

Electrocardiograms can be assessed with the Huinno's wearble device in atrial fibrillation patients

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Background/Aims: Atrial fibrillation(AF) is the most common cardiac arrhythmia related with stroke. In order to detect AF early, many wearable electrocardiogram(ECG) devices are being developed. We aimed to compare the quality of ECG signal and the diagnostic agreement of AF between the newly developed wearable single device (MEMO Watch, Huinno Co., Ltd., South Korea) and the previous three lead monitoring (IntelliVue MX450, Phillips, The Netherlands).

Methods: Between May 2020 and July 2020, we gathered ECGs of 10 patients who underwent direct current cardioversion(DCC) for AF. ECGs from the wearable single lead and the three lead devices were measured at the same time before and after DCC. We compared the diagnoses of the ECGs from two physicians.

Results: AF was successfully converted to sinus rhythm in 9 patients except one. There was no significant difference in P wave duration, PR interval, QRS width and QT interval between the wearable single lead and the three lead device. The diagnoses of AF and sinus rhythm were not significantly different between two devices.

Conclusions: The newly developed wearable single lead device showed an ECG signal quality similar to that of the previous three lead device in patients with AF. This new device can be applied to diagnose AF in these patients.



Fig1. Patient 4's QRS width and QT interval measured from the portable single lead I and from lead II on the three lead before receiving DCC. The upper ECG is from the three lead, and the lower ECG is from the single lead.

Table 1

Patient	P wave duration (msec) after DCC		PR interval (msec) after DCC		QRS width (msec)				QT interval (msec)			
					Before DCC		After DCC		Before DCC		After DCC	
	One Lead	Three Lead	One Lead	Three Lead	One Lead	Three Lead	One Lead	Three Lead	One Lead	Three Lead	One Lead	Three Lead
1	90	80	240	280	90	80	90	80	320	320	400	407
2	90	80	280	270	80	80	80	80	393	393	400	400
3	120	120	240	240	80	80	80	80	333	333	393	400
4	80	80	200	200	80	80	80	80	440	453	446	440
5	90	90	230	250	80	80	80	80	373	370	360	360
6	80	80	200	200	80	80	80	80	406	407	433	433
7	80	80	200	200	80	80	80	80	400	400	400	400
8	120	120	200	200	80	80	80	80	360	360	373	373
9	Afib	Afib	Afib	Afib	80	80	80	80	320	320	306	313
10	80	80	200	200	80	80	80	80	367	367	400	407

Table 1. Average (over three beats) P wave duration, PR interval, QRS width, QT interval in milliseconds for each patient using the portable single lead and the three lead before and after DCC.