Diagram illustrating the prevalence of anterior T wave inversion in both sexes.

Abstract 149 Figure 1 Diagram illustrating the prevalence of anterior T wave inversion in both sexes

20 years of annual screening would save 1,667 lives at a cost of £3.5 million per life saved with the ESC criteria; the Seattle and refined criteria reduced the cost to £3 million and £2.8 million per life saved respectively.

Conclusions The impressive 20% cost saving associated with ECG modification will be welcomed by organizations that mandate screening for their athletes. However, ECG screening is expensive considering the large number of young athletes that would require screening and the low event rate in such populations. Further ECG modification and physician education is required for such practices to be achievable or sustainable at a state-level.

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THE PREVALENCE AND SIGNIFICANCE OF ANTERIOR T WAVE INVERSION IN A LARGE WHITE POPULATION OF YOUNG ATHLETES AND NON-ATHLETES

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Introduction Anterior T wave inversion (ATWI) on an electrocardiogram (ECG) of an adult white individual raises the possibility of an underlying cardiomyopathy. While European consensus guidelines recommend that ATWI beyond V1 warrants further investigation, the prevalence and significance of ATWI has never been reported in a large white asymptomatic population.

Objective This study investigated the prevalence and significance of ATWI in a large cohort of young, white adults including athletes. This was an observational study with a mean follow-up period of 18.1 months.

Setting Several UK elite sporting organizations conduct ECG based pre-participation screening of athletes through the charitable organization, Cardiac Risk in the Young (CRY) for young and apparently healthy individuals. Follow-up of individuals with abnormalities at preliminary assessment is provided at a tertiary centre for inherited heart conditions and sports cardiology.

Participants 14,646 subjects aged 16–35 years were evaluated including 4,720 (32%) females and 2,958 (20%) athletes. All individuals underwent health questionnaire, physical examination and 12-lead ECG.

Main Measures ATWI was defined as T wave inversion in 2 or more contiguous anterior leads (V1–V4) and investigated comprehensively to elucidate underlying cardiac pathology. ATWI >0.1 mV or in 2 or more contiguous leads was considered abnormal except in V1/III.

Results 338 individuals (2.3%) exhibited ATWI. Those with ATWI were of similar age compared with subjects without ATWI (21.2 (± 5.4) years vs. 21.7 (± 5.3) years). Both groups had a similar mean body surface area. ATWI was more common in females compared with males (n = 203; 4.3% vs n = 135; 1.4%; p < 0.0001) and was more common in athletes than non-athletes in both sexes (females: n = 58; 6.5% vs. n = 145; 3.8%; p = 0.0005, and males: n = 45; 2.1% vs. n = 90; 1.1%; p = 0.0004; see Figure 1). Among athletes, ATWI was more prevalent in those competing in endurance sports than strength sports (n = 82; 5.6% vs. n = 41; 2.8%; p < 0.0001). No one with ATWI was diagnosed with ARVC after further evaluation.

Univariate predictors of ATWI were female gender and athletic status. Stepwise multiple linear regression identified female gender (hazard ratio 3.1, 95% CI 1.96–4.90, p < 0.001) and athletic status (HR 3.3, 95% CI 1.91–5.63, p = 0.001) as independent predictors irrespective of age.

Conclusions and implications Anterior T wave inversion confined to V1/ V2 may be a normal variant or physiological

phenomenon in asymptomatic white individuals without a relevant family history. Conversely, ATWI beyond V2 is rare, particularly in males and may warrant investigation. The results of this study will have a significant impact on ECG interpretation in young white athletes and non-athletes.

BCS Affiliates — Allied Professionals (BACPR/BANCC)

150 THE INCIDENCE OF LONG QTc IN ACUTE MEDICAL ADMISSIONS: AN EVALUATION OF FIVE METHODS

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Aim Long QTc is associated with poor outcomes on CCU and acute stroke units. Its incidence and outcome in unselected medical admissions is unknown. A range of drug classes and electrolyte abnormalities may lead to acquired long QTc. Given the frequency with which these are encountered in medical admissions, the incidence of long QTc requires study. We have calculated the incidence of long QTc encountered in acute medical admissions. As inaccuracies in the correction formula may give misleading data, this study compared five formulas commonly used to correct QT interval duration by heart rate (HR): Bazett (B), Fridericia (Fa), Framingham (Fm), Hodges (H), Van der Water's (VdW) as well as the automated QTc correction provided by the Welch Allyn (WA) ECG recorder.

Methods 1000 records of consecutive patients admitted to acute medical wards at a tertiary teaching hospital were reviewed by two physicians. Admission ECGs were examined. QTc was calculated using the five formulas specified. The Pearson correlation coefficient (R^2) was used to estimate the relationship between QTc and HR. Patient age and gender were recorded. QTc of ≥ 500 ms was considered significantly prolonged in both genders. ECGs with missing patient identifiers or poor trace quality were excluded. Cohen's kappa statistic, for inter-observer agreement, was made from a subgroup of 200 randomly chosen ECGs evaluated by a third observer.

Results 715 ECGs were included. 356 males, 359 females. Age 61 ± 20 years (mean $\pm$ SD). Kappa inter-observer agreement was 0.65 indicating substantial agreement. Incidence of QTc ≥ 500 ms was 1.7% (B), 0.4% (Fa), 0.4% (Fm), 0.3% (H), 0.4% (VdW) but was 6.2% with WA. Pearson correlation between QTc and HR was 0.02 (B), 0.06 (Fa), 0.5 (Fm), 0.001 (H), 0.5 (VdW) 0.009 (WA).

Conclusion The incidence of significant QT prolongation in unselected medical admissions varied by a factor of ten depending on the method used. Automated QTc software gave a far higher incidence of long QTc than manual interpretation. Framingham and Van der Water's equations show bias by HR. The clinical sequelae of long QT in unselected medical admissions needs further study.

Valve Disease/Pericardial Disease/ Cardiomyopathy

151 CARDIAC MYOSIN-BINDING PROTEIN C IS A NOVEL MARKER OF MYOCARDIAL INJURY AND FIBROSIS IN PATIENTS WITH AORTIC STENOSIS

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Background Cardiac myosin binding protein C (cMyC) is an abundant sarcomeric protein and a novel highly specific marker of myocardial injury. Given myocyte death characterises the transition from hypertrophy to replacement myocardial fibrosis in advanced aortic stenosis, we hypothesised that serum cMyC concentrations would be associated with cardiac structure and outcomes in patients with aortic stenosis.

Methods cMyC was measured in two cohorts: a mechanism cohort of patients with aortic stenosis ($n = 161$) and healthy controls ($n = 46$) who underwent cardiac magnetic resonance imaging, and an outcomes cohort with aortic stenosis ($n = 104$) followed for a median of 11.3 years. True cut myocardial biopsies were obtained from 10 patients in the mechanism

Abstract 151 Figure 1 Linear regression correlation of cMyC with indexed LV mass and fibrosis volume in aortic stenosis