ECG CHECKLIST FOR ASSESSING CARDIAC CAUSES OF SYNCOPE IN CHILDREN

1Jacky CK Wong, 2James Gnanapragasam, 3Gabrielle Magnall

1 GPST3 Abbeywell Surgery, Romsey, Southampton, S051 8EN
2 Paediatric Cardiology and 3 Paediatric Emergency Department, Southampton General Hospital – jackywong@doctors.org.uk

Introduction

The history, examination, and interpretation of electrocardiography (ECG) are very important parts of ruling out possible cardiac diseases in children following syncope. Although many cases of syncope present to the emergency department (ED), cases of recurrent “fainting” in children also present themselves within a primary care setting, and ruling out a cardiac syncope is equally important. While the majority of paediatric syncope are benign (50-80% vasovagal), 1-2% of these cases have cardiogenic causes that require specialist referral and management. [1-2]

A US study done by Denver’s Children’s Hospital on the accuracy of paediatric ECG interpretation have shown a high discordance rate of 27% between ED doctor’s and cardiologist’s interpretation of ECGs that show significant pathology. [3]

Another study on paediatric trainees at John Hopkins Medical Center also showed lack of knowledge and confidence when dealing with paediatric ECGs even in those who have had cardiology rotations. [4]

These studies from specialist paediatric units highlight the possible risk of missing preventable cardiac deaths when children are assessed in ED and discharged without further follow up. No studies were found for paediatric ECG interpretation in the primary care setting, but GPs have shown low levels of confidence in ECG interpretation even in adults. [5]

Aim

To design a checklist that will both educate doctors in what to look for in paediatric ECGs and provide a simple yet adequate process in ruling out cardiac causes of syncope in children.

Method

A checklist for assessing the history, examination findings, and ECG was made in collaboration with a consultant cardiologist and a consultant in paediatric emergency medicine at Southampton General Hospital.

A 10-question survey was conducted on trainee doctors working in the paediatric ED assessing their current knowledge on paediatric ECGs and level of training. The checklist was subsequently introduced for 1-2 months and a second test, as well as a survey, were conducted at the end of the study period for comparison and feedback regarding the usefulness of this tool.

All patients received senior reviews regardless of whether this tool was used.

Results

• 7 participants (5 GP and 2 ED trainees) were initially tested, with 4 subsequently participating in the second survey.

• There was a 16% improvement in the trainees’ average test scores pre- and post- introduction of the ECG checklist tool.

• All trainees surveyed found the list of conditions and reminder of ECG patterns to look out for (element D) most useful.

• All trainees subsequently surveyed found the tool very useful in the ED to remind them of conditions not to miss, and the patterns they could present as on ECG.

Discussion

• Given the frequent rotation of trainees bi-annually, this checklist may be useful as both a training tool for new trainees or as a memory aid for those already working in the ED.

• Because there is a low prevalence of causes that lead to sudden cardiac death (approximately 1 in 100,000), having a checklist of conditions (just as the trainees have found) can act as a memory aid may help with improving the discordance rates of ECG interpretation.

• A larger sample size, formalised test questions, as well as assessment of patient outcomes may be needed to further evaluate objectively the benefits of implementing such a checklist, especially within a primary care setting.

References


