Comparative acute lead-related complications of catheter delivery-system and stylet delivery system in pacemaker patients: Single center experience

Takashi Hagiwara

Introduction: In pacemaker implantation, the stylet delivery system (Conventional group) was mainstream, but with the recent appearance of catheter delivery system (Model C 315, Medtronic Inc., Minneapolis, MN, USA: Catheter Delivered group) The choice of has become possible. In this study, we compared the two systems from the viewpoint of lead related complications in the acute phase. (Single-center retrospective study)

Methods: The total number of used leads in 114 cases of pacemakers implanted from April 2018 to March 2019, retrospectively comparing the two systems from the perspective of lead related complications (perforation and dislodgement) in the acute phase.

Result: Of the 211 total leads used, 97 leads were Catheter Delivered and 114 leads were Conventional.  RA: Catheter Delivered group 44 leads, Conventional group 53 leads; RV: Catheter Delivered group 53 leads, Conventional group 61 leads. Lead-related complications occurred in 9 cases in total (7 cases for dislodgement, 2 cases for perforation). Among lead-related complications, Catheter Delivered group was dislodgement in 2 cases (2.06%), while that in Conventional group was 7 cases (6.14%), 5 cases of dislodgement and 2 cases of perforation. (P = 0.18) On the atrial side, dislodgement occurred in 1 case (2.27%) out of 44 leads in Catheter Delivered group. Dislodgement occurred in 5 cases out of 53 (9.43%) in the conventional group. (P=0.22) On the ventricular side, dislodgement occurred in one (1.89%) of the 53 leads Catheter Delivered groups. Perforation occurred in 2 out of 61 leads (3.28%) In the conventional group. (P=1.00) As the elderly people group, 80 years old or older was divided into the elderly people group and the non-elderly people group. Among the 54 elderly patients, Catheter Delivered had 0 cases of complications. Complications occurred in 5 of 43 cases in the conventional group (atria: dislodgement 3 / ventricular: perforation 2), and the complication rate was significantly lower in the Catheter Delivered group. (P = 0.014) In the non-elderly group, there were 2 internal complications of 43 leads in the Catheter Delivered group (atria: dislodgement 1 / ventricular: dislodgement 1), compared with 2 of 71 leads in the conventional group. (Dislodgement 2) (P = 0.631) Next, it divided into sex and verified. In the women's group, there were 1 internal complication of 52 leads in the Catheter Delivered group (atrium: 0 / ventricular: dislodgement 1), whereas in the conventional group, 4 out of 59 leads occurred complications. (Atria: dislodgement 2 / ventricle: Perforation 2). (P = 0.368) In the male group, the complication was 1 in 45 of the Catheter Delivered group (atrium: 0 / ventricular: dislodgement 1), whereas in the conventional group, the complication occurred in 3 out of 55. (Atria: dislodgement 3 / ventricle: 0). (P = 0.625)

Conclusion: In pacemaker cases, we compared the catheter-delivered and stylet delivery systems with acute lead-related complications. In elderly people, catheter delivery systems resulted in significantly fewer acute lead-related complications.