



IMMDA Advisory Statement on Definition of Exertion-Related Cardiac Events

This statement was prepared and written for IMMDA by:

Steven P. Van Camp, M.D.

Paul D. Thompson, M.D.

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Advisory Statement:

Exertion-related cardiac events should be defined as ones in which the onset of symptoms occurs during or within one hour of exertion.

Background

There presently exists no standard definition for exertion-related cardiac events. As the presence of one would provide a framework for standardization of reporting and compiling studies of such events, it was decided at a recent IMMDA meeting to attempt to provide one. The definition of “cardiac event” herein this statement would include cardiac arrest, myocardial infarction, acute coronary syndrome, and serious cardiac arrhythmias.

Sudden cardiac death (SCD) is generally defined as natural death from cardiac causes with abrupt loss of consciousness within one hour of the onset of acute symptoms (1). Multiple studies have used symptoms starting during or within one hour of exertion to define exertion-related events. This definition has been used with respect to acute myocardial infarction research. It is supported by the studies of Mittleman et al (2) and Hallqvist et al (3). Mittleman's study of myocardial infarction (MI) survivors documented an increase in risk of MI within the first, but not the second, hour after exertion. The study of Hallqvist et al suggested the increased risk of exertion is confined to the first 45 minutes after exertion, but their study is limited by its small sample size.

Rai and Thompson (4) reviewed studies of exertion-related MI and exertion-related SCD based on a PubMed search of English-language articles published from 1975 to 2008 and additional relevant articles identified from their references and from the authors' personal files. They identified 7 studies of the former, of which 5 defined exertion-related MIs as those whose symptoms began during or within one hour of exertion. The other two used definitions of during or within 30 minutes after exertion, and during or within 2 hours after exertion. Their review also included 17 studies of exertion-related SCD. Nine of these studies did not clearly define the time period used in their studies. Of the eight which did, multiple definitions were used: during (1), during/immediately after exertion (2), during or within 30 minutes after exertion (1), during or within one hour after exertion (3), and during or within "several hours" after exertion (1). Thus six of the seven studies of exertion-related MI and seven of the eight studies of exertion-related SCD used a definition that would be included in the definition of during or within one hour after exertion. Furthermore, two of the nine studies whose

time period could only be inferred from the results, case description, or discussion, used a probable definition of during or within one hour of exertion whereas seven probably used during or immediately post exertion.

Implicit in this definition is that no other possible, probable or likely interim trigger of the cardiac event has occurred in the period between cessation of exertion and onset of the cardiac event. Such interim causes would include any recognized natural and unnatural triggers of MI or SCD such as sexual activity, cocaine use, marijuana use, and mental stress or anger. The relationship between exertion and a cardiac event should be considered/defined as “uncertain” if any of these have been known to occur during or after exertion and prior to the onset of symptoms.

Conclusion

In view of two studies of hazard periods for MI following exertion and the predominance of relevant studies using one hour or less after exertion as a definition of an exertion-related cardiac event, we hereby adopt as an IMMDA Advisory Statement that exertion-related cardiac events should be defined as ones in which the onset of symptoms occurs during or within one hour of exertion.

References

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