

ETHYLGLUCURONIDE AND ETHYLSULFATE IN MECONIUM: NEW BIOMARKERS OF GESTATIONAL ETHANOL EXPOSURE?

Papaseit E*, Joya X*, Pichini S**, García Algar O*, Morini L***, Vagnarelli F****, Vall O* and de la Torre R*.
 (*) Institut Municipal d'Investigació Mèdica - Neuropsychopharmacology Programme, Barcelona, Spain.
 (**) Istituto Superiore di Sanità, Rome, Italy.
 (***) Department of Legal Medicine and Public Health, University of Pavia, Italy.
 (****) Arcispedale Santa Maria Nuova, Reggio Emilia, Italy.
 simona.pichini@iss.it

OBJECTIVES

To investigate: (1) the presence and the concentration of EtG and EtS in meconium from two different European newborn cohorts and (2) the eventual correlation between these two biomarkers and FAEEs from the same meconium samples.



Similar sociodemographic and ethnic characteristics

MATERIALS AND METHODS

Liquid chromatography tandem mass spectrometry was applied to measure EtG, EtS and FAEe in meconium samples obtained from Reggio Emilia, Italy (n=60) and from Barcelona, Spain (n=50).

LOQ for EtS in meconium samples: 1 ng/g
LOQ for EtG in meconium samples: 5 ng/g

CONCLUSIONS

The preliminary results of our study evidence for first time the presence of EtG and EtS in meconium. Further investigations are ongoing to verify the use of these two ethanol metabolites as alternative biomarkers of chronic in utero exposure to alcohol.

RESULTS AND DISCUSSION

MECONIUM ANALYSIS in 50 samples of Barcelona Meconium analysis disclosed:
 24 samples FAEe > 2 nmol/g sample and 26 FAEe < 2 nmol/g.

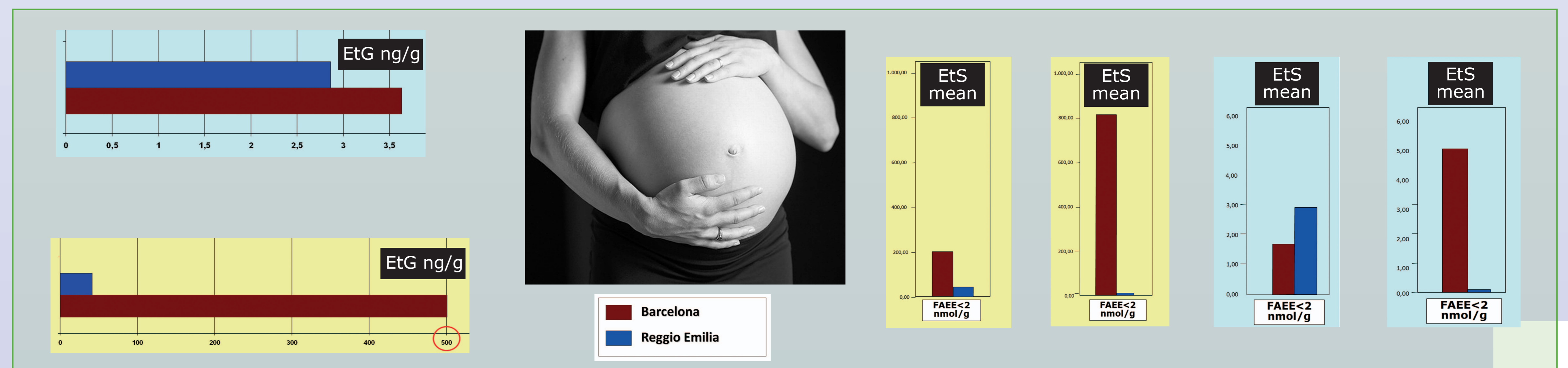
Prevalence of fetal alcohol exposure

45% ethanol consumption during pregnancy in accordance with previous studies*.

*Garcia-Algar O, Kulaga V, Gareri J, Koren G, Vall O, Zuccaro P, Pacifici R, Pichini S. Alarming prevalence of fetal alcohol exposure in a Mediterranean city. Ther Drug Monit. 2008 Apr;30(2):249-54.

MECONIUM ANALYSIS in 60 samples of Reggio Emilia Meconium analysis revealed:
 59 FAEe < 2 nmol/g of 60 total samples.

When considering only Barcelona samples with FAEEs below 2 nmol/g, values of EtG that were still different in the two cohorts. Conversely, EtS values were similar when comparing the whole samples from the two city cohorts and also RE samples with those from BCN with FAEEs below 2 nmol/g.



The preliminary results showed values of **EtG in meconium samples from Reggio Emilia were statistically lower than those from Barcelona specimens, similarly to what happen with FAEEs.**

EtG and EtS values did not correlate with total amount of the seven FAEEs in both Reggio Emilia and Barcelona meconium samples. This could be due to the different mechanism of formation of these metabolites.