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Intraoperative Programming Head Application to the Patient with the Unknown Pacemaker

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A 47 years old women was referred to our emergency department complaining of stuporous mental status and left motor weakness. She had a history of pacemaker implantation at another hospital. A brain computed tomography showed malignant hemorrhagic transformation involving the deep portions of the middle cerebral artery and causing severe tissue displacement (Fig. 1A). A decompressive craniectomy should have been used to relieve intracranial pressure immediately, but her medical record of such a device was not available.

A 12 lead electrocardiography showed fibrillatory P wave and ventricular pacing (Fig. 2A) and a chest X ray revealed the polygonal shape in the pacemaker generator, which is a characteristic of ENO™ DR pacemaker of Microport® (Fig. 2B). However, a programmer of Microport ®, or standard magnet (>80 G) was not available in our hospital. Instead, a programmer of Medtronic (CareLink™ 2090 Programmer) was all that was available, and there was a strong magnet contained in the programming head. Thus, the cable of the programming head was unplugged and applied (Fig. 1B) on the patient's implantable device, which induced asynchronous pacing (DOO, 96 bpm) (Fig. 2C). She successfully underwent emergency decompressive craniectomy.

Guidelines recommend pacemaker reprogramming or magnet application should be performed before the procedure starts and remain effective during the entire procedure if the device is located close to the operative field (<15 cm).[1] Magnets, which are usually greater than 80 G field strength, provoke asynchronous pacing (DOO, VOO or AOO) at the magnet rate (Abbott 100 bpm, Medtronics 85 bpm, Boston 100 bpm, Biotronic 90 bpm and Microport 96 bpm). In our case, a standard magnet was not available, so use of a programming head might be useful in clinical situations where emergent surgery is needed in patients with an unknown pacemaker.

Written informed consent was obtained from the patient for publication of this case report, which was approved by the Institutional Review Board of the Chosun University Hospital (CHOSUN 2022-04-031).

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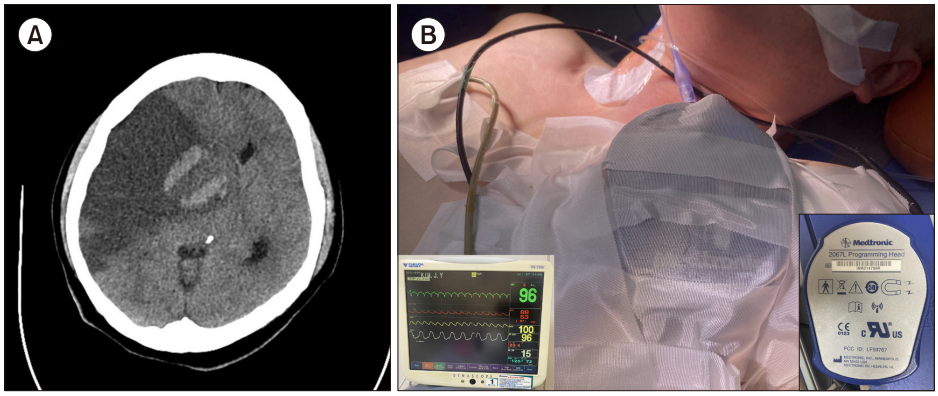

FIG. 1. (A) Brain computed tomography showed malignant hemorrhagic transformation involving the deep portions of middle cerebral artery and causing severe tissue displacement. (B) Intraoperative programming head application (CareLink™ 2090, Medtronic® Programmer) on the patient's implantable device. Intraoperative electrocardiography monitoring showed asynchronous DOO pacing at 96 bpm.

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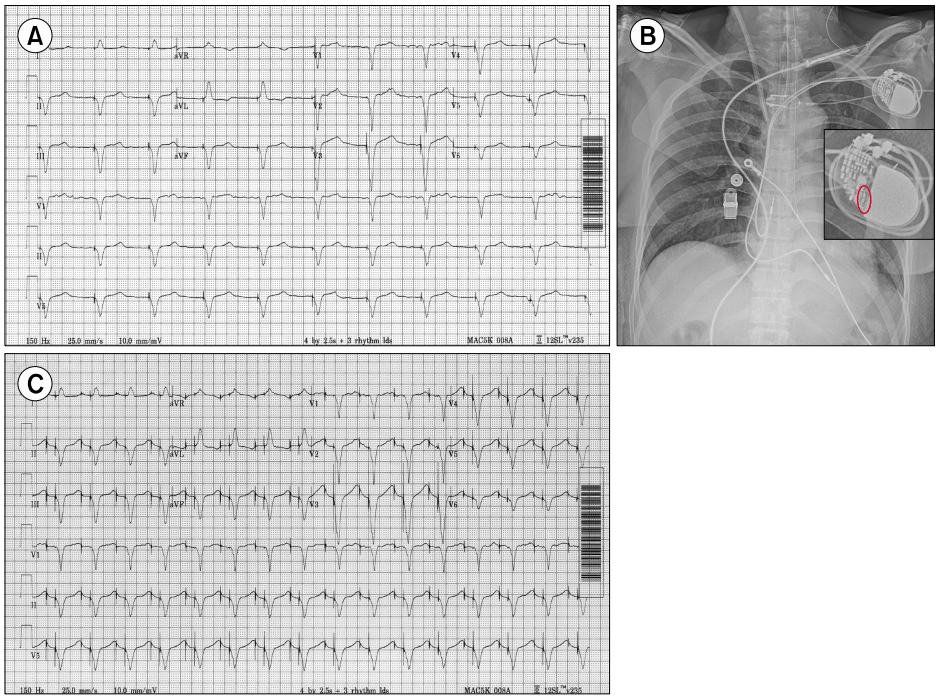

FIG. 2. (A) 12-lead electrocardiography showed fibrillatory P wave and ventricular pacing. (B) Chest X-ray showed the pacemaker generator and two leads, which were located in the atrium and the ventricle. A polygonal shape in the generator (dotted circle) was a characteristic of ENO™ DR pacemaker of Microport®. (C) 12-lead electrocardiography showed asynchronous DOO pacing at 96 magnet rates, which suggested pacemaker of Microport®.

CONFLICT OF INTEREST STATEMENT

None declared.

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