



Acupuncture Treatment of a Patient with Bradycardia and Idioventricular Rhythm

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A patient with bradycardia and an idioventricular rhythm was observed. According to cardiologists, there is no reliable drug treatment for bradycardia with an idioventricular rhythm; instead, the sole treatment is a pacemaker. In the course of this case, it was shown that acupuncture can restore the heart rhythm from bradycardia to normocardia, and from idioventricular with third-degree atrioventricular node block and an average heart rate of 34 BPM, to normal sinus rhythm with a heart rate of 71 BPM. Additionally, at the end of the treatment, the patient's number of episodes of ventricular extrasystole decreased 36 times (3289 versus 91 episodes). These results show that research on this technique should be continued.

Keywords: Case report, Bradycardia, Idioventricular rhythm, Sinus rhythm, Atrioventricular block, Acupuncture, Electropuncture

INTRODUCTION

Bradycardia is a common type of arrhythmia. However, bradycardia can be a symptom of internal illnesses. In some cases, when the automatism of both the sinus and the atrioventricular nodes decrease, the heart rhythm can become idioventricular. According to cardiologists, if the heart rate is less than 40 BPM for more than a month, there is no reliable drug treatment, and for bradycardia with an idioventricular rhythm; the only option is a pacemaker. However, the use of acupuncture as a primary treatment for patients with bradycardia is another option but is not widespread [1]. In this case, an attempt was made to help a patient with a heart rate of < 40 BPM for more than a month who refused to undergo the operation to implant a pacemaker. This treatment was designed and delivered with the written consent of the patient.

This case report follows the CARE Guidelines (Riley DS, Barber MS, Kienle GS, et al. CARE Explanation and Elaborations: Reporting Guidelines for Case Reports. *J Clin Epi* 2017 Sep;89:218-235. doi: 10.1016/jclinepi.2017.04.026).

MATERIALS AND METHODS

Here we report the case of a 71-year-old patient with sudden onset bradycardia who was treated with acupuncture for a month and a half after refusing to undergo pacemaker surgery. At baseline, the patient had an idioventricular rhythm with an average heart rate of 34 BPM, 405 bradycardia episodes, and a total duration of 18 h 50 min. These data were confirmed by a Holter monitor.

Acupuncture treatment was carried out using a combined method: acupuncture with metal needles alternated with electropuncture sessions. Metal needles were applied to points located on the abdomen, chest, and head. Electrodes were placed on points located on the limbs and back.

A new method of complex acupuncture treatment was developed based on traditional Chinese medicine. This was carried out on the points recommended in the literature for the treatment of heart diseases: angina pectoris, cardiac neurosis, heart flutter, and bradycardia (Table 1).

Since this treatment was planned to target points located on the limbs, the head, and the back and abdomen, a combined



Table 1. Description of treatment regimen

Style of acupuncture		Traditional Chinese acupuncture
Rationale for treatment	Spleen/kidney/heart/liver	
Needling details	Bilateral needling points	ST36, SP4, SP6, KI1, KI4, KI7, LI4, LI11, SI14, TE5, BL17, BL45, BL60, GB20, LR2, LR14
	Unilateral needling points	CV6, CV12, CV14, CV16, CV17, GV20
Number of needles	30 needles	Needle description Needle type: Seirin - J type 0.18 mm × 15 mm (1/2 tsun) 0.18 mm × 30 mm (1 tsun)
Depth of insertion 0.5-2 cm in depth	Response elicited De Qi	Needle stimulation method
		Manual stimulation Electrical impulse stimulation
Needle retention time	Acupuncture - 21 minutes	
	Electroacupuncture- 21 minutes	

treatment regimen was developed consisting of acupuncture sessions with metal needles and electropuncture sessions [2].

Metal needles, up to 3 cm long, 0.01 mm in diameter, with rounded tips, were inserted to a depth of 0.5-2 cm at points located on the abdomen, feet, and head until a “response” was obtained, as well as a feeling of heat and distention at the insertion site [3]. The duration of exposure to metal needles was 21 min in total.

Silver electrodes with an area of 1 mm² were placed on the points of the “five elements”, as well as on the back and sternum. The electric acupuncture device current settings were the following: 20 μA maximum; voltage 9V; impulse. The impulse was rectangular bipolar, with a frequency of 0.1, 1, 10 Hz, and a duty cycle of 2:1. The duration of the exposure intervals at the three indicated frequencies was 7 min each [4].

Points: ST36, SP4, SP6, KI1, KI4, KI7, LI4, LI11, SI14, CV6, CV12, CV14, CV16, CV17, TE5, BL17, BL45, BL60, GB20, GV20, LR2, LR14.

Currently, various non-invasive transthoracic pacemakers are used to maintain the heart rate in patients with bradycardia. The parameters of the ZOLL M temporary pacing device (ZOLL Medical Corporation, Chelmsford, MA, USA) are known and described below. The pacemaker stimulation current is up to 140 mA and the frequency is up to 180 pulses per minute. The pacing output is delivered to the heart using electrodes located on the back and in the precordial region [5].

The novelty of the acupuncture method developed for the treatment of this patient consisted of a combination of treatment with metal needles and electropuncture.

The patient was male, 71 years old, a former athlete, and currently a pensioner. In 1995 he suffered a myocardial infarction. His rehabilitation went well and for many years there were no complaints about the condition of his heart. In August 2021, he suddenly felt unwell with general weakness and rapid fatigability appearing. An ECG registration did not reveal new signs of ischemic heart disorders, however, it was established that at the time of ECG registration the

heart rate was 39 BPM. The patient then went to the hospital for help. A first 24 h Holter monitoring was prescribed and installed. It found the presence of sinus rhythm, second-degree atrioventricular block, single ventricular extrasystoles with a total of 2,267 over the observation period, and heart rate from 29 to 53 BPM. Drug treatment was started to relieve bradycardia. The medications given were orciprenaline, riboxin, mildronate, atropine preparations, isadrinum, and Tonginal. However, these showed little to no positive results.

After pharmaceutical treatment, the patient underwent a second Holter monitoring, which established the following: There were no ischemic changes in ST-T, idioventricular rhythm, third-degree atrioventricular block during 90% of the monitoring time, and second-degree block during 10% of the monitoring time. Average heart rate 34 BPM, minimum 30, maximum 35, and 3289 ventricular extrasystoles during the observation period.

The patient was offered surgery to install a pacemaker which he refused.

The patient was also offered acupuncture treatment, which he accepted and freely signed a document of his consent for such therapy.

RESULTS

External pacing can be used for the primary stabilization of a patient, but it does not preclude the implantation of a permanent pacemaker. This technique consists of placing two stimulator plates on the surface of the chest. One of them is usually located on the upper part of the sternum, and the second is placed behind on the left, almost at the level of the last ribs. When an electrical discharge passes between these two plates, it causes contraction of all muscles located in its path, including the heart and muscles of the chest wall.

A similar stimulation has been applied through specific cutaneous points using electropuncture techniques (Fig. 1) [6].

The acupuncture and electropuncture treatments were

carried out with a different combination of points, but each time at no more than six simultaneously. The first session consisted of a single insertion at the BL17 point, which generated a response upon insertion, and rapid stimulation of the point by turning the needle for 1 min. As a result, the patient's pulse rose to 60 BPM within 30 min after needle insertion and was stable for approximately 50 min, then it dropped back to the initial 36 BPM. On the following days of treatment, along with intervals of the pulse increasing to > 60 BPM, cases of unstable pulse appeared with the heart rate repeatedly fluctuating between 36-62 BPM.

In total, the patient underwent three courses of treatment within 50 days: 10 sessions per course with two resting intervals of 10 days. Each session in its turn consisted of both electropuncture and acupuncture methods. The

electropuncture was performed as described in the methodology above. It was followed by 2 h of rest, and then acupuncture finished each session. After the end of the third course, the patient underwent the third 24 h Holter monitor assessment.

Some of the results from the Holter monitor are presented in [Table 2](#).

In all three cases, there were no ischemic changes in the ST segment.

Two months after the appearance of a stable heart rate, the pulse constantly persists in the range of 62-72 BPM at rest, with a corresponding increase to 80-100 BPM during physical activity.

There have been no complaints of fatigue, dizziness, or other manifestations of hypoxia since treatment ended.

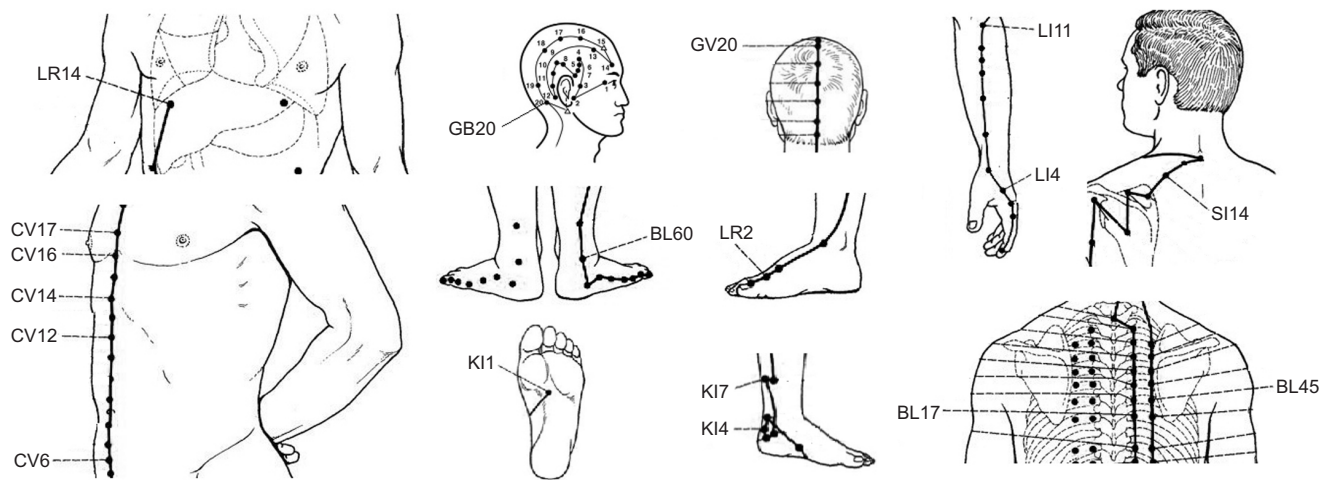


Fig. 1. Acupoints used in bradycardia treatment.

Table 2. Holter monitoring parameters of a patient with bradycardia

Parameter	08.31.2021	09.07.2021	11.15.2021
Rhythm	Sinus	Idioventricular in AV3 Sinus with AV 2	Sinus
Blockade	AV 2	AV 3-90% AV 2-10% of observation time Mobitz2 conduct 2: 1	AV 1 Alone episode AV 2 during a single paired ventricular extrasystole
General average			
HR	38	34	71
HR min	29	30	52
HR max	53	35	115
Extrasystoles single	2267	3289	91
Bigeminia/trigeminia	14/8	20/0	1
Paired ventricular	Not indicated	35	1
Pauses > 2 sec	2426	More than 3 seconds - no	-
Episodes of bradycardia (< 40 bpm)	20976; duration 9 hours 20 mins	405; duration 18 hours 49 min 50 sec	-

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