

Driving Vehicles in Patients with Implanted Cardioverter Defibrillator. Is It All the Same?

*Conducción de vehículos en pacientes con cardiodesfibriladores.
¿Es todo lo mismo?*

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The authorization to drive vehicles in patients with implantable electronic devices is often a subject of debate at the moment of assessing fitness to drive. In the case of implantable cardioverter defibrillators (ICDs), the obvious concern is the possibility of syncope secondary to ICD therapy that puts the driver and others at risk.

I have found in a small personal survey that many cardiologists do not have a well-defined opinion or think that these patients should not drive vehicles because of the possibility of receiving ICD shocks while driving, resulting in an accident.

IS ICD THERAPY WITH SYNCOPE OR PRESYNCOPE COMMON DURING DRIVING? HOW MANY PATIENTS PRESENT SYNCOPE?

There are several reports on the incidence of ICD shocks during driving, and this incidence depends on many factors, as the underlying heart disease and the indication in primary prevention (PP) or secondary prevention (SP).

In the AVID trial in SP, 295 ICD shocks were delivered to a population of 1,000 patients, (1) and 8% of these therapies occurred while driving, but no car accidents were reported. In another study, ICD therapy occurred in only 5% of 250 patients and no syncope episodes were reported. In a review of studies with ICD for SP, about 11% of patients presented syncope or presyncope during ICD therapy, but with a range between 2% and 17%. The rate of accidents in these reports was low. A survey conducted among treating physicians reported that among 286 ICD discharges during driving, the estimated mortality rate for patients with a defibrillator was 7.5/100,000 patient-years versus 18.4/100,000 patient-years in those without ICD. (2)

Interestingly, in patients with ventricular tachycardia (VT), recurrences and ICD therapies were more common within the first 6 months after implantation. (3)

In PP, where the incidence of VT is lower, the likelihood of ICD therapies with syncope is lower than in SP. For these cases, new programming strategies have been developed that clearly reduce the number

of shocks without increasing the incidence of syncope, such as high rate detection, long detection intervals and discriminators. As example, the MADIT-RIT study evaluating 1,500 patients with ICD indication in PP, found that 64 patients (4.3%) suffered syncope that was due to VT in 22 of cases (1.4%) and only one of these patients presented the event while driving. (4)

HOW TO ESTABLISH RISK IN DRIVERS? IS IT THE SAME FOR EVERYBODY?

Undoubtedly, there are two types of drivers: private drivers and professional or commercial drivers, with two basic differences: the time spent driving and the type of vehicle.

A private driver spends about 1 hour per day per year driving, while a professional driver spends 6 hours. Additionally, the risk of presenting syncope/presyncope causing disability during ICD therapy must be established. Data were obtained from retrospective registries, but there are no randomized prospective studies evaluating this issue. Yet, all the reports agree in showing a low rate of events and accidents in these patients. (5)

The Canadian Cardiovascular Society introduced the "risk of harm" concept, which establishes the probability a patient with an ICD has to cause harm or injuries to others when driving. (6) This formula has been used by many societies for the assessment of fitness to drive. Basically, the formula considers four variables: 1) the proportion of time a patient drives in a year, 2) a constant that depends on whether the vehicle is a car or a truck, 3) the probability of having syncope during driving, and 4) the probability that such an event will result in an accident.

Items 3 and 4 are the most sensitive. The calculations are made using a risk of syncope of 30% to be as realistic as possible, as current data show that this value is around 14%. The possibility of harm reported for all drivers is 2% per year. (7)

Using this formula, the annual risk of harm acceptable cut-off value is 5/100,000. Private drivers' risk of harm is below this value and professional drivers' risk of harm is higher. (6)

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HOW ARE DECISIONS MADE IN OTHER COUNTRY?

In the United States, Canada and Europe, private drives, but not professional drivers, are authorized to drive. Renewal of driver's license requires control and detection of VT/VF episodes. (8, 9)

It is evident that the number of cardioverter defibrillator devices implanted is increasing, especially in PP. Many of the patients are young adults, actively working and needing to drive a car. Collecting data on car accidents in ICD patients is not simple; however, the information available is quite conclusive about the low rate of accidents in these cases. The restriction or prohibition in these patients can affect their quality of life, already modified by the ICD implant. Therefore, it is important to consider this issue in guidelines or consensus statements to make the best decision possible.

The Argentine Society of Cardiology should make recommendations in this regard. The future consensus statement on pacemakers and cardioverter defibrillator devices elaborated by the Council on Arrhythmias of the SAC is already finished and will surely provide guidelines and recommendations to manage our patients. (10)

It is also necessary to consider that, although guidelines are very useful to provide general recommendations, given the complexity of these patients, good clinical judgment should always be present and applied to each individual case.

In summary, professional drivers with an ICD should not be qualified to drive in any case. On the contrary, private drivers in PP or SP could drive under strict and frequent controls. Patients with an ICD implanted for SP should require 6 months without shock therapy to be authorized to drive. In PP, this time should be lower (1 month) based on the low rate of events.

Conflicts of interest

None declared.

(See authors' conflicts of interest forms on the website/Supplementary material).

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