

Editorial to “Infection and migration incidence of Cardiac Implantable Electrical Devices in Japan: Web-based survey results”

Since 1958, when the first cardiac implantable electrical device (CIED) has been tried in clinical patient by Rune Elmqvist, more than half-century has past. Thanks to recent development of lithium-ion battery, miniaturization of generator has been realized and various devices with complicated function have been put into practical use along with the development of computer and programming technology. Although innovative concepts of devices, such as leadless pacemaker and/or subcutaneous devices, have appeared, fundamental concept of CIED, that is the system with subcutaneous device and trans-vascular leads positioned into endocardium, has been unchanged. Because the technique of CIED implantation involves various invasive procedures, careful attention must be paid to various perioperative complications. Although CIED implantation is a kind of surgical procedure, most of CIED implantation use to be performed by not only surgeons but also specially trained physicians because surgical step itself is limited and lead positioning technique itself is more strongly related with catheterization technique which is more familiar to electrophysiologists or ablaters in the electrophysiologic study than regular surgeons. In the other words, the operators for CIED are highly heterogeneous and basic understanding may vary among the operators and/or institutes. Therefore, general survey gathering information about CIED-related complications is quite important in each country, of course including Japan.^{1,2}

In the manuscript of “Infection and migration incidence of Cardiac Implantable Electrical Devices in Japan: Web-based survey results,” Nakajima et al have summarized CIED complications through Web-based survey using questionnaire from 155 doctors especially focusing on device infection and migration. They summarized the data of 10,499 cases and realized overall rate of device infection and migration are 0.85% and 0.68% in recent years, which were less common in comparison with Danish Device-Cohort.³ Importantly, they realized the rate of use of operation room was limited to 21% where the chance of infection might be reduced in comparison with regular catheterization laboratory. About the types of CIED, they found the infection and/or migration were most common in CRT-D cases in comparison with the others. About the treatment of infection, 39% cases could be cured by continuous administration and antibiotics

treatment but 41% cases needed device or entire system removal. Because such additional surgical procedure introduces additional risk for cardiovascular complications, this report realizes the importance of preventive improvement of procedure for CIED.⁴ This report is quite interesting and important to realize nowadays trend of CIED therapy in our own country.

Of course, the survey using questionnaire may include inaccurate data depending on the accuracy of individual data of each doctor who answered to the questionnaire. Additionally, the doctors who did not respond to this survey might have higher chance of complications because of their lower awareness to CIED complications. The latter may lead to underestimation of the incidence of CIED complications. These are fundamental limitations of this kind of study design, but such data accumulation is quite important and it should be continued through various types of studies in future.

Shinichi Niwano MD 

Department of Cardiovascular Medicine, Kitasato University
School of Medicine, Sagami-hara, Japan
Email: shniwano@med.kitasato-u.ac.jp

ORCID

Shinichi Niwano  <https://orcid.org/0000-0002-0702-0800>

REFERENCES

1. Nakajima H, Taki M. Incidence of cardiac implantable electronic device infections and migrations in Japan: Results from a 129 institute survey. *J Arrhythmia*. 2016;32:303–7.
2. De Bie MK, Van Rees JB, Thijssen J, et al. Cardiac device infections are associated with a significant mortality risk. *Heart Rhythm*. 2012;4:495–8.
3. Olsen T, Jorgensen OD, Nielsen JC, Thøgersen AM, Philbert BT, Johansen JB. Incidence of device-related infection in 97 750 patients: clinical data from the complete Danish device-cohort (1982–2018). *Eur Heart J*. 2019;40:1862–9.
4. Margey R, McCann H, Blake G, et al. Contemporary management of and outcomes from cardiac device related infections. *Europace*. 2010;12:64–70.

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2020 The Authors. *Journal of Arrhythmia* published by John Wiley & Sons Australia, Ltd on behalf of the Japanese Heart Rhythm Society.