

Prevalence of electrocardiographic findings associated to sudden cardiac death: spontaneous type 1 and type 2 Brugada patterns and QT disorders in spanish population older than forty years

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Introduction: There are different electrocardiographic (EKG) patterns associated with higher risk of sudden cardiac death (SCD) because of ventricular arrhythmias such as Brugada patterns, long QT and shortened QT. Data about the prevalence of these findings in general population are scant.

Objectives: To analyze the prevalence of spontaneous type 1 and type 2 Brugada patterns and QT disorders in Spanish population older than forty years.

Patients and methods: A cross-sectional study endorsed by the Spanish Society of Cardiology over the Spanish population ≥ 40 years was performed. Two stage random sampling was used, where first stage units where primary care physicians randomly selected at every spanish province and second stage units were 20 randomly selected persons drawn from every participating physician's assigned population. By this way we randomly selected a representative sample of Spanish population of 11,831 individuals which were invited to participate in the study. Finally, 8,343 consented to participate and completed the study protocol that included a 12-lead-EKG. There was centralized reading of the EKG recordings. EKGs were evaluated by a two trained cardiologists. In case of disagreement in the diagnosis a third cardiologist was consulted and final diagnosis was reached by consensus. Type 1 and type 2 Brugada patterns were defined according to the 2002 Brugada Consensus Report. QT interval was measured from the start of the QRS complex until the end of the T-wave. The Bazett formula ($QTc = QT / \sqrt{RR}$) was used to correct the interval for heart rate. Four categories were defined: normal QTc 340–439 milliseconds (ms), borderline 440–469 ms, prolonged QTc ≥ 470 ms, short QTc > 340 ms.

Results: Overall, 8343 randomized individuals were evaluated. Mean age was 59,2 years 95% CI: 58,6–59,8 (range, 40–104 years), 52,4% female. We identified 12 cases of type 1 and type 2 Brugada patterns (global prevalence 0.13%) with the following distribution:

- Type 1: two cases (0.024%), both were women, 55 and 54 years old.
- Type 2: ten cases (0.11%), nine of them were males, mean age 52.2 years old.

For QTc analysis we excluded individuals with left bundle branch block and individuals without sinus rhythm. We analyzed data from 7,889 patients, 52.5% were women, mean age 58.3 years. These are our findings: Borderline QTc: 763 cases, weighted prevalence 8.33%. Long QTc: 96 cases, weighted prevalence 1.01%, Short QTc: 18 cases, weighted prevalence 0.18%.

Conclusions: At least, 1.32% of Spanish population older than 40 years has a EKG pattern associated with higher risk of SCD.