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„Effects of continuous CTG monitoring during labour on selected obstetric outcomes”

Abstract

Background: Cardiotocography (CTG) is widely used for continuous or intermittent evaluation of the foetal heart function, material heart rate, foetal movements and the uterus contractions during labour.

Objectives: This study is designed to assess the effects of continuous CTG monitoring during labour on selected obstetric outcomes.

Research problems are as follows:

1. Comparison of the effects of continuous and intermittent CTG monitoring on obstetric outocomes (the mode of delivery, number of perineal incisions and number of neonates born with an Apgar score of ≤7 and >7 at 1 and 5 minutes with information about seizures and deaths) and the frequency of epidural and 5 IU infusion oxytocin - I part of the research
2. Determination of the effects of the simultaneous presence of multiple indications for continuous CTG on selected obstetric outcomes (mode of delivery, number of perineal incisions, and number of neonates born with an Apgar score of ≤7 and >7 at 1 and 5 minutes)- II part of the research.
3. Analysis of the correlations between individual indications for continuous CTG monitoring and selected obstetric outcomes (mode of delivery, number of perineal incisions, and number of neonates born with an Apgar score of ≤7 and >7 at 1 and 5 minutes)- III part of the research.
4. Assessment of the usefulness in clinical practice of the guidelines regarding the indications for CTG monitoring during childbirth in the Regulation of the Minister of Health of 2018 and Recommendations of the Expert Team of the Polish Gynecological Society of 2009.

Methods: Non-invasive retrospective study conducted between 1 July 2018 and 1 July 2020 at St. Sophia Hospital in Warsaw. The analysis was conducted from two time intervals reflecting the legal framework governing mandatory use of continuous CTG monitoring: from

1 January 2014 until 31 December 2014 – before the legal regulation was adopted and from 1 January 2017 until 31 December 2017 – after the legal regulation entered into force.

Study group: women who gave birth after the introduction of the regulation in question, who qualified for mandatory continuous CTG monitoring due to: twin pregnancy; complicated pregnancy; leaking of green amniotic fluid; indication for stimulation of uterine contractions; indication for epidural analgesia during labour.

Control group: women who gave birth prior to the introduction of the legal regulation, in whom continuous CTG monitoring in labour was not deemed necessary (instead, intermittent CTG monitoring at 2 h intervals was used, alongside intermittent auscultation of the fetal heart rate) despite the presence of the indications referred to hereinabove.

Results: Vacuum deliveries were found to be significantly more common in women who had continuous versus intermittent CTG monitoring ($p= 0,022$). The number of neonates born with an Apgar score of ≤7 at 5 minutes was higher in the group of women who had continuous CTG monitoring during labour ($p=0,025$). The number of Cesarean Sections and vacuum deliveries ($p<0,001$), the number of perineal incisions ($p<0,001$) and number of neonates born with an Apgar score of ≤7 at 1 minutes ($p=0,01$) was significantly higher in the group of women with multiple indications.

Conclusions:

1. A relationship was correlated with a higher number of vacuum deliveries, higher number of epidural anaesthesia, higher number of oxytocin 5 IU injections to induce uterine contractions, higher number of neonates born with an Apgar score of ≤7 at 5 minutes in the group of patients who had continuous CTG monitoring in labour (compared to intermittent CTG monitoring).
2. The simultaneous presence of multiple indications for continuous CTG monitoring correlates with a higher number of neonates born with an Apgar score of ≤7 at 1 minute, so in those cases the use of continuous CTG monitoring is justified.
3. There were no differences between the majority of compared indications for continuous CTG and the obstetric outcomes.
4. The current recommendations (Regulation of the Minister of Health of 2018) regarding the use of continuous CTG monitoring in justified medical cases is ambiguous. Perhaps it is worth reconsidering the PTG guidelines from 2009, which in most cases recommended intermittent CTG monitoring. This allowed to reduce the frequency of continuous CTG among women whose delivery did not require such a supervision.