Response to Letter by Dewhurst and Adams

Response:

We thank Drs Dewhurst and Adams for their interest in our article regarding the ethnic distribution of ECG predictors of atrial fibrillation and its impact on understanding the ethnic distribution of ischemic stroke in the Atherosclerosis Risk in Communities (ARIC) study. In their letter, Drs Dewhurst and Adams point out a typographic error in the unit of P wave area in our article. As I mentioned to the authors of the letter when they contacted me directly, 2 requests for correction have been sent to the Journal: one immediately after publication and the second when they contacted me a few months ago. As a result, the Journal has corrected the unit of P wave area in the online version of the article and published an erratum highlighting the correction.

In addition to the typographic error in the unit of P wave area, Drs Dewhurst and Adams also think that the values of the P wave area in our article should be in the tens of thousands rather than hundreds. It is clear that they are mixing between the method of calculating P wave area using the GE Marquette 12-SL (which we used in our article) and the method of calculating P terminal force in V1. P terminal force in V1. The amplitude of P’ in V1×its duration should be generally larger than the P’ area in V1, approximately twice as large if we consider the P’ part is closer to a triangle than a rectangle (personal communication, Joel Xue, Principal Scientist, GE Healthcare, Milwaukee, Wisconsin, 2010). Noteworthy, the P wave area values in our article are the exact values as reported by the GE Magellan Research Work Station based on the GE Marquette 12-SL software calculation. Under the GE Magellan Research Work Station, P wave area is reported as the net sum area of P wave after being normalized to 250 samples per second. For ECG recorded at 500 samples per second, the resultant value should be divided by 2. To compare the P wave area values reported by GE Magellan Research Work Station with those values reported by other software, values such as those in our article should be multiplied by 4.88 microvolts, which is the GE signal resolution (ie, unit of analog/digital in the GE MAC ECG machine card), and then multiplied again by 4 milliseconds, which comes from the 250 samples per second and 4-millisecond sample interval (personal communication, Joel Xue). Although the current GE MAC ECG machines use 500 samples per second, the GE Marquette 12-SL still keeps the original unit on area measure (personal communication, Joel Xue). This means that 1 unit of P wave area in our article and similar articles that use area values as exactly reported by the GE Magellan Research Work Station should equal 1×19.52 microvolts×milliseconds if values are to be compared to those measured using other software. Because we used the values of P wave area in one race relative to another (ie, in blacks relative to whites), using a unit value that takes into account the difficult-to-understand unit adjustments was not critical in our analysis. In their interesting work in Africa, Dewhurst and Adams should carefully consider differences in methodology of calculating P wave area because this may affect their conclusions if they want to compare their results to ours.

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