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Hospital stay and short-term follow-up of children of drug-abusing mothers born in an urban community hospital – a retrospective review

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Abstract In order to assess the current use of medical and social services of children of drug-abusing mothers in regard to their short term outcome in a Swiss urban community hospital, we compared hospital, private paediatricians and home nursing records of 37 of these children with 37 matched control children from birth to 18 months of age. Children of drug-abusing mothers (CDAM) experienced a longer neonatal hospital stay than control children with a median (25%–75%) of 26 days (10.5–52.5 days) versus 5 (5–6) days ($P < 0.001$), a substantial part of which, 8 days (3.5–26 days) versus 0 days (0–1 day) ($P < 0.001$) was not motivated by any specific medical treatment or nursing care. Before discharge, CDAM were referred to out of hospital nursing and social services for further management, but only 13% were effectively followed. More than 50% were lost to follow-up by their initial paediatrician after 1 year of life.

Conclusion New ways to ensure better co-ordination between paediatricians and the social services (inside and outside the hospital) should be developed to shorten the neonatal hospitalisation period and improve the quality of follow-up.

Key words Child of drug-abusing mother · Medical follow-up · Social follow-up · Neonatal hospitalisation

Abbreviations CDAM children of drug-abusing mothers · IUGR intra-uterine growth retardation

Introduction

Drug abuse has become a common problem in western societies and a growing number of drug-abusing women give birth nowadays. Becoming parent with such a condition can be difficult and potentially deleterious to the child’s care and development.

Most of the medical literature regarding children of drug-abusing mothers (CDAM) refers to their acute medical problems, particularly relating the risk of occurrence and management of a withdrawal syndrome [5, 10]. In addition to this acute problem and due to the often brittle personality and social status of their parents, many of these children remain in the hospital during the time needed to prepare their return home and organise social and medical follow-up [4, 10, 12]. The complexity of this issue and the number of people implied often lead to a long hospital stay without any medical needs, but adding risks of nosocomial complications [3, 8]. These aspects have so far been poorly analysed. Particularly in Switzerland, the efforts put on such patients and the impact on their short-term outcome has not been quantified.

The purpose of this study was to evaluate the utilisation of medical structures by such children (public
hospital and private practitioners), with regard to their medical and developmental short-term outcome.

**Patients and methods**

We reviewed the charts of 37 neonates born in the maternity unit of the Geneva University Hospital between January 1 1989 and December 31 1994 identified by using the local computerised diagnoses “CDAM” or “neonatal withdrawal syndrome”. A control group of newborns was established using the following matching criteria: infant of the same gestational age and gender, born during the same week and whose mother was the same age (± 4 years), number of previous deliveries (± 1) and pregnancies (± 1), and was not clinically suspected to take any kind of toxic substance during or before pregnancy.

Hospitalisation for CDAM in the neonatal unit was aimed at recognising early signs of withdrawal syndrome, at taking care of any neonatal complications these children are known to be at higher risk for, and to evaluate the conditions of home return and organise a systematic nursing follow-up at home when required.

Groups were compared for maternal risks of vertical transmission of infectious diseases by comparing serologies (toxoplasmosis, rubella, syphilis, HIV, hepatitis B virus), evidence of intra-uterine growth retardation (IUGR) by comparing birth weight, length and head circumference as well as perinatal adaptation by the Apgar score. Paediatric records for neonatal hospitalisation were reviewed to quantify medical problems associated with maternal substance abuse, type of feeding, possible nosocomial infections, length of stay (in the neonatology unit for children requiring medical attention or in the well-babies nursery for normal newborns), number of specialised consultations (neurology, cardiology, infectious diseases, social services) and laboratory examinations performed (blood, urine and cerebrospinal fluid, bacteriological, radiological and electrophysiological). On a social point of view, mothers were compared regarding their nationality, marital and professional status.

The length of hospital stay was segregated into two periods: a “medical hospitalisation” period justified by any medical monitoring or intervention and a “social hospitalisation” period during which no medical care or investigation was required. Hospital length of stay for the control group was taken as the duration of post-partum hospital stay.

The follow-up of these children during the first 18 months of life was assessed by a questionnaire sent to their paediatricians regarding vaccination performed, number of consultations, reason for consulting, growth, weight and psychomotor development with four items on the Denver scale (child sits alone, speaks five words, walks alone, thumb-index opposition). We also sent questionnaires to the main home nursing service connected to our hospital (Geneva Home Nursing Institution) to assess how many of these children had effectively been taken care of after being addressed to them. The ethical committee of the paediatric department approved the protocol of this study.

**Statistical analysis**

Lengths of stay were compared using the non-parametric Wilcoxon rank sum test. Other normally distributed variables were compared by t-test or chi-squared test. A value of \( P < 0.05 \) was considered significant.

**Results**

A total of 37 mothers were sorted from the hospital records according to our criteria after exclusion of exclusive alcohol or tobacco users. As validation of the matching process, mean age (± standard deviation) of the investigated mothers compared to the control group was 26.9 (± 3.8) years versus 27.7 (± 4.8) (n.s.), mean number of pregnancies was 2.2 (± 1.8) versus 1.5 (± 0.7) (n.s.) and number of deliveries was 1.6 (± 0.9) versus 1.9 (± 1.1) (n.s.). Gestational ages of delivery were similar between groups: 37.6 (± 2.9) weeks versus 38.6 (± 2.4) weeks (n.s.).

**Obstetric records**

The majority of mothers in the CDAM group were addicted to opiate derivatives: 41% taking methadone alone, 8% heroin alone and 51% a combination of substances (methadone, heroin, benzodiazepines, cocaine). Almost all mothers taking methadone (82%) were followed in a regular drug substitution programme during their pregnancy. A higher prevalence of positive serological markers was found in toxic abusing mothers compared to control mothers for HIV (19.4% versus 0%; \( P < 0.025 \)) and for hepatitis B antigen (46% versus 0%; \( P < 0.005 \)). On a social standpoint, 73% of the CDAM mothers were of Swiss nationality versus 35% in the control group (\( P < 0.05 \)), while 35% were married versus 89% (\( P < 0.005 \)) and 30% had a professional occupation versus 65% (\( P < 0.05 \)) at the time of delivery.

Regarding their newborns, birth weight (2657 ± 656 g versus 3218 ± 581 g, \( P < 0.003 \)), birth length (47.1 ± 3.4 cm versus 49.7 ± 2.7 cm, \( P < 0.004 \)) and head circumference (32.3 ± 2.2 cm versus 34.6 ± 2.1 cm, \( P < 0.008 \)), were all significantly lower in the CDAM group leading to a higher rate of IUGR (29.7% versus 0%, \( P < 0.001 \)). Apgar scores were similar in both groups.

**Length of hospital stay**

The median (25–75 percentiles) length of hospital stay was significantly longer for the 37 CDAM (26 days (10.5–52.5 days) versus 5 (5–6 days) days, \( P < 0.001 \)) and 65% of them developed signs of withdrawal syndrome. Of the CDAM, 92% required a long hospital stay during which they did not require any treatment or investigation. The median length (25–75 percentiles) of this “social” hospitalisation was 8 days (3.5–26 days) for CDAM versus 0 days (0–1 day) (\( P < 0.001 \)) in the control group (Fig. 1).

CDAM were not subjected to significantly more radiological or electrophysiological examinations except for cerebral ultrasound (33.3% versus 10%, \( P < 0.05 \)). Bacteriological examinations were all significantly more performed in the CDAM population than in controls: blood cultures 35.1% versus 10.8% (\( P < 0.025 \)); urine cultures 21.6% versus 5.4% (\( P < 0.05 \)); white blood count 81.1% versus 21.6% (\( P < 0.001 \)); serum chemistry 67.6% versus 24.3% (\( P < 0.001 \)). Over the whole hospital stay, 30% of CDAM were treated with antibiotics for suspected or proven infection versus 8% in the