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A Chance to Survive: Neonatal Narcotic Addiction

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A Chance to Survive: Neonatal Narcotic Addiction

/
by

Brenda Morgan
//

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A handwritten signature in cursive script, reading "Alberta Hilton", is written over a horizontal line.

Project Advisor

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Chapter I Background

As far back as man has been recording about himself, and probably a great deal further, he has been using narcotic drugs to help him relieve his tensions, anxiety, pain, and fear. Opium is listed on Assyrian medical tablets dating to the 7th century B.C. and on an Egyptian list of remedies drawn up probably in the 16th century B.C. The Sumerians had a word for it even earlier -- about 6,000 years ago.¹ Opium was probably brought to this country with the first settlers since it's medicinal effectiveness was well known and widely used. At about the end of the Civil War drug addiction began to be a notable problem in the United States, seemingly brought about by three main factors. This was just a few years after the introduction of the hypodermic syringe making it possible to administer morphine through the skin and thus relieve pain more rapidly. As a result addicts were made of wounded soldiers and civilian patients alike. At this time also there had been an introduction of patent medicines containing opium or opiates and sold freely in drugstores and even general stores. The third factor was the introduction of opium smoking by the Chinese immigrants brought in to help build the railroads of the West.² Around 1900 the public began to be warned about the habit-forming

¹ Narcotic Drug Addiction (Public Health Monograph 2), p.1.

² Narcotic Drug Addiction, op. cit., p.1.

drugs and largely as a result of newspaper and magazine campaigns, physician concern, and public concern was the Harrison Narcotic Act passed by the legislature in 1914. The Act and its later amendments regulated the importation, manufacture, production, compounding, sale, dispensing, or giving away of opium or cocoa leaves (containing cocaine), their salts, derivatives, or preparations. Under this law all wholesale and retail dealers, doctors, institutions, hospitals, and others dealing in or prescribing drugs for medicinal use had to obtain licenses and keep an accurate inventory of the drugs bought, used, and sold.³ After the passage of this Act the illicit traffic of narcotics appeared and continued and is at present a large, complex, and complicated problem for law enforcement agencies, social welfare agencies, and medical agencies.

Much of the time, workers fighting drug addiction would seem to have ample reason for feeling that they are fighting a losing battle. For example, the U. S. Public Health Service Hospital at Lexington, Kentucky, the world's largest, oldest, and most prestigious center for treating drug addicts, records probably less than 10% of their patients stay off drugs when they get home. However, the workers are bolstered by one intriguing and extraordinary fact: nearly half the country's addicts are in their 20's and only 11% are over forty.⁴

³ Victory H. Vogel and Virginia E. Vogel, Facts about Narcotics (Chicago: Science Research Associates, Inc., 1951), p.7.

⁴ James Mills, "Drug Addicts, Part 2," Life, 58:95, March 5, 1965.

When a person takes addicting drugs, one or more of the following results: 1) he becomes psychologically (emotionally) and physically dependent on the drug, 2) he becomes ill (withdrawal sickness) when he stops taking the drug, and 3) he builds a tolerance to the drug so that he needs more to receive the same effect. The terms habituation and addiction have in the past been used interchangeably but in 1957 the Expert Committee on Addiction-Producing Drugs of the World Health Organization published the distinction of "physical dependence as 'generally' (but not necessarily) a characteristic of addiction".⁵

The best known drugs of addiction are morphine, heroin, and cocaine. In general the effects of heroin and morphine are similar. In addition to relieving pain, morphine diminishes the urge of sex and above all diminishes worry and anxiety created by the problems of life. Feelings of frustration disappear and the person forgets goals he has set for himself and the disappointment in failing to attain them. In addition morphine produces a feeling of well-being or euphoria. This is said to be more pronounced with heroin. Smaller doses of heroin are needed for about the same effects. Cocaine is not a narcotic. It stimulates the brain, causing excitement and a sense of well-being. The effect of taking cocaine is to increase conversational powers and to heighten the imagination, often with pleasant hallucinations.⁶

⁵ "Use of the Terms Habituation and Addiction," Journal of the American Medical Association, 183:363, February 2, 1963.

⁶ Harold Burn, Drugs, Medicines, and Man (New York: Charles Scribner's Sons, 1962), p. 108-109.

"Cocaine is a dangerous drug and a person may develop such a strong desire for it that he is unable to stop using it. However, the drug does not cause physical dependence or withdrawal illness."⁷

Because of the effects of the drugs, dependence becomes both psychological and physical. They are used to shut out problems and to relieve anxieties, and the more often the drugs cause the relief, the stronger is their hold. Addiction then becomes a matter of physical dependence, so dependent that without the drug the user becomes sick.

⁷ Vogel and Vogel, op. cit., p. 18.

Chapter II Survey of the Literature

This exploratory study was conducted to discover the responsibility of the nurse to the neonatal drug addict. By means of surveying current literature, it was hoped to bring together varying ideas and proposed characteristics of the nurse's role. The nurse is a member of the health team which comes into contact with persons who have the problem of being addicted to narcotics. Her presence in the hospital and other health agencies predisposes her to the possibility of detection and further to care for addicted women. If these women are pregnant she has an additional responsibility to the infant. Further, if she is to learn how to work with these small patients, "this complication of pregnancy must receive specific attention in ... schools of nursing."⁸

The problem of infant addiction was brought to the attention of the nursing profession recently by an article by Juanita Fleming in the American Journal of Nursing. In her experience with three cases of infant narcotic addiction, all three were discovered by nurses. The nurses recognized that these infants were exhibiting symptoms unlike those usually seen in normal infants. Careful investigation that followed their reporting revealed that the mothers were addicts and that the infants were undergoing withdrawal symptoms.⁹

⁸ T. Rosenthal, S. W. Patrick, and D. C. Krug, "Congenital Neonatal Narcotic Addiction: a Natural History, "American Journal of Public Health, 54:1261.

⁹ Juanita Fleming, "Recognizing the Newborn Addict," American Journal of Nursing, 65:83, January, 1965.

This report reveals the information available concerning the neonatal addict. To lay a background for this problem observations of other investigators have been listed along with the investigators' opinions concluded from their experience and previous knowledge. The amount of this research appears to be somewhat limited and the facts are drawn from a seemingly small number of actual cases of infant addiction. The amount of information is sufficient, however, to show an interest and need for additional work in this complex area.

Within the context of the general social and medical problem of narcotic addiction lies this problem of the addicted newborn. From about the mid-1950's interest in this problem seems to have been re-emphasized, perhaps as a result of an increase of interest in addiction in general. With the prevalence of the use of narcotics rising among young adults, this problem of the neonatal addict can also be assumed to rise.

Care of infants born to narcotic-addicted mothers is a serious problem. Many of these infants are prematurely born, and the mortality is high. These infants are predisposed to asphyxia and anoxia and often have respiratory distress at birth or shortly thereafter. In addition to the more serious effects of the narcotic on the infants during labor and shortly after birth, there may be symptoms and signs of narcotic withdrawal. These usually become manifest within hours after birth and if they are unrecognized and are not treated early, the infant may die.¹⁰

¹⁰ Ralph H. Kunstadter, "Narcotic Withdrawal Symptoms in Newborn Infants," Journal of the American Medical Association, 168:1008, October 25, 1958.

Many of these mothers have had little or no prenatal care, and often little information is available when the infant arrives in the hospital. Therefore it becomes incumbent upon nurses and physicians to be aware of the potential hazard and to be able to recognize these infants, who present, in many instances, a classic syndrome of narcotic withdrawal signs.¹¹

The studies of these newborn infants have been done at various times and with varying number of subjects. Some of the early accounts can no longer be used for scientific accuracy but interestingly some of their findings are similar to those reported in recent studies.

Fere' reported in The Opium Problem of a case in 1883 in which a woman was regularly taking 25 mg. of morphine a day. When withdrawn before delivery the fetus became so violently active that the drug was continued until birth. The child showed jerky movements, being very nervous and crying for 60 hours without sleeping. After this it recovered.¹² In 1888 F. B. Earle reported in the same book of a full term baby who at the end of the 3rd day seemed particularly sensitive to motion, was pale, pinched, and prostrate. Twelve hours later the baby died suddenly. The mother at the time of the child's birth was a chronic opium user. Dr. Earle observed that children of opium smokers were somewhat intractable to opium, but that such children were apt to die suddenly. He cited cases in which opium was given with

¹¹ Ibid., p. 1008.

¹² Charles E. Terry and Mildred Pellens, The Opium Problem (New York: Bureau of Social Hygiene, 1928), p. 410.

the result of improving the physical condition of the children, who, however, grew up "stupid".¹³

T. J. Happel in 1892 concluded that when the mother uses morphine habitually, the child is born with some defect of the heart, a congenital heart disease. This author states that the symptoms are restlessness, fretfulness, and cyanosis but that the child is generally in good condition for the first 12-24 hours. However, the condition grows worse unless the cause is known or suspected and free use of opiates is begun.¹⁴

In 1895 Bureau presented chemical proof of the passage of morphine through the placenta. He followed three pregnancies of the same patient. The first one was normal with no withdrawal. The second child died on the seventh day with symptoms of excessive nervousness, rapid breathing and convulsive movements. It also nursed with difficulty. During the third pregnancy withdrawal of the drug from the mother was tried at the fourth month but this failed. The child was born with a cephalic asymmetry and a left club foot. During the first week the child was very nervous but recovered. After this delivery, placental blood was drawn and tested carefully for morphine which was found present as indicated by positive reactions in five different tests. The author states that he did not find this surprising but he could find no record of the fact having been previously demonstrated.¹⁵

¹³ F. B. Earle, "Maternal Opium Habit and Infant Mortality," Medical Standard, 1883, pp. 2-4.

¹⁴ T. J. Happel, "Morphinism in its relation to the sexual functions and appetite, and its effect on the offspring of the Users of the Drug," Medical-Surgical Report, 1892, pp. 403-407.

¹⁵ Terry and Pellens, op. cit., p. 412.

The following year the American Textbook of Applied Therapeutics reported that infants born of mothers who are morphinists have small chances of living. Convulsions, cyanosis and most alarming collapse often supervene shortly after birth and large doses of morphine hypodermically are necessary for relief. The child subsequently must be weaned from the poison. The ultimate prognosis as to the child's growing up is, however, bad; and this may be considered fortunate, as the moral and mental strength of these children is so far below par as to make them liable to much subsequent suffering.¹⁶

T. C. Allbutt in 1905 had the opinion that these children not rarely become themselves morphinists or alcoholists in after-life. "He concluded that it must be difficult to distinguish between such a direct and specific influence and the more general forms of narcotic inheritance."¹⁷

A final example of historical accounts is by Pettry written in 1913. His conclusions were rather closely connected to those of today. He wrote that the child's tissues and blood are as fully saturated with the narcotic as those of its mother; in fact, so far as the physical elements of the addiction are concerned, the child is as much an habitue' as is its mother. Severance of the placental circulation, through which the child has been receiving the narcotic, shuts off the supply, and, if the drug

¹⁶ J. C. Wilson and A. A. Eskner, American Textbook of Applied Therapeutics (Philadelphia: W. B. Saunders, 1896), p. 212.

¹⁷ Terry and Pellens, op. cit., p. 414.

is not administered to the child, it suffers the shock and collapse incident to the abrupt withdrawal of opiates from an habitue'.¹⁸

More recent investigations have been carried out by pediatricians, obstetricians, and other research personnel for various reasons. Some felt the need because they were faced with treating an infant with withdrawal symptoms and, after investigation, found little literature available to help them determine the proper medical care of the child. Others have been concerned with the high perinatal morbidity and mortality rate and considered the narcotic addicted mother and infant a contributor to it. Even another cause for investigation came from the relative increase in the frequency of withdrawal symptoms occurring in the newborn nursery pointing to a need for more uniform and effective methods of detection and treatment. The following are eight investigations published within the last ten years. Up to this time more recent research has not been published which deals directly with the problems of neonatal drug addiction.

Cobrinik, Hood, Chusid, and Slobody reported in 1956 22 cases occurring in New York City during the previous five years, of infants born to narcotic addicted mothers.¹⁹ Of the 20 mothers (2 sets of twins) eighteen were taking heroin, one morphine, and one drug undetermined. The majority received their drug intravenously with the maternal dosage of heroin

¹⁸ George E. Pettry, Narcotic Drug Diseases and Applied Ailments (Tennessee: J. A. Davis Company, 1913), p. 121.

¹⁹ Ralph W. Cobrinik, et. al., "Effects of Maternal Narcotic Addiction on the Newborn Infant," American Journal of the Diseased Child, 92:504, 1956.

ranging from 2 to 45 mg. per day. The birth weights ranged from 1100 to 3600 gm., with a mean of 2600 gm. All of the infants were normally developed. Twenty of the newborns demonstrated clinical findings with the onset being from birth to the fourth day. In 16 of these the signs and symptoms were present during the first 24 hours. In all of the 20 infants there were tremors, excessive crying, sleeplessness or hyper-irritability. Also often observed was vomiting and poor feeding, diarrhea, yawning and sneezing, and, in one infant, convulsions. These investigators believed that there was apparently a direct relationship between the severity of the infant's signs and symptoms and the size of the maternal narcotic dosage.

Complete recovery occurred in all infants. The diagnosis presented no problem when a clear history of the maternal narcotic addiction was available. However, the history was often not elicited or emphatically denied. A complete physical exam of the mother usually revealed evidences of narcotic use. In nine of the infants the course was mild and no treatment was necessary. In the other thirteen the clinical findings were of sufficient severity to warrant treatment. After studying paregoric, chlorpromazine, phenobarbital, and reserpine; chlorpromazine and paregoric were found particularly effective.

In 1959 two of these men, Cobrinik and Slobody, published another study made in New York City which had covered an 18 month period and involved the observation of thirteen newborns of narcotic addicted mothers.²⁰ They stated, "the increase in

²⁰ Lawrence Slobody and Ralph Cobrinik, "Neonatal Narcotic Addiction," Quarterly Review of Pediatrics, (July-September): 169-171, 1959.

narcotic addiction among our teenage and young adult population is bringing about a corresponding rise in incidence of neonatal effects from maternal narcotic addiction.²¹

They observed that symptoms in the newborn of an addicted mother ordinarily began during the first day of life, occasionally during the second day, but rarely present at birth. The symptoms are really due to withdrawal rather than to narcosis. "Hence in the newborn infant they are related inversely to the maternal withdrawal time, that is, to the mother's last dose of narcotic prior to delivery, including preanesthetic medication. The longer the time of withdrawal for the mother, the earlier the symptoms appear in the newborn infant."²²

The birth weights of these infants were less than average having a mean of a little more than five and one half pounds or 2.6 kg. Symptoms ranged from mild or absent to severe. A mother's dose of 12 mg. or more daily of heroin usually brought moderate to severe disturbances in the infant. Central nervous system hyperirritability including restlessness, tremors, and excessive shrill crying was always present if symptoms were present at all. This may have progressed to generalized convulsions. An excess of tracheal mucus also appeared early in the course of the illness. Frequently present were gastrointestinal manifestations such as poor feeding, vomiting, and diarrhea. Excessive yawning, sneezing, and elevated temperature were found occasionally. Laboratory studies (analysis of spinal fluid and serum calcium, hemograms, and urinalysis) gave normal results.²³

²¹ Ibid. p. 169.

²² Ibid. p. 170.

²³ Ibid. p. 170.

Diagnosis was again made by maternal history and physical examination. Specific treatment was described the same as in the previous study with the inclusion of a greater need for supportive therapy by way of meticulous devotion to fluid and electrolyte balance.

Also reported in 1956 by Goodfriend, Shey, and Klein were the case histories of ten pregnancies complicated by drug addiction. Five were admitted to obstetrical service at Morrisania City Hospital during the years 1951-1954. Five were seen at Harlem Hospital during 1954.²⁴ These men found it readily understandable how somatic requirements for opiates could be built up in the fetus. "It is well known that morphine readily passes the placenta and produces varying degrees of asphyxia in utero as indicated by changes in rate and rhythm of the fetal heart. Accordingly, opiates may enter the circulation of the fetus freely and depending on the frequency and dosage will produce in the newborn child the somatic changes present in addicted mothers."²⁵

The syndrome of clinical findings which they found included the normal appearance at birth but within 24-72 hours progressive restlessness and irritability began. Also present was the protracted shrill cry, poor feeding and vomiting, yawning and intermittent cyanosis, diarrhea, and severe dystrophy and possible death during convulsions.

²⁴ Milton J. Goodfriend, et. al., "The Effects of Maternal Narcotic Addiction on the Newborn," American Journal of Obstetrics and Gynecology, 71:29, January, 1956.

²⁵ Ibid., p. 29.

These investigators found that success in treatment depended on early recognition. Sedation given in the form of opium derivatives with individual doses according to the infant's requirements was the practice.

Goodfriend, et. al. made the following summary: 1) Narcotic addiction with abstinence symptoms is a distinct clinical entity in the newborn. 2) The symptom complex seems to bear a distinct relationship to the duration of addiction in the mother, the quantity of the drug used, and the time of the last dose of narcotic prior to the birth of the child. 3) Early diagnosis is important. Addiction in the mother should be suspected even in the absence of a history, if the infant shows signs suggestive of narcotic withdrawal. 4) Recommended treatment consists of morphine derivatives and/or barbiturates.²⁶

"While the abstinence syndrome in the newborn is an uncommon condition it is our impression that it occurs more frequently than is reported in the literature. If the use of narcotics in women of childbearing age continues to rise, the problem of addiction in the newborn will become increasingly important ..."²⁷

Dr. Nina Steg reported in 1957 on three cases of addicted newborns observed at Boston City Hospital during a period of 14 months. The clinical picture was reported as being infants observed with an annoying high-pitched cry, extremely irritable, hyperactive, and very jittery. The Moro reflex was incomplete and deep tendon reflexes were increased. In severe cases generalized convulsions occur and may be repeated; vomiting,

²⁶ Ibid., p.30.

²⁷ Ibid., p.29.

anorexia, and weight loss may be striking. These symptoms persisted for five to six days in the untreated cases reported here.²⁸ Dr. Steg particularly noted the distinctive cry of these infants. The cry is louder, higher-pitched, and more continuous than the cry ordinarily observed in infants with organic disturbances of the central nervous system.

"It should be noted that the finding of clinical manifestations of narcotic withdrawal in the newborn as described does not preclude the presence of other pathology which may account for some of the manifestations for which a search should always be made."²⁹ Even though the patients reported here improved without treatment, the author does not believe that this is necessarily a contraindication of the findings of other authors. Depending upon the severity of the clinical findings, such medication may be indicated. The author reports no residual abnormalities were noted in these three infants.³⁰

Krause, Murray, Holmes, and Burch reported in 1958 about a study they conducted at the Department of Obstetrics and Gynecology at Sydenham Hospital. These investigators consider heroin addiction as a complication of pregnancy affecting both the mother and the baby. The subjects of their study were eighteen women delivered at this hospital during 1953, 1954, and their

²⁸ Nina Steg, "Narcotic Withdrawal Reactions in the Newborn," AMA American Journal of the Diseased Child, 94:287, 1957.

²⁹ Ibid., p.288.

³⁰ Ibid., p.288.

³¹ Samuel Krause, et. al., "Heroin Addiction among Pregnant Women and Their Newborn Babies," American Journal of Obstetrics and Gynecology, 75:754, April, 1958.

addiction, disclosed the time of their last dose, how often they required the drug, and how long they had been taking the drug. They seemed to respond best to a straightforward, sympathetic approach.

Five of the eighteen babies were premature by weight (less than 5 1/2 pounds), eleven of them weighed between 5 1/2 and 6 1/2 pounds, and only one weighed more than 6 1/2 pounds. All but two of the babies were in good condition at birth; they cried and breathed spontaneously. Of the two, the mother of one had a prolonged labor and demonstrated withdrawal symptoms one day before delivery. The other infant was in poor condition with congenital anomalies incompatible with life. One other infant had congenital defects - an umbilical hernia and severe divergent strabismus. At the time the study was undertaken by these investigators four of sixteen babies had died.

Fifteen of the eighteen infants developed withdrawal symptoms within one to fifty-six hours after birth. They presented the characteristic syndrome, varying from mild to severe. Excess mucus, often greenish or brownish, appeared at or within the first few hours of birth, interfering with respiration and requiring repeated aspiration and oxygen. Within six to eighteen hours abnormal tremors of the arms and legs were observed. Vomiting and inability to nurse were frequent. The vomiting began within 24-36 hours and in some instances was mild and lasted only two to three days and in others it was so severe that no formula or water was retained for five to six days. Respiratory crisis and cyanosis was also noted. The babies that survived were usually

asymptomatic within six to seven days. During terminal stages the babies were apathetic and emaciated; all appeared to die of respiratory distress. Irritability and severe crying spells were frequently seen.³²

Before this study was begun, treatment at this hospital was more or less symptomatic with the use of phenobarbital, calcium gluconate, special formulas, oxygen, and aspiration, paregoric, and hypodermoclysis. During the study Methadone in doses of 0.5 mg. every 4-12 hours was started within twenty-four hours and continued in decreasing doses. Five babies managed on this routine all survived.

Again in 1958 Kunstadter and others reported a study from the Premature Infant Station of Michael Reese Hospital. They reported that many of the infants born of addicted mothers are prematurely born and the mortality rate is high. A high percentage show hyaline membrane disease and resorption atelectasis at autopsy. Since many of the addicted mothers have little or no prenatal care and often information is not available to the physician at delivery, it is vital for nurses and physicians to be aware and be able to recognize and treat these infants. "All physicians as well as nurses dedicated to the care of infants should be familiar with the syndrome and management of the patient."³³

The list of symptoms reported by these investigators included respiratory distress including rapid respirations, grunting, retractions, intermittant cyanosis with periods of apnea;

³² Ibid., p.754.

³³ Kunstadter, op. cit., p.1009.

hyperactivity with trembling, twitching, or convulsions; shrill, high-pitched cry; sucking of hands and fingers as though constantly hungry; gastrointestinal disturbances including vomiting, diarrhea, with excessive weight loss; sneezing; diaphoresis; yawning; and incomplete Moro reflex. These appear shortly after birth or may be delayed several hours or more. This probably depends upon the mother's most recent injection and/or dose prior to the time of birth.

Kunstadter concludes that the syndrome of narcotic withdrawal in newborn infants present two significant signs recorded by all observers, 1)Hyperactivity, trembling, twitching, or convulsions, and 2) shrill, high-pitched, prolonged cry.³⁴ Unique signs of these infants are the almost constant sucking and chewing on the hands and fingers as if hungry. "Mortality is definately related to the severity of respiratory distress which in turn is partly dependent on the degree of intrauterine anoxia resulting from narcotization in utero."³⁵

Recommended treatment is morphine, tincture of opium or camphorated tincture of opium used in diminishing doses over a period of several days. In the presence of respiratory distress, appropriate antibiotics should be used as pneumonia is a likely complication. Feedings should be withheld until vomiting has ceased and danger of aspiration has passed. Intravenous fluids may be necessary during this time.

³⁴ Ibid., p. 1010.

³⁵ Ibid., p. 1010.

Also in 1958 a report from Schneck from the Pediatric Service of Beth Israel Hospital of New York discussed some of the studies already covered. It is his belief that it is now appropriate to stimulate an awareness of this problem because of the necessity of early appropriate treatment in the more severely addicted infants. It is quite possible that many cases of narcotic addiction in newborn infants have been overlooked. "Because the mortality of untreated babies is high it is important that pediatricians as well as obstetricians be aware of the withdrawal signs and symptoms in newborns so that appropriate therapy can be instituted early whenever necessary."³⁶

After reviewing the signs and symptoms given by other researchers, Dr. Schneck then went on to discuss the infants and possible residual damage. Although it has been implied that these infants are apparently cured completely once their symptoms have subsided it would appear that a prolonged follow-up period is in order. If some of these babies are ill enough to have severe respiratory symptoms, cyanosis, and convulsive seizures, it may be reasonable to assume that a fraction of them could be left with some residual organic brain damage. "To my knowledge there are no data in the current literature dealing with this aspect of the problem."³⁷ Dr. Schneck went further in his discussion of the probable advisability of adoption of these infants. It is his belief that although many of these babies are placed for adoption, it may be pondered whether they are a

³⁶ Herman Schneck, "Narcotic Withdrawal Symptoms in Newborn Infants resulting from Maternal Addiction," Journal of Pediatrics, 52:585, May, 1958.

³⁷ Ibid., p.586.

good adoptive risk. "Could the mother's emotional instability which led her to resort to narcotics foreshadow the neuro-hereditary pattern of her off-spring, or is the infant's ultimate emotional development primarily one of environment?"³⁸ These questions bring to the problem the sociological and genetic factors involved.

Slobody and Cobrinik also were concerned with the future of the infant after the initial physical withdrawal from the drug. Because the addiction in the newborn is not based on conscious appetite with its attendant psychologic and sociologic problems, the infant can be cured permanently of his addiction.³⁹ If the infant is returned to his own home, constant follow-up would be necessary to ensure his not becoming addicted because of environmental exposure to addicts. This appears to be almost impossible since it has been known that mothers have been the source of their children's addiction at a later date.⁴⁰ If the environment cannot be properly controlled, and it rarely can, removing the infant from his environment may be the only hope for a permanent cure and a useful life.

In 1964, the latest published report concerning this problem, Rosenthal presented a comprehensive survey of the problem in the American Journal of Public Health. Dr. Rosenthal, along with Sherman Patrick and Donald Krug, is associated with the City Health Department, Office of Narcotics Coordinator in New York.

³⁸ Ibid., p.587.

³⁹ Slobody and Cobrinik, op. cit., p.171.

⁴⁰ Ibid., p.171.

After study of the recent case reports, technical discussions, and textbook references, these authors consider this problem of neonatal drug addiction increasingly important as the increase in narcotic addiction in general is increasing. There is every reason to believe that unrecognized and untreated addicted infants contributes to the total neonatal mortality rate in "high incidence" areas of drug addiction throughout the nation. If untreated, these infants risk death from one or a combination of 1) physiological strain involved in narcotic withdrawal without medication, 2) direct effect of depressant action of the opiate or opiate-like drug, 3) anomalies resulting from faulty intrauterine development in an addicted mother which possibly includes damage directly attributable to the action of the drug on body cells.⁴¹

In New York, as other cities, heroin is the principle drug of addiction. Because of the difficulty of eliciting information from these addicted mothers about their habit, it may be possible that the drug named by the addict is not accurate in many cases, even those carefully studied. "Withdrawal of barbiturates is much more dangerous than withdrawal of morphine and its derivatives. Barbiturates also pass the placental barrier, so the neonate may be addicted."⁴² Cerebral lesions in the fetus may result from severe barbiturate and opiate poisoning. According to

⁴¹ T. Rosenthal, S. W. Patrick, and D. C. Krug, "Congenital Neonatal Narcotic Addiction: a Natural History," American Journal of Public Health, 54:1255.

⁴² Stuart S. Asch, "Mental and Emotional Problems," in Gutt-macker, Alan F. and Rovinsky, Joseph J., Complications of Pregnancy (Baltimore: Williams and Wilkins, 1960), p. 381.

Courville, the alterations in the gray matter make it clear that the most likely mechanism of damage is that of cerebral anoxia.⁴³

Because of the illegal nature of drug taking, information about the mother's addiction are extremely difficult to ascertain. Therefore, it is difficult to make a conclusion as to the amount of drug needed to produce a definitive reaction in the fetus. It does seem to be extremely small, however, from the information that is known. The greatest problem in managing neonatal addiction appears to be the stress of withdrawal, not the direct effect of the narcotic agent.⁴⁴

There is no easy way to make a diagnosis of drug addiction in the mother without her admission of the problem. Some of the signs which a hospital worker could use in determining possible addiction are 1) tatoo-like scars over veins on the hands, arms, and legs, 2) superficial infections over veins near the surface of the skin, 3) burnt fingers and burnt holes in the clothing caused by smoking while "High" on the drug, and 4) drowsiness and lethargy, at times accompanied by a desire to scratch the body.⁴⁵

Until a more reliable indicator is developed to indicate addiction, withdrawal symptoms must be used as an indication of the prescence and severity of narcotic addiction. In dealing with mothers and infants of possible addiction, one must take

⁴³ Robert F. L. Nesbitt, Jr., Perinatal Loss in Modern Obstetrics (Philadelphia: F. A. Davis, 1957), p. 159.

⁴⁴ Rosenthal, et. al., op. cit., p. 1256.

⁴⁵ Ibid., p. 1256.

into consideration the effect on the baby of narcotics, analgesics, and anesthetics given to the mother before and during delivery as well as the effect of the last dose of drug taken by the mother before hospital admission. In most cases the total is an unknown quantity. Narcotics given immediately before delivery seem to postpone the appearance of withdrawal symptoms in the mother and probably also in the infant. Because the stress of withdrawal in the infant seems to be so great, discussion has been done as to the advisability of withdrawing the drug in the pregnant addict before delivery. Slobody and Cobrinik state, "Whether withdrawal should be attempted in the pregnant addict is questionable. Various studies certainly indicate that this should not be attempted late in pregnancy. ... it is doubtful whether a pregnancy should be jeopardized at any stage by anything but the most cautious attempts at withdrawal ..."46

Withdrawal symptoms in the newborn of an addict studied by Rosenthal had a range of onset from before birth to one week postpartem. In most cases, however, the symptoms appeared between the first and third day after delivery. Since many studies rely on hospital records the selection of cases becomes a crucial consideration. In their study cases were examined of mothers "Diagnosed: as addicts in the hospital records. In other cases the babies were symptom free, but in others severe withdrawal symptoms were shown making it appear that the mothers were addicted at the time of delivery. Another problem entered

46 Slobody and Cobrinik, op. cit., p. 170.

the picture, that of leaving the hospital before discharge. When the mother left the hospital during or within a day or two after the day of delivery, a definite diagnosis could rarely be made. In some of these cases the baby was discharged with the mother so that symptoms might have developed which were not recorded. In still other circumstances treatment for the baby was initiated before symptoms were exhibited, leaving the possibility that the baby would have been asymptomatic without treatment.⁴⁷

At the present time there exists no standard regimen of treatment for these newborns. Demerol and Morphine are used infrequently now, usually resorted to in severe cases not responding to paregoric and chlorpromazine. Paregoric seems to exhibit excellent results since the beginning of its use to control symptoms. Luminal and Methodone are effective in milder cases but not in severe ones. Chlorpromazine has been used alone with satisfactory results in over half of the cases with symptoms. Treatment generally begins as soon as initial symptoms appear.⁴⁸

The withdrawal syndrome, if untreated, reaches peak intensity from forty-eight hours to four days after the abrupt withdrawal of drugs and subsides (if the infant survives) gradually over a period of about one week although some systems, the gastrointestinal, for instance, may not return to normal levels for as long as six months. If left untreated infants may develop an electrolyte imbalance, severe convulsions, coma, and die of acute

⁴⁷ Rosenthal, et. al., op. cit., p. 1258.

⁴⁸ Ibid., p. 1258

respiratory depression, usually within the first to tenth day of life.⁴⁹ Prematurity appears to be a complicating factor in a large percentage of cases. "The incidence of prematurity appears much higher than in the general population ..."⁵⁰ The relationship between maternal addiction and infant prematurity and/or addiction is yet to be clearly understood.

Other medical complications uncovered in the recent studies and likely to be a problem in managing future cases are:

- A. Infectious hepatitis in the mother (resulting from the use of contaminated needles or drug supply).
- B. Congenital syphilis (for females the primary method of obtaining money to maintain a habit is through prostitution).
- C. Pregnancy wastage - It is reasonable to assume that for most female addicts pregnancy is an unwanted complication in their lives. Although there is no way to easily assess the total pregnancy wastage among female addicts, our recent survey suggests that the problem is severe. Sixteen of the one hundred two women who had delivered a live child were on record as having previously aborted one or more times, a total of thirty five abortions recorded. In addition, six stillbirths were recorded among the total number of babies delivered of "diagnosed mothers".⁵¹

This survey does not indicate a difference in the incidence between male and female infants. In most of the recently reported studies, the mothers have been Negroes. It is true, however, that there are many more Negro than white females reported as addicts. Until a carefully controlled study is attempted, ethnicity as a factor in the neonates' tolerance to drugs, with-

⁴⁹ Ibid., p. 1259.

⁵⁰ Ibid., p. 1259.

⁵¹ Ibid., p. 1259.

drawal symptomatology, and the like must remain an open question.⁵²

⁵² Ibid., p. 1260.

Chapter III Impressions

Narcotic addiction is a growing national problem and is of growing national concern. Those who are members of the medical professions must undertake their responsibility in solving this problem and in helping those addicted persons to return to society as contributing members. Not the least of these is the infant born with an addiction to narcotics received from his mother, and perhaps in addition a strong tendency toward narcotic addiction later in his life.

The United States has the most advanced laboratories for study, extensive educational facilities, and the capabilities for treating illness that are the highest in the world. Why, then, do we continue to have a high infant mortality rate? Much work is presently being done to discover the causes of this fact, and, surprisingly, neonatal narcotic addiction is turning out to be a contributor to the death toll in the newborn.

The studies which have previously been cited point to several possibilities as to the cause of the death of the newborn although nothing absolutely conclusive has been shown. Because of the socio-economic background of a large percentage of the mothers, there is a great lack of prenatal care and observation. This in itself is reason to expect a greater number of complications in mother and infant. Prematurity also seems to be involved as well as congenital anomalies, also reducing the chances of the infant to survive. Another large factor is the infants' dependence itself to narcotics which must be overcome at birth. Observers have not agreed as to whether the drug itself is more harmful to the infant or whether the physical strain of with-

drawal has its largest toll. The list of signs of withdrawal alone are sufficient reason to believe that the infants do undergo some, and in many cases a great deal of, physical stress. An infant who cannot retain feedings, cries for extended lengths of time with hyperactivity and hyper-excitability, and even convulsions is, under any circumstances, a very sick child. Even though there is no microbial cause, the physical signs are still present and may cause similar damage.

After reviewing the literature concerning these infants I believe there are several areas in which research needs to be undertaken. Besides the physical loss of the child in death, we must consider the possible psychological loss of the child if he survives the initial withdrawal from the drug and continues to mature into an adult. Until recently it was generally believed that because the infant was only physically addicted, after this dependence was broken there was no reason to believe he would ever have any more related problems. Perhaps the question can be raised that the incomplete emotional development of the child's mother which has caused her to be an addict would be passed as an hereditary tendency and that the child might develop with a similar emotional weakness. Another area closely related to the hereditary tendency is the question of the advisability of allowing these children to be adopted. At the present time adoption is a frequent outcome for these infants but if undesirable tendencies might be inherited, neonatal narcotic addiction might become a complicating factor in adoption eligibility. It seems this area needs further investigation.

Another category of researchable topics might include

the incidence of congenital anomalies, spontaneous abortions, premature births, and/or stillbirths. Cause and effect relationships between the action of the drugs within the mother and the appearance of these problems should be especially noted.

A final concern is the social adjustment of the child. It does little good to save the child from death at birth only to send him back into an environment filled with stress which may cause him to acquire the same habit as his mother's. Several authors have reported that pregnancy is usually an unwanted complication to a female addict's life. If the child remains with his mother, what will happen to him in the low, less than ideal, social situation? Research might be provided which could point toward the improvements needed for the child to become a productive and responsible citizen.

Where do nurses fit into neonatal drug addiction? I believe that almost anywhere in this problem she has a role and responsibility to take a leading part. The problem is a very complex one and the knowledge of many areas must be used together to help overcome it. From the hospital where she may observe and identify the addicted woman in labor to the nursery where alert and accurate observation and reporting may cause treatment to be begun as soon as possible, she is needed. The actual care of the infant during withdrawal may be in large part the nurse's responsibility as with other patients in hospitals. But her responsibility does not end with the discharge of the child from the hospital. It seems that a large share of the work with narcotic addicts must be done by the nurse.

working through public health agencies. The nurse works in the addicts' environment with other people to help the addicts overcome the handicaps of an addicted life. The ravages of narcotic addiction may total a whole lifetime. Progress can be made, but so far a cure is unknown.

The nurse's role does not seem to be clearly defined at present. She does have a responsibility to use the resources now available to her to work with the narcotic addiction problem including the addicted newborn. As more information and direction is made known, she must continue to do her part in working with narcotic addicts.

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