

## Influence of the Echocardiogram on the Blood Pressure

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### Abstract

We know the effect of anxiety on blood pressure known as "white coat", but we know the effect generated by complementary methods on it. We evaluated 100 patients consecutively in the echocardiography service and found that although there were higher blood pressure values before the echocardiogram than after the echocardiogram, the difference would not translate to changes in the final results, especially in patients with valvular heart disease.

### Abbreviations (if used)

PAS systolic blood pressure

PAD diastolic blood pressure

### Introduction

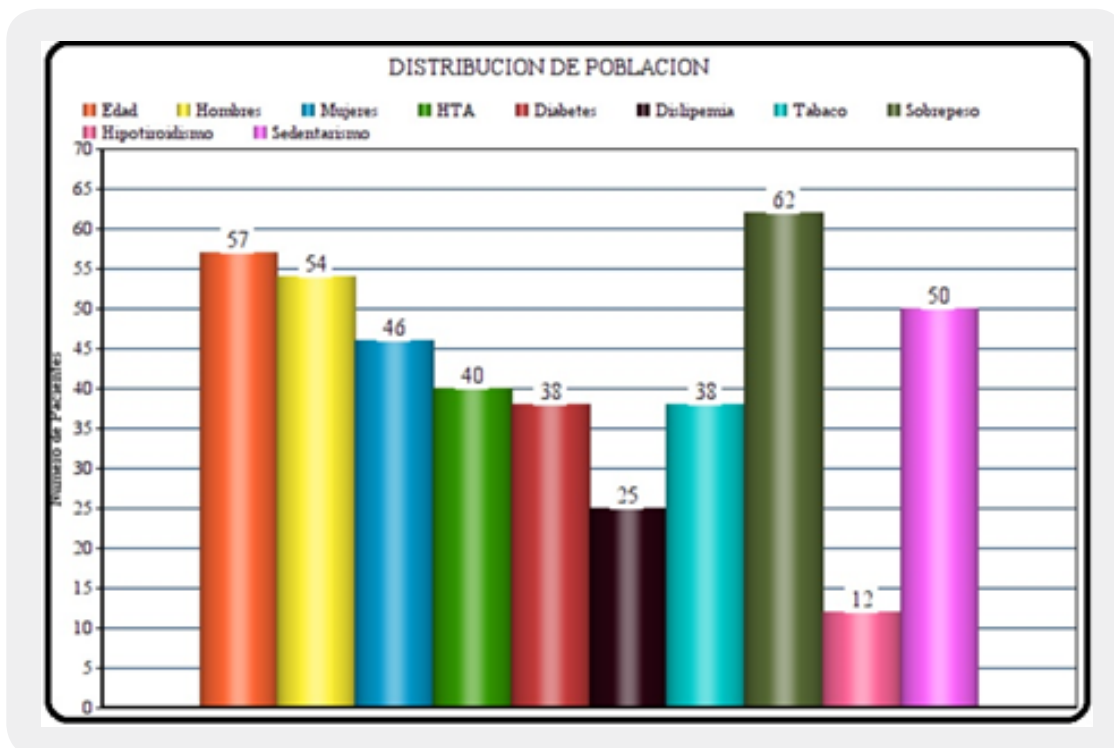
It is known the effect of "white coat" on blood pressure in patients evaluated in the hospital setting, and the possible errors that can lead to the diagnosis and treatment [1]. We did not find data on the effects of complementary methods on blood pressure, so we decided to evaluate 100 consecutive patients in the echocardiography service of our center and record what effect it produced on blood pressure.

## Materials and Methods

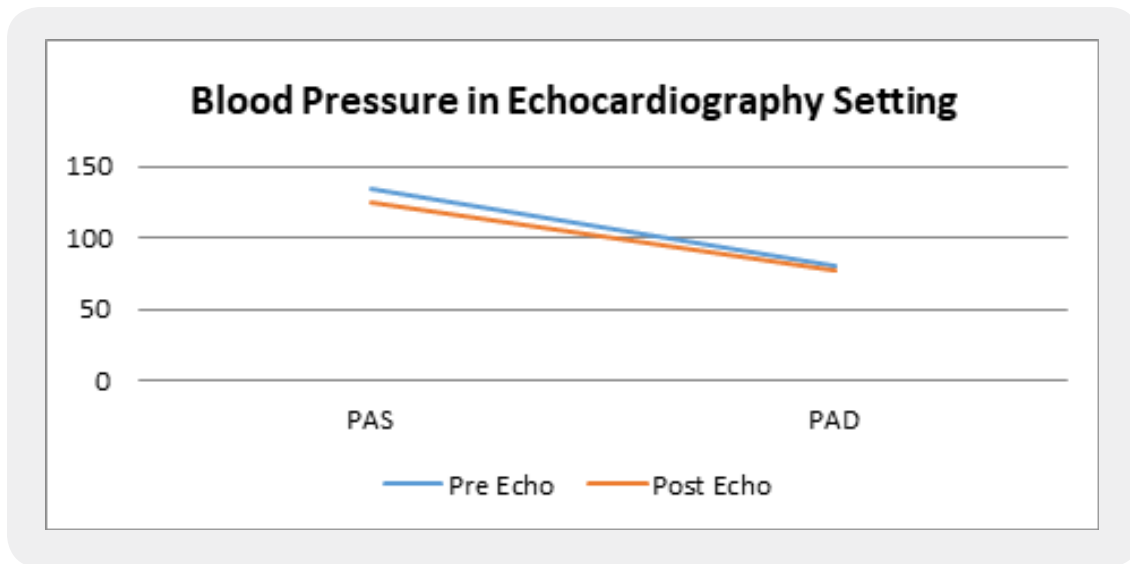
Observational, descriptive, cross-sectional and prospective study. A total of 100 patients were evaluated consecutively, recording systolic blood pressure (SBP) and diastolic blood pressure (DBP) in supine decubitus, in the left arm, before the echocardiographic study and after the end of it. We excluded patients under 16 years of age or frequent arrhythmia. The device used was an aneroid tensiometer (Welch Allyn Ds 45, adult bracelet 11 and obese 12). Personal records were recorded and data was collected in Excel spreadsheet.

## Results

The average age was 57 years, 54 were (54%) men and 46 (46%) women, 40 (40%) had arterial hypertension, 38 (38%) diabetes mellitus, 25 (25%) dyslipidemia, 43 (43%) smoked, 38 (38%) were overweight and 24 (24%) had a body mass index greater than 31, 12 (12%) had hypothyroidism and 50 (50%) did not perform physical activity more than 3 times a week (Figure 1). The mean SBP recorded before the echocardiogram was 134.7mmHg and the mean DBP was 80.9mmHg. After the end of the echocardiogram, the average SBP was 125.4mmHg and DBP was 77.6mmHg (Figure 2). A difference of 9.3mmHg was registered for the TAS and 3.3mmHg for the TAD. The greatest difference in absolute values was 22mmHg for SBP and 10mmHg for DBP. There were 2 patients who had a post-procedural TA increase of 10mmHg for systolic and 4mmHg for diastolic. The SBP decreased 9.3 mmHg (6.9%) and the DBP 3.3 mmHg (4%) pre to post echocardiogram.



**Figure 1:** The distribution of the population is represented graphically by average age, sex and comorbidities.



**Figure 2:** The blue line represents the average blood pressure before the echocardiographic study and the red line the average after the study. It is observed that before the study the arterial pressure is slightly higher.

## Discussions

How many times have we conducted studies with echocardiography, stratifying the severity of some valvulopathy without knowing the blood pressure? We believe that many, and the reasons are several, perhaps the most frequent and least substantiated is the "time factor". Since a couple of years ago our service began to register blood pressure at the end of the study in a systematic way, and in some cases we have found significant valvulopathies but in the context of arterial hypertension grade equal to or greater than 2, [2] and after treatment, the insufficiency reduced at least one degree.

When evaluating the severity of aortic stenosis with echocardiography, the guidelines recommend performing it in normotension and it is demonstrated that the increase in afterload increases the magnitude of mitral regurgitation [3].

Based on all this, we decided to investigate the repercussion of the anxiety linked to the echocardiographic study in a standard population of our daily practice as the "white coat" phenomenon does. After examining a population of 100 patients, we found a significant effect on blood pressure, but without this difference influencing the outcome of the study. We emphasize that this study was unicentric and with a small number of patients, so that a larger and more global population would be necessary to reinforce the final results.

## Conclusion

After evaluating 100 patients, we found a decrease in SBP on average 9.3mmHg and DBP 3.3mmHg, demonstrating that in this particular complementary method, although there is a rise in blood pressure similar to that of "white coat" due to anxiety, its repercussion it does not influence the final result of the echocardiogram. In any case, when we evaluated the absolute values, the highest difference reached 20mmHg

for the systolic pressure and 10mmHg for the diastolic. Reason for which we believe that the recording of blood pressure as the heart rate at the time of the examination should be part of the final report, especially in valvulopathies.

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