JIM

The power of Epigenetics

Twins: identical but different

Selected Proceedings of the
13th International Workshop
on Neonatology
and Satellite Meetings
Cagliari (Italy)
October 25th-28th, 2017

Edited by
V. Fanos
G. Dimitriou
O.D. Saugstad
D.I. Boomsma
M. Mussap
G. Faa
R. Sciot

HYGEIA PRESS

PROCEEDINGS

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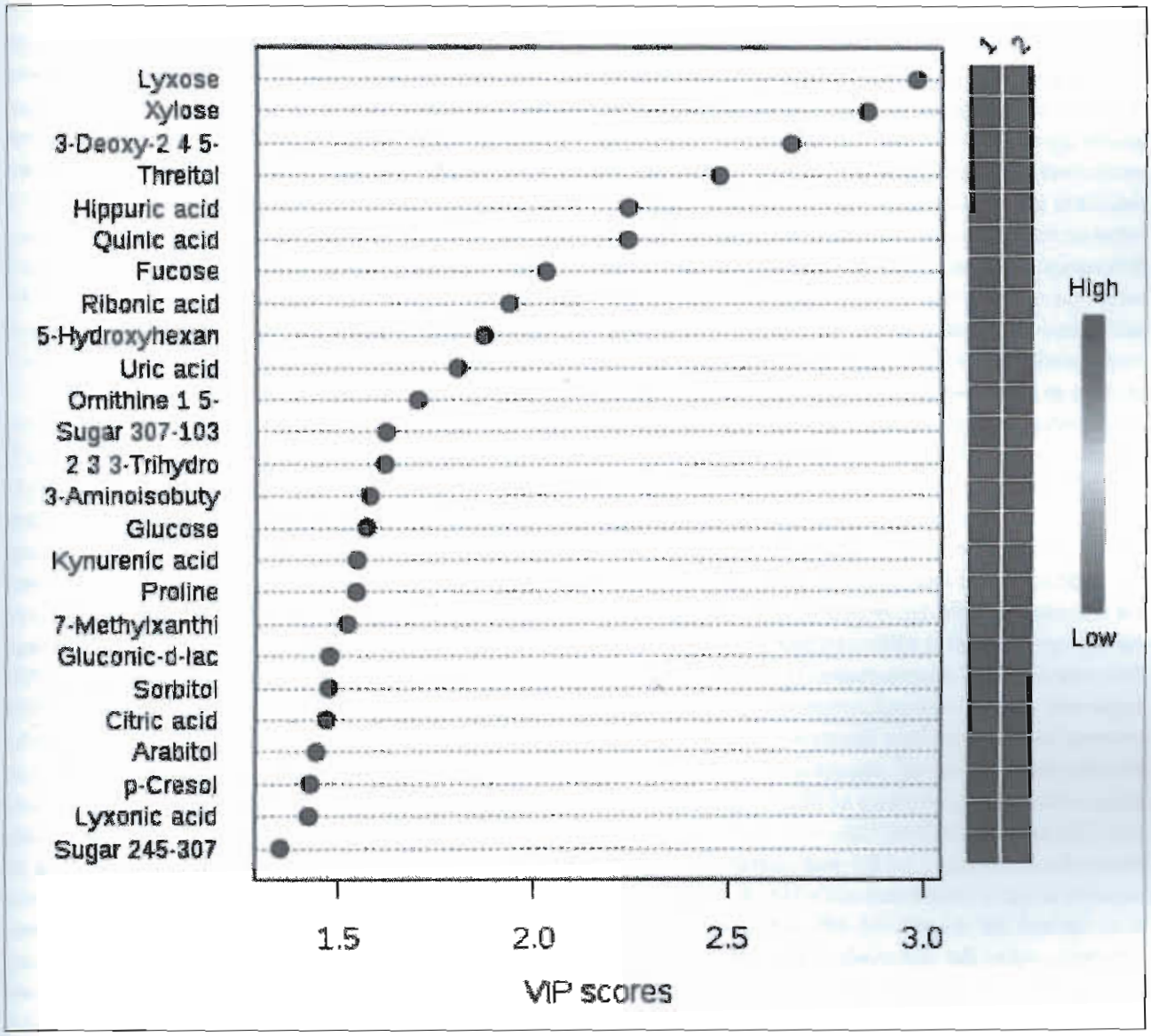

Figure 1 (LECT 27). The 25 metabolites more discriminant among ASD children (Class 1) and unaffected siblings (Class 2).

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LECT 28

PLACENTAL BIOMARKERS

A.M. Paoletti[1], B. Piras[1], P. Abis[1], V. Corda[1], M. Neri[1], M.F. Marotto[1], M. Angiolucci[1], G.B. Melis[1], F. Coghe[2], V. Mais[1]

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INTRODUCTION

Some placental (Pl) substances are of extreme interest in clinical practice for assessing the development of pregnancy (Pr). Since the 1st trimester of Pr, it is possible to assay in the maternal blood some parameters that allow for screening of fetal conditions and, in particular, fetal chromosomal anomalies. By adding to these parameters the evaluation of anamnestic and biophysical parameters (mean arterial pressure and flow of uterine arteries) it is also possible to perform a precocious screening of preeclampsia (PE). Aspirin (Asp) treatment more

than placebo administered from 11 to 14 weeks of Pr until 36 weeks of Pr is capable of improving the Pl blood perfusion and preventing the PE [1]. Another substance in the maternal bloodstream is an estrogen, estetrol (E4), secreted by the fetal liver exclusively during Pr. The E4 passes in the amniotic fluid and in the maternal blood (MB). Although the increase of E4 levels in the MB during the Pr, for follow-up and survey of Pr pathology E4 levels were not suitable due to the large intra- and inter-individual variation of plasma levels [2]. However, its physiologic role in Pr has been investigated. The studies so far carried out demonstrate that E4 exerts an important role in the regulation of the fibrinolytic protein system in endothelial cells, showing a key action in the vascular system, with potential implications for the local control of blood clotting and for vascular remodelling [3]. A recent study in cell cultures of rat's hippocampus demonstrates that E4 exerts an antioxidative action mostly dependent on estrogen receptor (ER) α (ERα) and ERβ [4]. The same study demonstrates that E4 exerts an important effect on neurogenesis and possibly promyelinating activities through its link with ERβ [4]. In the context of placental biomarkers, our focus was on early markers of PE.

MATERIAL AND METHODS

Precocious screening of PE was performed in 700 women at the 1st trimester of Pr [1]. Asp treatment was started in at risk of PE subjects from the screening up to the 36th week of Pr.

RESULTS

The test was capable of detecting 58 women at risk for PE. The Asp treatment from the screening up to the 36th week of Pr impeded in these subjects the occurrence of PE.

CONCLUSIONS

The Asp treatment in selected women at risk of PE since the 1st trimester of Pr reduces the occurrence of this pathology. However, only an adequate screening can indicate women susceptible to treatment. Further studies are needed to clarify the exact role of E4 in the protection of endothelium and brain during the fetal life.

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LECT 29

BIOMARKERS IN NEONATAL SEPSIS

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Neonatal sepsis (NS) is one of the leading causes of neonatal morbidity and mortality, particularly in preterm infants. Early diagnosis and treatment is of vital importance in NS in order to decrease mortality. It is difficult to distinguish the clinical findings of NS, especially for early-onset NS (EONS) during the initial period of sepsis, from non-infectious causes because there are no specific signs or symptoms in EONS. Obtaining a positive blood culture is considered a definitive diagnostic tool in sepsis, but this is a time-consuming procedure. To avoid the unnecessary treatment of uninfected patients, an early, sensitive, and specific laboratory test would be helpful to guide clinicians in deciding whether or not to start administering antibiotics. C-reactive protein (CRP), white blood cell count, absolute neutrophil count, and immature/total neutrophil ratio are the most widely used tests in the diagnosis of NS. Many biomarkers can be used in NS. CRP is frequently used in the diagnosis of EONS. The delayed CRP elevation at the onset of infection showed that it should not be used alone in the diagnosis of sepsis and in deciding to begin antibiotherapy. A single determination is often not helpful in determining infection, serial CRP measurements may be more useful in evaluating the efficacy of treatment. Procalcitonin (PCT) as a biomarker may also be used to monitor the activity and the prognosis of severe bacterial infections, but it has some limitations in the diagnosis of NS. In EONS, PCT measurements at birth may initially be normal; serial PCT measurements at 24 h of age may be more helpful for an early diagnosis. We found that during the first 24 h of life PCT is a more sensitive marker of infection than CRP. Because the dynamics of PCT and CRP are time-dependent, serial PCT and CRP measurements at birth and at