Effectiveness of Closed Loop Stimulation (CLS) Function for Blood Pressure Drop during Dialysis in an Ordinarily Hypotensive Dialysis Patient with Bradycardiac Atrial Fibrillation

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Background: In bradycardiac dialysis, it sometimes becomes difficult for patients to continue hemodialysis treatment because of blood pressure drop due to bradycardia. We have had 3 cases where a pacemaker (PM) with CLS function was effective. Purpose: We present one case where we implanted a PM with CLS function (Nihon Kohden, BIOTRONIK) in a 77-year-old male patient with ordinary hypotension and bradycardiac atrial fibrillation and investigated the effectiveness of CLS function. Methods: We measured blood pressure changes and heart rate response during dialysis and compared them between CLS and acceleration sensor modes. Results: In ordinary hypotension, in VVI-CLS mode, heart rate variation was observed during dialysis. When systolic pressure (Ps) dropped from 70 mmHg to 64 mmHg, pacing rate increased 13 ppm and Ps recovered promptly. In acceleration sensor VVIR mode, PR remained at 60 ppm. Discussion: In VVI-CLS setting, we believe that myocardial contraction dynamics changed in response to blood pressure drop and changed intracardiac impedance, and thereby CLS function increased PR and recovered and maintained blood pressure early. Conclusion: For blood pressure drop in dialysis patients who have ordinary hypotension of 60 to 70 mmHg and bradycardiac atrial fibrillation, CLS function appears to increase its pacing rate responsively. Keywords: closed loop stimulation (CLS), hemodialysis, blood pressure