

## VIEWPOINT

## Is there such a thing as a normal sinus rate?

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The currently accepted limits for a normal sinus rate were set at 60 and 100 beats per minute by Kossmann in 1953.<sup>1</sup> Spodick *et al* in an article entitled Operational Definition of Normal Sinus Heart Rate ask whether values outside these limits should raise a "suspicion of abnormality".<sup>2</sup> I do not think they should. The opening sentence in Kossmann's paper reads as follows: "One of the most difficult tasks which confronts the worker in the life sciences is to define a normal", and Kossmann adds another caveat: "These limits (of normal sinus rhythm) and terminologies (bradycardia and tachycardia) are used principally for convenience and for uniformity of designation."<sup>1</sup>: thus they do not set a boundary between normal and abnormal.

In their well-known book entitled *Beyond Normality* Galen and Gambino state that part of the problem of defining normality is semantics.<sup>3</sup> They cite Edmond Murphy, who listed seven different meanings for "normal". Also Simonson<sup>4</sup> warns us about the use of the term "normal" for electrocardiographic characteristics, because the electrocardiogram can be normal in clinical heart disease and abnormal in health.

The Task Force I of the Tenth Bethesda Conference on Optimal Electrocardiography, organised by the American College of Cardiology, was asked to standardise terminology and interpretation.<sup>5</sup> "Normal" was defined as "An electrocardiographic feature that is within a specified normal range limit for a sufficiently large and appropriately stratified healthy population sample." Because of the gaussian distribution of some important electrocardiographic features, the use of standard deviation or the extreme range for the distribution was discouraged. Are the 500 healthy subjects (367 women and 123 men aged 50 to 80 years) studied by Spodick *et al*,

a "sufficiently large and appropriately stratified healthy population sample". Also, Spodick *et al* recommend that for operational simplicity limits of 50–90 rather than 60–100 beats/min should be regarded as normal. This does not seem necessary or justifiable. A heart in the tachycardia zone can be completely normal as can one with a rate below 60 or 50. Such a change in the normal limits of heart rates induced by the sinus node will have no impact on daily clinical practice. Electrocardiographic data, especially sinus rate figures, do not prove that the heart is normal or diseased. Clinical data should always be considered in the context of all information obtained about a patient. So there is no real need for a lower limit, though it may do no harm.

Would it be helpful to know that cardiovascular mortality rates increase progressively with resting heart rates? And if they do, how important is the difference in mortality between patients with heart rates of 90 and 100?

Trivial changes in "normal" boundaries, whether or not they are statistically significant, may not reflect biological significance and probably will not significantly improve the physician's "normal" clinical judgement.

- 1 Kossmann CE. The normal electrocardiogram. *Circulation* 1953;8:920–36.
- 2 Spodick DH, Raju P, Bishop RL, Rifkin RD. Operational definition of normal sinus heart rate. *Am J Cardiol* 1992;69:1245–6.
- 3 Galen RS, Gambino SR. *Beyond normality. The predictive value and efficiency of medical diagnoses.* New York: John Wiley and Sons, 1975.
- 4 Simonson E. *Differentiation between normal and abnormal in electrocardiography.* St. Louis: C V Mosby, 1961.
- 5 Task Force. Standardization of terminology and interpretation. Tenth Bethesda Conference on Optimal Electrocardiography. *Am J Cardiol* 1978;41:130–45.

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