

Maternal ethanol consumption during pregnancy: prenatal exposure diagnosis, neonatal screening and postnatal follow up

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Background: Prevalence, underdeclaration, severe effects on neurodevelopment (fetal alcohol syndrome), and associated expenditure of prenatal ethanol exposure are well known. The objectives of this study were as follows: (1) To study the measurement of prenatal alcohol exposure: questionnaire and biochemical screening techniques. (2) To design and to implement a prenatal diagnosis and a neonatal screening protocols of prenatal ethanol exposure. (3) To design and to implement an intervention protocol and follow up of exposed newborns.

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Methods: Prospective study including mothers and newborns prenatally exposed to ethanol, in the hospital of the PI: 200 pregnant women for the prenatal diagnosis, 200 couples of mothers and newborns for the neonatal screening, and 50 children prenatally exposed to ethanol for the follow up during 1 year. A questionnaire about consumption and exposure to tobacco, alcohol and drugs of abuse during pregnancy, was administered, and in biological samples (maternal hair from the first trimester and after childbirth, meconium and cord blood) fatty acid ethyl esters (FAEE), EtG/EtS and phosphatidylethanol (PEth) of ethanol and drugs of abuse, was analyzed by liquid chromatography coupled with tandem mass spectrometry and by immunoanalysis.

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Results: (1) Prevalence of prenatal alcohol exposure in Barcelona has decreased from previous cohort study. (2) A clinical prenatal diagnosis and neonatal screening protocol and follow up of alcohol fetal exposure was implemented. (2) Brief intervention during pregnancy was shown to be effective in reducing prenatal exposure to ethanol by alternative matrices analysis.

Conclusion: Intervention and screening protocols during pregnancy and at birth are effective in reducing prenatal exposure to alcohol.