Correlation between cardiotocography during the active phase of the second stage of labour and neonatal blood gas analysis

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Objective. To correlate cardiotocographic (CTG) alterations during the second stage of labour and blood gas analysis from umbilical cord to identify CTG parameters predictive of foetal hypoxia and acidaemia.

Materials and Methods. This was a retrospective observational study carried out in Policlinico Casilino Hospital. 100 women at term of pregnancy with vaginal delivery entered in the study. All patients received continuous CTG monitoring in labour and Blood gas analysis was performed within 5min from birth, using an automated blood gas analyser. A representative part of the CTG 1hour before birth was chosen for the analysis. The CTG traces were assessed by 2 experienced physicians (H.V and B.V) who focused on FHR baseline, variability, and presence of decelerations (FIGO guideline)

Results. Baseline FHR in second stage of labour > 1 hour (pushing efforts) was increased compared to patients with a duration < 1 hour (144 bpm ± 16 bpm *vs* 131 bpm ± 19 bpm; p < 0.01). Patients with epidural analgesia showed lower FHR compared to patients without analgesia (126 bpm ±19 bpm, 139 bpm ± 17 bpm; p = 0.001). Baseline FHR > 140 bpm in the active phase of second stage of labour was predictive for a Base Excess value > -9 mmol/L (OR 2.87; 95%CI 1.18-7 and p = 0.02) and it was found to be an independent predictor for a pathological Base Excess value (OR 2.78 and p = 0.03).

Conclusions. FHR > 140 bpm and active phase of the second stage of labour > 1hour appear to be associated to alterations at umbilical cord blood gas analysis. Further studies are needed to understand the clinical implications of these results.