Frequency and Characteristics of Remote Monitoring Detected Event Notifications in a Population with Cardiac Implantable Electronic Devices

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Keywords: Remote Monitoring, Cardiac Implantable Electronic Devices.

Abstract: Current remote monitoring technology allows permanent follow-up of cardiac implantable electronic devices. However, the long term frequency and characteristics of event notifications are unknown. We reviewed the data base from our population who received an ICD and were followed by using a remote monitoring system and focus was placed on event notifications, characterized as either related to therapy delivery or to others reasons.

1 INTRODUCTION

Evidence-based expansion of indications for cardiac implantable electronic devices has led to a dramatic increase in the number of implants in the last decade.

Current remote monitoring technology allows permanent follow-up of cardiac implantable electronic devices.

Home Monitoring system of implanted pacemakers and ICDs was first introduced in Europe in the year in 2000. Since the first clinical study, feasibility and technical reliability of this remote monitoring systems were clearly shown.

However, the long term frequency and characteristics of event notifications are unknown. Moreover, this information is critical for the development of infrastructures to successfully execute a continuous remote monitoring program.

2 METHODS

We reviewed the data base from our population who received an implantable cardioverter defibrillator (ICD) and were followed for > 3 months by using a remote monitoring system. A total of 276 patients were included, and focus was placed on event notifications, characterized as either related to therapy delivery (ATP or ICD shocks) or to others reasons (heart failure, battery status, atrial fibrillation, lead failure, untreated sustained ventricular arrhythmia).

Of this 276 (75% men; 60.4±14.6 years) with an ICD (n=197; 21% dual-chamber) or an ICD combined with a cardiac resynchronization therapy device (n=79).

Cardiac implantable electronic devices were implanted for primary prevention of sudden death in 172 cases and for secondary prevention in 104 cases.

Data was incorporated into the hospital information system via web and analyzed by an allied professional and an electrophysiologist in a single center follow-up program.

3 RESULTS

During a mean follow-up of 32 months, a total of 9996 alerts were recorded, corresponding to 1134 episodes (11,3%) of therapy delivery (1020 ATP and 114 shocks) and 8862 alerts (88,6%) related to other reasons.

There were problems in the data transmission of 22 alert episodes (0,25% of all alerts).

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4 CONCLUSIONS

Although representing the minority of all alerts, episodes of ventricular tachyarrhythmias treated via ICD represent an important clinical situation, since a delay in the analysis of this information may have impact in patient care.

The centers following cardiac implantable electronic devices in a remote program, need to establish an infrastructure and strategy to manage these alerts, which represents a real challenge in clinical practice, as the burden of remotely produced data continues to increase.

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