



# Bleeding into the atrial apex in hypertensive emergencies

*Aplicación de sangría en el ápex auricular en la urgencia hipertensiva*

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Recibido: 02/03/2020 Aceptado: 0/04/2020 Publicado: 15/05/2020  
<https://doi.org/10.5281/zenodo.4074303>

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## Abstract

**A** quasi-experimental and cross-sectional study was conducted at the "Comandante Manuel Fajardo Rivero" Hospital in Santa Clara, in the period from October 2015 to June 2019, with the aim of determining the therapeutic response in patients with the application of auricular apex bleeding in hypertensive emergencies. The population consisted of all patients who attended the emergency department of that hospital with this diagnosis. The sample was formed in a non-probabilistic way by criteria, consisting of 84 patients, distributed in two groups at random; one treated with the technique of bleeding into the atrial apex (Erjian point) and the other with a chewed captopril tablet (every 30 minutes) until the maximum dose of 50 mg was reached (for the duration of the study). The principles of medical ethics and the STRICTA guidelines for acupuncture research were followed. The main response measurement variables were: traditional Chinese diagnosis, clinical evolution, remission time of blood pressure figures and therapeutic response. Patients were evaluated at the beginning, 10, 15, 20 and 30 minutes after the application of the treatments in both groups. The diagnosis of hot-back disease by Yin vacuum, favourable clinical evolution, moderately short remission time and satisfactory therapeutic response prevailed in 100 % of the patients treated with atrial apex bleeding. It was concluded that in hypertensive emergencies this procedure was satisfactory.

**Keywords:** bleeding, hypertensive urgency, traditional Chinese diagnosis.

## Resumen

**S**e realizó un estudio cuasi experimental y transversal, en el Hospital "Comandante Manuel Fajardo Rivero" de Santa Clara, en el período de octubre de 2015 a junio de 2019, con el objetivo de determinar la respuesta terapéutica en los pacientes con la aplicación de sangría en el ápex auricular en la urgencia hipertensiva. La población estuvo conformada por todos los pacientes que acudieron al servicio de urgencia de dicho hospital con este diagnóstico. La muestra se conformó de manera no probabilística por criterios, quedando constituida por 84 pacientes, distribuidos en dos grupos de manera aleatoria; uno tratado con la técnica de sangría en el ápex auricular (Punto Erjian) y el otro con una tableta de captopril masticada (cada 30 minutos) hasta alcanzar la dosis máxima de 50 mg (para la duración del estudio). Se cumplió con los principios de ética médica y se siguieron las normas STRICTA para la investigación con acupuntura. Las principales variables de medición de respuesta fueron: diagnóstico tradicional chino, evolución clínica, tiempo de remisión de las cifras de tensión arterial y respuesta terapéutica. Los pacientes se evaluaron al inicio, a los 10, 15, 20 y 30 minutos de aplicados los tratamientos en ambos grupos. Prevalció el diagnóstico de enfermedad del reverso calurosa por vacío de Yin, la evolución clínica favorable, el tiempo de remisión medianamente corto y la respuesta terapéutica satisfactoria en el 100 % de los pacientes tratados con sangría en el ápex auricular. Se concluyó que en la urgencia hipertensiva este proceder resultó satisfactorio.

**Palabras clave:** Sangría, urgencia hipertensiva, diagnóstico tradicional chino.

**A**rterial hypertension (HTA) is one of the most important medical-sanitary problems in contemporary medicine, as it is suffered by 80-90% of the world's population. It is known metaphorically as "the dancer of the four halls", since it affects the heart, the brain, the kidneys and the great vessels<sup>1</sup>.

More than a health problem, it is a potential problem because it is the most morbid-mortality cardiovascular disease. It affects a large number of the world's adult population and is a risk factor for cardiovascular and cerebral events<sup>2,3</sup>.

One of the most important elements of the Cuban health system is the control of the chronic non-communicable diseases within which this disease is found. Its frequency increases with age, after 50 years, almost 50.0% of the population is hypertensive.

This disease also constitutes the most frequent emergency medical consultation, the greatest demand for medicines, many of them expensive and with associated adverse events, which in many cases delay the remission of symptoms, sometimes forcing the use of one or more drugs, even from different pharmacological groups<sup>4,5</sup>. In Cuba, in 2018, the rate of hypertension per 1000 inhabitants was 225.2 and in Villa Clara<sup>5</sup>.

In the emergency department of the "Comandant Manuel Fajardo Rivero" Hospital, 34,037 patients were attended in 2017, of which 4,393 were for ATH, representing 13.0% of the cases seen in the on-call department, and in 2018, 37,690 patients were attended, of which 4,706 were for ATH, representing 12.5%.

After presenting essential aspects about the use of the auricular microsystem to control high BP figures by applying different forms of stimulation to its points, it is concluded that it has action on this health problem. The need for other tools to manage hypertensive emergencies motivated this research.

**A**n analytical, quasi-experimental and cross-sectional research study was carried out at the "Comandant Manuel Fajardo Rivero" Hospital in Santa Clara, in the period from October 2015 to June 2019.

The study population consisted of all patients who attended the emergency department of that hospital with a diagnosis of hypertensive emergency from January 2016 to December 2018.

For the development of the research, the criterion of hypertensive emergency declared in the Cuban Guide for diagnosis, evaluation and treatment of hypertension was assumed, which proposes sudden but isolated increases in BP with values equal to or greater than 140 mmHg of SBP and 90 mmHg of DBP, without injury to target organs<sup>5</sup>. The sample was formed in a non-probabilistic way by criteria, consisting of 84 patients.

#### **Method for obtaining the information**

Patients were given a form designed for the study, which was applied in the emergency department, becoming the primary source of information. Both documents were applied to each patient during their stay in the emergency department by the researcher and the previously trained third and fourth year residents of the specialty of Natural and Traditional Medicine (NTM).

The drug treatment used in the group treated in a conventional manner consisted of the administration of IECAS (captopril tablets 25 mg), at the rate of one chewed tablet, since this is the drug recognized in the Cuban guide as a first line drug without associated morbid states for the treatment of hypertensive emergencies.

One tablet was administered every 30 minutes up to 50 mg of captopril (maximum dose for the duration of the study). The internal medicine specialist on duty applied this treatment.

The technique consisted of causing a Feng or three-edged, Chinese-made, stainless steel needle to bleed into the atrial apex, with the aim of regulating organic or functional alterations<sup>6,7</sup>.

The treatment was applied in a quiet environment, with adequate lighting and strict aseptic and antiseptic standards. After sterilization of the instruments, cotton swabs, alcohol at 76 degrees and iodized alcohol were used to disinfect the skin in the area where the puncture was performed. The sterile needles with double wrapping of crafted paper were placed in a stainless-steel tray with a lid, with double wrapping of cloths.

The patient was placed in a position that contributed to the access of the anatomical region where the point was

located and the correct application of the technique (sitting position). First a detailed observation of the ear was performed and then the patient was gently held with the thumb and index finger, exploring the auricular apex. The quality of the auricle to be treated was taken into account. The auricle was immobilized with the left hand and the point was punctured with the three-edged needle, with the right hand, after asepsis and antiseptics of the auricle. The depth of the puncture only crossed the skin, without going beyond the cartilage. The hole was left to bleed after the needle was removed and if necessary sterile cotton swabs were used to prevent bleeding.

A treatment session was performed given the scenario (emergency service) and based on the decision of the internal medicine specialist not to keep the patient with a hypertensive emergency for more than 30 minutes without receiving the established treatment protocol because of the risks involved.

## Results

Table 1 shows the distribution of patients by age group. The highest frequency of patients with hypertensive emergencies occurred in both groups, aged 50-59 years, with a total of 43 patients, for 51.2%, and the lowest number between 19-29 years, with three cases, for 3.6%.

In both groups the behaviour was similar to the total sample. A total of 52.3% of the patients between 50 and 59 years of age prevailed in the group treated with atrial apex bleeding and 50.0% of the patients with these ages in the group receiving conventional treatment.  $\chi^2$  took value of 0.5233 so there were no statistically significant differences between the groups in relation to the age of the patients studied ( $p=0.9138$ ).

**Table 1. Distribution of patients by age groups. Comandante Manuel Fajardo Rivero Hospital in Santa Clara. October 2015 to June 2019**

Age group	Group				Total	
	Apex auricular bleeding		Conventional treatment		Nº	%
	Nº	%	Nº	%		
19-29	2	4,8	1	2,3	3	3,6
30-39	7	16,7	7	16,7	14	16,7
40-49	11	26,2	13	31,0	24	28,5
50-59	22	52,3	21	50,0	43	51,2
<b>Total</b>	42	100	42	100	84	100

Source: Medical history  $\chi^2=0.5233$   $p=0.9138$

The distribution of the sample patients by sex in both groups is reflected in Table 2. Males represented 53.6% of the sample, with a total of 45 patients. In the group treated with auricular apex bleeding, this sex was represented by 22 cases, for 52.4%, and in the group treated in a conventional manner by 23 patients, for 54.8%. The  $p$  value of 0.8268 expresses that there were no statistically significant differences between the groups in relation to the sex of the patients studied.

**Table 2. Distribution of patients according to sex in the groups studied**

Sex	Group				Total	
	Apex auricular bleeding		Conventional Treatment		Nº	%
	Nº	%	Nº	%		
Female	20	47,6	19	45,2	39	46,4
Male	22	52,4	23	54,8	45	53,6
<b>Total</b>	42	100	42	100	84	100

Source: Medical history  $\chi^2=0.0479$   $p=0.8268$

The syndromes found when performing the traditional Chinese diagnosis in both groups are shown in table 3. 58.3% of the total sample presented a hot-back disease due to Yin vacuum and 41.7% a hot-back disease due to Yang fullness. The behavior by groups was similar, predominating in both the first diagnosis referred with 61.9% in the group treated with atrial apex bleeding and 54.8% in the group with conventional treatment. There were no statistically significant differences between the groups in relation to the traditional diagnosis. ( $p=0,507$ ). In the variables exposed so far, age, sex and traditional diagnosis, there were no significant differences between the groups studied, so they were homogeneous and comparable.

**Table 3. Traditional Chinese diagnosis in the groups treated with atrial apex bleeding and conventional treatment**

Traditional Diagnosis	Group				Total	
	Apex auricular bleeding		Conventional Treatment		Nº	%
	Nº	%	Nº	%		
Full-Yang Warm-Side Disease	16	38,1	19	45,2	35	41,7
Hot Back Yin Vacuum Disease	26	61,9	23	54,8	49	58,3
<b>Total</b>	42	100	42	100	84	100

Source: Medical history  $\chi^2=0.441$   $p=0.507$

Table 4 shows that 60.7% of the patients studied showed a favourable clinical evolution. Of these, 42 patients in the group were treated with atrial apex bleeding (100%), and nine in the group with conventional treatment (21.4%). In this group, the unfavourable category prevailed, presenting in 78.6% of the patients. These results showed statistically significant differences in clinical evolution between the groups studied. ( $p=0,001$ )

**Table 4. Clinical evolution in the groups studied**

Clinical Evolutions	Group				Total	
	Apex auricular bleeding		Conventional Treatment		Nº	%
	Nº	%	Nº	%		
Favorable	42	100	9	21,4	51	60,7
Not favourable	0	0	33	78,6	33	39,3
<b>Total</b>	42	100	42	100	84	100

Source: Form  $\chi^2=54,353$   $p=0,000$

When comparing the clinical evolution according to the traditional diagnoses, reflected in table 5, it can be seen that in both diagnoses the favourable evolution predominated, with 19 patients for 22.6% in hot-back disease by Yang fullness and 32 patients for 38.2% in hot-back disease by Yin fullness. The group treated with atrial apex bleeding showed both a predominantly favourable clinical evolution in both diagnoses (19.0% in heat by fullness and 31.0% in heat by vacuum) with respect to the group treated with medication.

In both traditional diagnoses there are statistically significant differences in clinical evolution when comparing the groups studied ( $p=0.001$  in both).

Table 6 and graph 2 show how the referral time behaved in the patients. In general, remission time was moderately short, occurring in 42.9% of the patients studied. In the group where bleeding was applied to the atrial apex, 35.7% of patients reached remission of their symptoms in a short time, 64.3% in a medium-short time and no patients in a long time. In the group that received conventional treatment, on the contrary, no patient presented remission of blood pressure figures in a short time, and only nine patients, for 21.4% achieved it in a medium short time, prevailing the long time that was presented in 78.6% of the patients in this group. The p value was 0.000, there-

fore, there were statistically significant differences in the time of remission between the groups studied.

Table 7 shows the time in which the patients' blood pressure figures were remitted according to traditional diagnoses. In the case of hot-back disease by fullness of yang, the greatest number remitted over a long period, but all these patients (16, for 19.0%) belonged to the group with conventional treatment and in the group that received treatment with bleeding in the atrial apex the medium-short remission time predominated, with nine patients for 10.7%.

In relation to the traditional diagnosis of hot-back disease by yin vacuum, the median short remission time predominated, with 24 patients for 28.6%. Of these, 21.4% (18 patients) belonged to the group that was bled and 7.1% (6 cases) to the group treated in the conventional way. It should be noted that in this group no patient diagnosed with hot back disease due to yin vacuum remitted their BP figures in a short time and in the group with treatment of bleeding into the apex of the ear no case of both traditional diagnoses remitted their BP figures in a long period. In both traditional diagnoses, there are statistically significant differences in the time of remission when comparing the groups involved in the investigation. ( $p=0.001$  in both)

**Table 5. Clinical evolution of patients according to traditional diagnosis**

Tradicional Diagnosis	Clinical Evolution	Group				Total		$\chi^2$ (p)
		Apex auricular bleeding		Conventional Treatment		No	%	
		No	%	No	%			
Full-Yang Warm-Side Disease	Favorable	16	19,0	3	3,7	19	22,6	24,82 (0,001)
	No favourable	0	0,0	16	19,0	16	19,0	
Hot Back Yin Vacuum Disease	Favorable	26	31,0	6	7,1	32	38,2	29,43 (0,001)
	No favourable	0	0,0	17	20,2	17	20,2	

\*percentage calculated for n=84 Source: Form

**Table 6. Remission time in both groups**

Time of transmission	Group				Total	
	Apex auricular bleeding		Conventional Treatment		No	%
	No	%	No	%		
Short	15	35,7	0	0	15	17,9
Medium Short	27	64,3	9	21,4	36	42,9
Long	0	0	33	78,6	33	39,2
<b>Total</b>	42	100	42	100	84	100

Source: Form  $\chi^2=57,000$   $p=0,000$

**Table 7. Remission time of blood pressure figures according to traditional diagnosis in both groups**

Traditional Diagnosis	Time of transmission	Group				Total		$\chi^2$ (p)
		Apex auricular bleeding		Conventional Treatment		No	%	
		No	%	No	%			
Full-Yang Warm-Side Disease	Short	7	8,3	0	0,0	7	8,3	25,93 (0,001)
	Medium-short	9	10,7	3	3,7	12	14,3	
	Long	0	0,0	16	19,0	16	19,0	
Hot Back Yin Vacuum Disease	Short	8	9,6	0	0,0	8	9,6	30,93 (0,001)
	Medium-short	18	21,4	6	7,1	24	28,6	
	Long	0	0,0	17	20,2	17	20,2	

\*percentage calculated for n=84 Source: Form

The assessment of the therapeutic response in both groups, shown in Table 8 and Figure 3, reflects that 60.7% of patients presented a satisfactory therapeutic response. In the group treated with atrial apex bleeding, 100% of the patients had this result. In the group with conventional treatment the response was satisfactory in 21.4% of patients and unsatisfactory in 78.6%. The differences were statistically significant in the therapeutic response between the groups studied, taking the p value of 0.000.

Discussion

In this study, ages between 50 and 59 years prevailed when analyzing risk factors in hypertensive patients, who found a prevalence of this same age group in 24.0% of their sample.

**Table 8 Distribution of patients according to therapeutic response in both groups**

Therapeutic response	Group				Total	
	Apex auricular bleeding		Conventional Treatment			
	Nº	%	Nº	%	Nº	%
Satisfactory	42	100	9	21,4	51	60,7
Not satisfactory	0	0	33	78,6	33	39,3
Total	42	100	42	100	84	100

Source: Form x2=54,353 p=0,000

The therapeutic response of patients in both groups in relation to traditional diagnoses is shown in Table 9. Satisfactory response predominated in both diagnoses, with 19 patients, for 22.6% in hot-back disease by fullness of yang and 32 patients, for 38.2% in hot-back disease by vacuum of yin.

In the group that was bled, all patients, regardless of the diagnosis, progressed satisfactorily, but not in the group treated with medication. In this group, only 3 patients (3.7%) with heat by fullness of yang and 6 patients (7.1%) with heat by vacuum of yin presented this response.

In both traditional diagnoses there are statistically significant differences in the therapeutic response when comparing the groups investigated (p=0.001 in both).

**Table 9. Distribution of patients according to therapeutic response by traditional diagnosis, in both groups**

Traditional Diagnosis	Answer therapeutics	Group				Total		x <sup>2</sup> (p)
		Apex auricular bleeding		Conventional Treatment				
		No	%	No	%	No	%	
Full-Yang Warm-Side Disease	Satisfactory	16	19,0	3	3,7	19	22,6	24,82 (0,001)
	Not satisfactory	0	0	16	19,0	16	19,0	
Hot Back Yin Vacuum Disease	Satisfactory	26	31,0	6	7,1	32	38,2	29,43 (0,001)
	Not satisfactory	0	0	17	20,2	17	20,2	

\*percentage calculated for n=84 Source: Form

The presence of a greater number of male patients found in the study:

This variable behavior found in the various publications reviewed, even though they belong to the same province, is given by the multifactorial nature of the disease, the living conditions and eating habits of the different regions, which influence its incidence.

In addition, if the analysis of ages by sex is carried out, it is seen that the female sex predominates in those over 50 years of age, a behavior similar to the greater number of bibliography, related to the hormonal changes of women in this age, which contributes to an increase in the presence of this disease, but in the rest of the age groups the male sex predominated.

However, the prevalence of the male sex that was presented in this research may be related to the population characteristics that are cared for in the institution, fundamentally of the male sex and with job responsibilities that influence the presentation of the disease. These gender differences in lifestyle are manifested in relation to the degree of tension experienced by them in the behaviors "Responsibility for health" (in favor of women) and "Physical activity" (in favor of men). Behaviors derived, respectively, from the traditional stereotypes of women, associated with expressiveness, tenderness and high emotionality, and from men, related to rationality and competence<sup>6,7</sup>.

The favorable clinical evolution, with normalization of the BP figures in the study patients who were treated with bleeding in the atrial apex, coincides with the result reported by Estanquero Ramos, in Havana, which with the same therapy achieves a positive effect in 70.49% of their patients<sup>8,9</sup>.

The clinical evolution analysis was carried out according to the traditional diagnosis and in those cases where bleeding was applied to the atrial apex there were no changes of this variable. In the two traditional diagnoses found, there are statistically significant differences in the clinical evolution when comparing the studied groups.

Regarding the remission time, the moderately short prevailed, that is, the BP figures were controlled between 15 and 30 minutes, which showed statistically significant differences between the groups studied. The satisfactory therapeutic response obtained in patients with hypertensive urgency, treated in this study with bleeding in the atrial apex, exposes a positive result in 70.49% of treated patients<sup>10,11</sup>.



A decrease of up to 30 mm of Hg is achieved in the first 10 minutes of treating patients with this technique<sup>12,13</sup>. The corrective effect of auriculotherapy on hypertension is explained through neurological, humoral, and bioelectric mechanisms, which produce sedation, vasodilation, diuresis, and hypotension<sup>14,15</sup>.

The therapeutic response in patients with the application of bleeding in the atrial apex in hypertensive emergency was satisfactory, decreasing the blood pressure figures in a fairly short time<sup>16,17</sup>.

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