Computerized Intrapartum Electronic Cardiotocograph (CTG): An Audit of Compliance and Outcome to Identify Areas for Practice Improvement

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ABSTRACT

Objectives: To assess if introduction of digital CTG pop-up box with the guidance for CTG interpretation improves the rate of compliancy review, accuracy of interpretation, prompt action taken on pathological CTG and the rate of adverse perinatal outcome. The digital guidance for CTG interpretation aim to support decision making during labour and improve the quality of intrapartum fetal monitoring and its management in maternity services. **Methods:** Intrapartum data and CTG were collected on labouring women at UMMC from December 2015 to the end of June 2016. We introduced a digital system to aid interpretation of CTG in March 2016. Our study period was three months before and three months after this date. Comparisons were made between conventional CTG paper tracings with digital CTG, specifically in cases diagnosed as 'fetal distress'. Two reviewers agreed on accuracy of CTG interpretation. Data were also collected on adverse neonatal outcomes during this study period. These are term newborns admitted to Neonatal Unit, Low Apgar score (less than 7 at 5 minutes of life), and cord pH less than 7.1. In these newborns, we assessed the documented rate of CTG reviews, the accuracy of CTG interpretation and whether appropriate action was taken when CTG was interpreted as 'pathological'. Comparison on the compliancy of CTG reviews, accuracy of CTG interpretation, the rate of documented prompt action taken on pathological CTG and the rate of adverse perinatal outcome is compared. **Results:** Documentation on the compliance of CTG review every 30 minutes were statistically significantly different between the two periods 14.7%, (95% CI 9.3-20.2) vs 46.4%, (95% CI 38.5-54.3). Accurate CTG interpretation as per NICE Guideline was found in 42.9%, (95% CI 35.3-50.5) prior to implementation of digital CTG and shows improvement 56.8%, (95% CI 49.0-64.7), although it is not statistically significant. Prompt action taken for pathological CTG shows statistically significant difference between both group 33.4% (95% CI 27.1-41.7) vs 58.8% (95%CI 49.0-64.7). The adverse perinatal outcome improved although it is not statistically significant 27 % (95% CI 20.2-33.8) in conventional CTG vs 17% (95% CI 11.1-23.0) in digital CTG, most likely due to the small sample size. **Conclusion:** This study has shown that the introduction of digital CTG pop up box to guide CTG interpretation have significantly improved the compliancy of CTG review, and the rate of prompt action taken on pathological CTG.

Wernicke's Encephalopathy following Hyperemesis Gravidarum

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ABSTRACT

Introduction: Wernicke's Encephalopathy is a serious neurological disorder induced by thiamine, Vitamin B1 deficiency. Dr Carl Wernicke, a German neurologist described it in 1881 as a triad of acute mental confusion, ataxia and opthalmoplegia. It may develop in non-alcoholic condition such hyperemesis gravidarum and prolong starvation. We reported a case of Wernicke's Encephalopathy in our center following hyperemesis gravidarum. **Case Report and Discussion:** A 37 years old Indonesian lady who is in her fifth pregnancy was brought in by her husband to screening room after he noticed that his wife was verbally less responsive and keeps on starring at him for a week. She had thrice admission to hospital for hyperemesis gravidarum for this current pregnancy. On examination, she had nystagmus with conjugate gaze palsies which required her to have frequent head movement instead of her eyes. She had peripheral neuropathy and power assessment were only 3 for each limb. She obeyed simple commands but had slight of agitation, confusion and inattentiveness. Her TFT that was taken during last admission showed hyperthyroidism. No other clinical finding correlated to the thyrotoxicosis except her flapping tremor. Cardio-respiratory and Gastrointestinal system were unremarkable. Diagnosis of Wernicke's Encephalopathy and gestational thyrotoxicosis were established. Further blood investigation revealed hypokalaemia and folate deficiency. Intravenous Parenterovite and intramuscular thiamine were commenced. She was also given T. Prophylthiouracil as benefit to treat thyrotoxicosis. Serum potassium level was corrected. With the above treatment, her eye gaze improved and she was able to communicate as usual. Her muscle power was 4 over 5 and she started to recall the past. By day 7 of treatment, she was able to ambulate and feed herself. She had neither retrograde nor anterograde amnesia but the care taker claimed she had mild visual hallucination. **Conclusion:** Hyperemesis gravidarum constitute 0.3 to 3.6% cases that complicate pregnancy during first trimester. Suboptimal management of hyperemesis gravidarum might lead to Wernicke's Encepahlopahy. This is the most serious neurological complication that can lead to death. Identifying the unique character of Wernicke's Encephalopathy and early thiamine initiation are the crucial part of treatment to ensure better prognosis.