

Obstetric pain medication and eventual adult amphetamine addiction in offspring.

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Our purpose was to investigate whether obstetric analgesia, particularly by nitrous oxide, constitutes a risk that the infant might develop amphetamine addiction in later life. Of 200 current amphetamine addicts born between 1945 and 1966 in Stockholm, proportionately more were born at hospitals where pain medication had been administered in large doses (p less than 0.05). A blind matched comparison was made between 73 addicts and 109 non-addicted siblings by logistic regression, in which nitrous oxide administration was tested in competition with 12 other natal variables as possible confounders. The risk for amphetamine drug addiction in offspring was found to increase with duration of intermittent administration of pure nitrous oxide, i.e. it was estimated to be 5.6 times greater (95% confidence intervals 1.6-16.9, $p = 0.005$) when nitrous oxide had been given for greater than or equal to 4.5 h vis-à-vis less than or equal to 0.25 h. Calculated risks are probably underestimates. Results can be explained as an effect of imprinting. It is concluded that local or regional anesthesia are preferable to general anesthesia which allows substantial amounts of drugs to cross the placenta.

Obstetric medication versus residential area as perinatal risk factors for subsequent adult drug addiction in offspring.

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In an attempt to explain pronounced uneven distributions of births of subsequent amphetamine and opiate addicts at seven hospitals in Stockholm, two possible mechanisms for adult drug addiction were weighed against each other: (1) risk factors associated with the obstetric care at the hospitals of birth of the addicts and (2) risk factors associated with the phenomenon of 'contagious' transmission of drug addiction in certain residential areas during adolescence. The subjects comprised 200 amphetamine addicts and 200 opiate addicts born between 1945 and 1966. By loglinear analysis the relative risk for future addiction was determined for eight residential areas as well as for the seven hospitals and four periods of birth. For the opiate addicts only one weak association was found for the residential area, which could not explain fully a clustering of births at any particular hospital. For the amphetamine addicts, hospital of birth was found to be an important risk factor even after controlling for residential area. Hence, the variable residential area has not been able to explain the uneven distribution of births of drug abusers among the studied hospitals.

Opiate addiction in adult offspring through possible imprinting after obstetric treatment.

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OBJECTIVE--To test the hypothesis that opiate addiction in adults might stem partly from an imprinting process during birth when certain drugs are given to the mother.

DESIGN--Retrospective study by logistic regression of opiate addicts with siblings as controls.

SETTING--Stockholm, Sweden.

SUBJECTS--200 Opiate addicts born in Stockholm during 1945-66, comprising 41 identified during interviews of probands for an earlier study; 75 patients whose death from opiate addiction had been confirmed during 1978-88; and 84 accepted for the methadone programme. 262 Siblings (controls) born in Stockholm during the same period, 24 of whom were excluded for drug addiction or being brought up outside the family. Birth records were unavailable for eight, leaving 230 siblings and 139 corresponding probands.

MAIN OUTCOME MEASURES--Administration of opiates, barbiturates, and nitrous oxide (for greater than 1 h) to mothers of all subjects during labour within 10 hours before birth as a risk factor for adult opiate addiction.

RESULTS--In subjects who had subsequently become addicts a significant proportion of mothers had received opiates or barbiturates, or both, compared with unmatched siblings (25% v 16%, $\chi^2 = 5.83$, $df = 1$, $p = 0.02$), and these mothers had received nitrous oxide for longer and more often. After controlling for hospital of birth, order of birth, duration of labour, presentation other than vertex, surgical intervention, asphyxia, meconium stained amniotic fluid, and birth weight the relative risk for offspring subsequently becoming an adult opiate addict increased with the number of administrations of any of the three drugs. When the addicts were matched with their own siblings the estimated relative risk was 4.7 (95% confidence interval 1.8 to 12.4, p for trend = 0.002) for three administrations compared with when no drug was given.

CONCLUSIONS--The results are compatible with the imprinting hypothesis. Therefore, for obstetric pain relief methods are preferable that do not permit substantial passage of drugs through the placenta.

Socio-economic versus obstetric risk factors for drug addiction in offspring.

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Two possible risk factors for drug addiction were weighed against each other: (1) perinatal factors associated with obstetric medication at time of birth; and (2) factors associated with familial socio-economic conditions at time of birth. The subjects comprised 200 amphetamine addicts and 200 opiate addicts born in Stockholm 1945-1966. In a matched case control study, addicts were compared to their siblings with regard to possible obstetric risk factors by means of conditional logistic regression controlling for socio-economic level and civil status. Administration of opiates, barbiturates and nitrous oxide to mothers during labor was associated with drug addiction in offspring, hence confirming results from earlier studies. In a cohort study the risk associated with birth at a given hospital and familial socio-economic level was analyzed by means of log-linear analysis using 7100 controls from the general population. For amphetamine addicts, a low socio-economic level at time of birth might be of importance for the infant subsequently becoming an addict. This could not be demonstrated for the opiate addicts. An uneven distribution of births among the hospitals, most pronounced for the amphetamine addicts, is in agreement with the hypothesis that obstetric practices may be risk factors for adult drug addiction.