscularly eight hourly) has been used successfully.[19] Once symptoms are controlled the dose is halved and the length between injections lengthened. Treatment with diazepam is usually relatively short lasting from 1.25 to 6 days, when the mother is on heroin alone.

Chlorpromazine is also effective. The usual treatment begins with 2.2 to 3 mg/kg/day orally or intramuscularly divided into four doses, which is reduced every two to four days as indicated by control of signs and symptoms.

Phenobarbitone gives good control of central nervous system signs in neonatal withdrawal. However, diarrhoea may persist and high doses may sedate the infant and depress the sucking reflex. A dose of 5 to 10 mg/kg/day in three or four divided doses is usually sufficient.

Our experience in the management of withdrawal symptoms is limited as they occurred in only 20% of infants. The reported incidence varies from 40% to 91%.[20] Most of our cases simply required swaddling and only two required drug treatment. Both were treated with phenobarbitone and one also required a single dose of Omnopon.

We found that the main problems of our patients were social. Understandable anxiety, among the medical and social staff, concerning the social conditions led to longer hospitalization and separation of these infants. Apart from one baby who was adopted, all eventually returned to their mothers, although three are likely to go into care. Some had frequent visits to the outpatients department with management or feeding problems. In retrospect, these may have been unrecognised symptoms of the late withdrawal syndrome. Others failed to keep their follow-up appointments. A similar situation existed in the United States up to the early 1970s, in that there was almost no follow-up of infants born to heroin addicted mothers, until the introduction of methadone programmes.[18] Since that time surveys have shown a high incidence of behaviour disturbances manifested by sleep disturbances, hyper-activity and temper tantrums in infants of drug addicted mothers. An abnormally high death rate among infants and children in the houses of addicted parents has also been reported, with speculation that death is due to abuse or neglect.[21]

Rothstein and Gould[18] have developed a system of assessing the risk to the infants of sending the child home with the mother. High risk factors include a mother less than 18 years or greater than 30 years of age, and a home situation where other members of the family also abuse drugs. Active voluntary participation in a drug programme, a short history of drug abuse and a mother who has raised other children without problems offer a lower risk to the infant.

To protect the interests of the child it is essential firstly to recognize the escalation of the problem of drug abuse among pregnant women, and secondly to adopt a comprehensive approach to their management. Such an approach would include active intervention to ensure proper antenatal care and nutrition, a lowering of multiple drug abuse prior to delivery and the provision of close follow-up care for the mother and child.

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