Congenital narcotic addiction

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Summary

Attention is drawn to the probable increase in incidence of congenital narcotic addiction. Four instances of babies born to narcotic-addicted mothers are described. Three of the four infants developed symptoms, but all responded to treatment. Management with chlorpromazine alone is recommended. The social implications are briefly discussed.

NARCOTIC addiction in the neonate is well documented and described. However, most reports have come from North America. Two cases only are described in the English literature (Caruana, 1968; McMullin & Mobarak, 1970).

The incidence of narcotic addiction in this country has increased in recent years. In 1960, there were 242 female registered drug addicts in the United Kingdom compared with 590 in 1970, the increase being almost entirely in heroin and methadone addicts (Home Office, 1970). Consequently, one would expect the incidence of congenital addiction to have risen also, although no statistics for this are available.

The purpose of this paper is to draw further attention to this important neonatal problem and to suggest 'guidelines' for management. The medical histories of four infants born in the last year will be reported and the most recent literature reviewed.

Case 1

A male infant, weighing 3700 g was born to a 20-year-old mother at 40 weeks' gestation. The Apgar score at 1 min was 9. The mother had been taking methadone 20 mg i.v. daily for most of the pregnancy. Prior to this, she was having heroin 300 mg i.v. daily. Antenatal progress had been uncomplicated and the only analgesia used during labour was pentazocine 30 mg 2 hr before delivery.

The infant appeared normal until 21 hr after birth when he was noted to be tremulous on handling and had a rectal temperature of 38°C. He was also salivating excessively and retching. At 40 hr, phenobarbitone 15 mg was given i.m. and within a few hours his behaviour was normal.

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Subsequently he did well and was discharged home with his mother. When seen again at 33 days, he weighed 4800 g and was developing normally. Efforts to continue follow-up have been fruitless.

Case 2

This 2100 g male child was born at full term to a 24-year-old mother who was taking methadone 40 mg i.v. daily. The Apgar score was 7 at 1 min and 10 at 15 min.

At initial examination the infant was noted to be 'small for dates'. Two hours after delivery, he became tremulous and methadone 1 mg was given i.m. with good effect. The blood glucose was 45 mg/100 ml at this time. At 33 hr the infant again became tremulous and methadone 1 mg i.v. was again effective. On the fourth day of life, this irritability returned and methadone 0.5 mg was given once daily i.m. until the eighth day when a return of symptoms responded to the addition of chlorpromazine 1 mg six-hourly orally. Both drugs were given daily in this dosage for 2 weeks when the chlorpromazine was stopped and the methadone 'tailed off' over the following week.

He was transferred with his mother to a Drug Addiction Unit and when seen again, 2 months later, was developing normally and weighed 4200 g. He failed to attend as an out-patient but was re-admitted at 1 year with an upper respiratory tract infection. His general condition and development at this time were satisfactory and an EEG was normal.

Case 3

A 3000 g female infant was born to a 30-year-old mother at full term. The Apgar score at 1 min was 9. The mother had been addicted to heroin for 10 years. During pregnancy she had reduced her requirements from an unspecified amount to heroin 10 mg and methadone 20-30 mg i.v. daily. The last opiate administered was methadone 10 mg 11 hr before delivery. Analgesics used during labour were pentazocine 60 mg, pethidine 100 mg and promazine 50 mg.

At delivery, the child was normal and showed no withdrawal symptoms during the 7 days she remained in hospital. She was discharged to an apparently stable home environment, although both parents

are addicts. They have left the area and follow-up has not been possible.

Case 4

A female infant weighing 1900 g at 42 weeks' gestation, was delivered by forceps under general anaesthesia to a 21-year-old heroin addict. The mother had been an in-patient for 6 weeks with septicaemia. She had been a drug addict for 7 years and was taking heroin 45 mg and 10–20 mg of methadone each day. The second stage of labour was prolonged because of persistent occipito-posterior position and the infant was asphyxiated at birth with an Apgar score of 3 at 1 min. Endotracheal intubation was performed and positive pressure ventilation with oxygen was continued for 6 min by which time the Apgar score was 10.

Blood glucose 3 hr after birth was 45 mg/100 ml and feeding was commenced via a nasogastric tube. Blood glucose levels were monitored frequently, but at no time did they drop below 45 mg/100 ml. Eighteen hours after birth, the infant was noted to be tremulous on handling, but settled with intragastric chloral hydrate 60 mg. On the third day of life, she was retching and vomited twice. These symptoms abated quickly but recurred on the fourth day. The most likely cause for this was drug withdrawal. Because of the vomiting, intravenous fluids were started and she was commenced on chlorpromazine 2 mg 6 hourly i.m.

This regimen was continued successfully for 3 days when i.v. fluids were stopped. On the eighth day she again became tremulous, vomited and was frequently yawning in spite of continued chlorpromazine and so Nepenthe 0.15 ml of 0.05% solution was added 4 hourly. There was an impressive response to this treatment and subsequently she did well.

The dose of Nepenthe was gradually reduced and stopped on the nineteenth day of life. Chlorpromazine was stopped on the twenty-third day. An EEG performed on the tenth day of life showed some transient activity suggestive, but not diagnostic of narcotic withdrawal. A second EEG at 50 days was thought to be normal.

The infant now lives with her mother and grandmother. She is thriving and her developmental progress was normal at 4 months of age.

Comment

This small series of patients exhibited varying degrees of drug-dependence. The incidence of symptoms in our patients, three out of four, is in keeping with an extensive survey over 10 years by Zelsen, Rubio & Wasserman in New York (1971) in which 67.4% of the infants developed symptoms requiring treatment within 4 days of birth. The

policy of Drug Addiction Centres is to wean addicts from heroin, using methadone as a temporary substitute. There appears to be no difference between these drugs in their effect on the baby (Reddy, Harper & Stern, 1971).

It is of interest to note that none of the above infants was of short gestation, but two of the four were of low birth-weight. This agrees with the findings in other series (Zelsen *et al.*, 1971; Reddy *et al.*, 1971). It cannot be said that this is a direct result of maternal addiction as many other factors conducive to low birth-weight were in operation during the pregnancies.

None of the babies described developed significant jaundice. A low incidence of neonatal jaundice has been described previously (Zelsen *et al.*, 1971). It is presumed that intra-uterine exposure to narcotics results in the early induction of microsomal enzymes in the infant's liver. The enhanced levels of glucuronyl transferase are then able to cope more effectively with the normal load of unconjugated bilirubin presented to the neonate's liver.

Treatment has proved entirely successful in our series. Various drugs and treatment regimens have been used in the management of narcotic withdrawal in the neonate. They include breast feeding by the addicted mother, paregoric, morphine, methadone, barbiturates, reserpine and chlorpromazine (Cobrinik, Hood & Chusid, 1959; Krause *et al.*, 1958). A recently published extensive series (Zelsen *et al.*, 1971) showed that chlorpromazine 2.2 mg/kg/24 hr, either parenterally or orally, was usually effective in abolishing symptoms and signs of withdrawal, without recourse to opiates. This is now our first line of treatment. After 2–4 days, the dose is reduced by 0.5 mg/kg/24 hr and the 'tailing off' process is continued in similar steps every 2 or 3 days, depending on clinical response, until the drug is finally withdrawn at some time between 10 and 40 days after delivery. However, there will be occasions, as in our Case 4, when it may be necessary to give opiates also.

None of our infants died. The mortality rate was high at one time—34% overall and 93% in untreated symptomatic infants (Goodfriend, Shey & Klein, 1956). These figures have recently been refuted by Zelsen who reports an overall neonatal mortality rate from all causes of 3.6% in infants of addicted mothers. This was about the same as the overall neonatal mortality rate at their hospital during the period studied.

The narcotic withdrawal syndrome must be considered in the differential diagnosis of convulsions, pyrexia and vomiting in the first week of life. Mothers may attempt to conceal their addiction and so a 'high index of suspicion' is required. Symptoms and signs usually develop in the affected neonate

within 4 days of delivery. The clinical features most commonly reported are, in order of frequency, irritability, tremors, vomiting, high pitched cry, sneezing, hyperactivity and respiratory distress. Less constant features are fever, diarrhoea, convulsions, yawning and salivation (Zelsen *et al.*, 1971). Neonatal withdrawal symptoms are more common in those with the longest-addicted mothers (Hill & Desmond, 1963). The four babies described exhibited fairly typical symptoms.

The social aspects of this condition are disturbing. In only one of the cases described was it possible to maintain a satisfactory follow-up. Two of the mothers of the babies were not expected to live more than 2 years. Very few, if any, addicted mothers can provide the stable background which a child needs for normal growth and development. It may be advisable, therefore, for the infant's sake, to recommend early adoption, but one may then lose the strongest reason for narcotic abstinence that the mother may encounter.

Mothers have been known to give their fretful infants narcotics in an attempt to settle them, and this raises the problem of 'child abuse'. The action taken will vary, but advice from a social worker experienced in the problems of drug addiction may be invaluable.

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