Syncope and Driving

Juan C. Guzman, MD, MSc, FRCPC[a],
Carlos A. Morillo, MD, FRCPC, FESC, FHRS[b,*]

KEYWORDS

• Syncope • Automobile driving • Cardiac arrhythmias • Sudden cardiac death • Guidelines
• Prognosis

KEY POINTS

- Syncope occurring while driving, and its recurrence, has obvious implications for personal and public safety.
- Vasovagal syncope is the most common type of syncope during driving, and patients with structural heart disease are potentially at high risk; most guidelines enforce restricting driving privileges under these circumstances, although the evidence that this action in fact reduces traffic accidents is limited.
- The current guidelines seem to be restrictive, given the lack of evidence that patients with syncope have a higher risk of vehicle accidents in comparison with the general population.
- The social, financial, and personal grief created by the current guidelines seems disproportionate to the overall risk. Future guidelines will certainly take this lack of evidence into account to further protect the rights of patients with syncope.

INTRODUCTION

Syncope, defined as a transient loss of consciousness (TLOC), is estimated to account for 1% to 3% of emergency department (ED) annual visits, and up to 6% of hospital admissions in North America[1] and around the world.[2] Although most potential causes of syncope are benign and self-limited, some are associated with significant morbidity and mortality, including life-threatening cardiac arrhythmias and structural heart disease.[3] Recurrence is highly variable and is related to the underlying etiology, and such recurrences can be extremely unpredictable.[4] Syncope while driving, as well as postsyncope recurrence, has obvious implications for personal and public safety. Thus consideration of restriction of privileges is intuitive, so as to protect both the patient and the public. However, restricting driving privileges leads to strained physician-patient relationships, as most patients do not want to give up the independence offered by driving. However, this must be balanced with public safety.[5] This article reviews the current evidence related to syncope and driving, and the current recommendations pertaining to fitness to drive.

FITNESS TO DRIVE

Physicians are regularly called upon to evaluate medical fitness to drive. However, driving is an essential and daily activity, and the potential effects of a medical condition on driving capability should be a considered once a patient is referred for assessment of syncope.[6] When examining a patient to determine fitness to drive, both the patient's rights and the welfare of the community that will be exposed if the patient will drive should be taken into consideration. Physicians should be aware of

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[a] Syncope & Autonomic Disorders Unit, Department of Medicine, Hamilton General Hospital, McMaster University, McMaster Wing Room 601, 237 Barton Street East, Hamilton, Ontario L8L 2X2, Canada; [b] Syncope & Autonomic Disorder Unit, Cardiology Division, Department of Medicine, McMaster University, David Braley CVSRI, Room C-3-120, 237 Barton Street East, Hamilton, Ontario L8L 2X2, Canada
* Corresponding author.
E-mail addresses: morillo@hhsc.ca; Carlos.Morillo@phri.ca

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their responsibility or legislated requirement to report patients with medical conditions that make it unsafe for them to drive, according to the jurisdiction in which they practice.[6] Physicians should also be aware of the circumstances under which patients are likely to function. For example, the extreme demands related to operating emergency vehicles and commercial transportation vehicles suggest that drivers of these vehicles should be cautioned that even relatively minor functional defects may make it unsafe for them to drive.[6] Redelmeier and colleagues[7] recently reported that physicians' warnings to patients who are potentially unfit to drive may contribute to a decrease in subsequent trauma from road crashes, yet they may also exacerbate mood disorders and compromise the doctor-patient relationship.

The rights of individuals, including acceptance of personal risk, compete with society's right to legislate the level of risk it considers acceptable for performance of certain activities by individuals who may potentially cause harm to others. Any such policy must be fair to all persons, recognizing that restrictions may limit personal freedoms, job security, and feelings of well-being.[8]

PATHOPHYSIOLOGIC FEATURES OF SYNCOPE AND DRIVING

The final pathophysiologic pathway leading to syncope is sudden transient global cerebral hypoperfusion. Thus, conditions that reduce cardiac output (CO) and cause excessive vasodilatation can cause syncope. The pathophysiologic classification of the principal causes of syncope is detailed elsewhere in this issue in the article by Jean-Jacques Blanc.

Studies from selected and unselected populations have consistently demonstrated that neurally mediated syncope (NMS) is the most common form of syncope.[9–11] Orthostatic stress is recognized as a common trigger of NMS.[2] As a result, NMS theoretically would be uncommon in the seated position; therefore, a cardiac (as opposed to neurocardiogenic) cause of syncope is often suspected when syncope occurs while driving. In a small case-series study, Li and colleagues[12] reported that among 23 patients undergoing tilt-table testing for syncope while driving, 19 patients had a positive tilt-table response consistent with a neurally mediated origin. Using a case-control design, Sorajja and colleagues[13] studied consecutive patients evaluated for syncope from 1996 through 1998 at the Mayo Clinic. Of 3877 patients identified, 381 (9.8%) had syncope while driving (driving group). Compared with the 3496 patients (90.2%) who did not have syncope while driving, the driving group was younger ($P<.01$), and had a higher percentage of male patients ($P<.001$), patients with a history of any cardiovascular disease, ($P<.01$) and patients with a history of stroke ($P<.02$). Syncope while driving was commonly caused by NMS (37.3%) and cardiac arrhythmias (11.8%). Overall, NMS also was the most common type of syncope while driving. The high prevalence of NMS occurring in the seated position during driving suggests that impaired neurally mediated reflexes may still trigger syncope in a significant proportion of patients driving.[13] Several mechanisms that may trigger NMS are plausible in the passively seated position without muscle tension or venous pooling, especially in the setting of preexisting dehydration or intravascular depletion.[2] The warm environment in a car may lead to a level of cutaneous vasodilatation capable of triggering NMS while driving.[14] Strong emotional stimulation while driving is another potential trigger of syncope in the sitting position.[15] The observation that NMS is common while driving is hypothesis generating, including the possibility that driving may act as a trigger. There may be a role for patient education with respect to minimizing both the risk of recurrent syncope and harm to the individual and others. By encouraging frequent breaks while driving and optimal hydration, and, most importantly, by having patients recognize prodromal symptoms promptly, it may be possible to reduce the incidence of recurrent syncope.[4] However, this is clearly speculative and is based on common sense, as there is insufficient evidence to support this recommendation.

Of note, the etiology and recurrence rate of syncope does not differ whether or not the index episode occurred while driving.[13] Thus, the clinical approach to syncope evaluation and recommendations for driving should not differ with regard to the time or activity related with the presentation of the syncopal episode.[4] A patient with structural heart disease (reduced ejection fraction, previous myocardial infarction, significant congenital heart disease) is potentially at high risk, and should have driving privileges revoked pending clarification of the extent of underlying heart disease and cause of syncope. It is well known that syncope, a previous aborted cardiac arrest, 1 or more episodes of sustained ventricular tachycardia (VT), and a history of sudden death in young family members are strong indicators of a high risk of sudden cardiac death (SCD).[6] Overall, SCD while performing dangerous activities is either rare or underreported, and seldom results in injury to others. Risk depends somewhat on specific underlying cardiac arrhythmias.[8] Moreover, the TOVA trial[16] examined the risk of implantable