

Inadequate Request of Transthoracic Echocardiography according to the Guidelines of the Brazilian Society of Cardiology

Laiz Boniziolli Barachi, Flávia Candolo Pupo Barbosa, Samuel-Datum Moscovitch, Bárbara Contarato Pilon, Gabriela Vescovi Pissinati, Evandro Tinoco Mesquita, Cláudio Tinoco Mesquita, Marcus Vinicius Santos

Hospital Universitário Antônio Pedro, Universidade Federal Fluminense, Niterói; Hospital Pró-Cardíaco, Botafogo, Rio de Janeiro, RJ - Brazil

Abstract

Background: Guidelines from medical societies suggest recommendations for the appropriate request of tests. In 2009, the Brazilian Society of Cardiology (BSC) published new guidelines for transthoracic echocardiography (TTE) request.

Objective: To evaluate the prevalence of Class III requests for TTE, as defined by the BSC Guidelines and analyze these requests profile comparing a public university hospital (PUH) with a private cardiology hospital (PCH).

Methods: We prospectively evaluated 779 consecutive outpatient TTE requests: 391 from the PCH and 388 from the PUH between December 2009 and May 2010. The indications studied were classified accordingly to the BSC guidelines. Request distribution was compared by Chi-square test. Statistical significance was set at $p < 0.05$.

Results: Of the 779 requests, 61 (7.8%) were considered Class III. Of these 14 were from the public and 47 from the private hospital. The distribution of requests was statistically different between institutions ($p < 0.001$). Check-up in asymptomatic patients was the main inadequate indication, with 37 cases (33 in the private institution- 89.18%), followed by evaluation after angioplasty in 9 cases (8 in the private institution - 88.88%); ventricular function monitoring in patients with stable heart failure in 6 cases (4 in the public institution - 66.66%), post-bypass surgery in 5 cases (4 in the private institution- 80%), and evaluation of nonspecific electrocardiographic abnormalities in 4 cases (4 in the public institution - 100%).

Conclusion: Asymptomatic patients' assessment was the main cause of inadequate TTE requests, which differs between institutions: routine check-up in the private and heart failure in the public hospital. (Arq Bras Cardiol 2012;99(4):952-955)

Keywords: Echocardiography / utilization; health services misuse; heart failure; practice clinic guidelines.

Introduction

In recent years, the Brazilian health model has followed the technician model of the U.S.A., which shows technological progress accompanied by an increase in the request for complementary tests. The transthoracic echocardiogram (TTE) is a relatively low-cost, widely used test in the public and private sectors. In 2010, the Brazilian Unified Health System (SUS) performed 715,655 elective outpatient TTEs, of which 425,317 (59%) were performed in the southeastern region of the country, with an estimated total cost of R\$ 30,704,597.02¹. Amid this growing demand, a major challenge for cardiovascular imaging services is to maintain the quality standard². Moreover, unnecessary test requests are common, especially in the private sector. One explanation could be the distance between the medical practice and medical societies' recommendations on the rational use of complementary tests².

In 2009, the Guidelines on Indications for Echocardiography of the Brazilian Society of Cardiology (SBC)³ were published to guide physicians on the appropriate use of the TTE, to increase the diagnostic accuracy and optimize available resources. According to SBC guidelines, the requests can be classified as: Class I, when there is evidence or general acceptance that a certain procedure or treatment is useful and effective; Class II, when there is conflicting evidence and / or divergence of opinion on the usefulness/efficacy of a procedure or treatment; Class IIa, when the evidence/opinion favors usefulness/efficacy; Class IIb, when the usefulness/efficacy is less established by evidence/opinion; Class III, when there is evidence and/or general acceptance that the procedure/treatment is not useful/effective and, in some cases could be harmful³. However, few studies have evaluated the appropriateness of TTE requests according to the guidelines developed by Brazilian experts⁴.

The aim of this study was to investigate the prevalence of outpatient TTE requests Class III (inadequate) according to SBC guidelines and analyze the profile of these requests, comparing them between a public university hospital (PUH) and a private cardiology hospital (PCH).

Mailing Address: Cláudio Tinoco Mesquita •

Av. Almirante Ary Parreiras, 60, Apto. 801, Icaraí. Postal Code 24230-322, Niterói, RJ - Brazil

E-mail: tinocom@cardiol.br, claudiotinocomesquita@gmail.com

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Material and Methods

This was a prospective and observational study, which evaluated 779 consecutive outpatient TTE requests from a private (n = 391, 50.2%) and a public (n = 388, 49.8%) institution from December 2009 to May 2010. Indications were classified based on the criteria of SBC guidelines by two medical examiners. In this study, requests were considered inadequate when classified as Class III, as recommended by SBC guidelines. The requests were previously submitted to a prospective analysis according to criteria of adequacy of the American College of Cardiology for echocardiograms⁵; when necessary, these criteria were adapted (ACC), correlating them with the class III indications from SBC guidelines of 2004 and 2009⁴.

Patients older than 18 years of age were included in this study. Inpatients were excluded as well as those for whom the test request made by the attending physician was not available or readable, as well as unclassified tests. The research was previously approved by the Research Ethics Committee (REC) of UFF/HUAP (130/2010) and of Pro-Cardíaco Hospital (330/2009).

The results are expressed as percentage values of frequency. The comparison of differences was performed using the Chi-square (χ^2) or Fisher's exact test. The value of statistical significance was set at $p < 0.05$.

Results

Of the total 779 TTE requests, 432 were made for women (56%) and 347 for men (44%); 388 requests from the PUH and 391 from the PCH. The mean age was 59 ± 15 years. Of the 61 (7.8%) cases classified as inadequate, 14 (22.95%) were from PUH and 47 (77.04%) from the PCH. The mean age of patients with Class III requests was 62.3 years. There was a significant difference in the distribution of indications between institutions ($p < 0.001$). In the PUH, 14 (3.6%) of 388 requests were classified as inadequate (Class III), whereas in the PCH, it was 47 (12%). Chart 1 shows the overall distribution of the 61 (7.8%) cases considered Class III, of which 37 cases occurred in routine check-ups (33 in the PCH; 89.18%), followed by post-angioplasty assessment in 9 patients (8 in the PCH, 88.88%). The test was also requested for the monitoring of ventricular function in patients with stable heart failure in 6 cases (4 in the PUH; 66.66%), post-CABC in 5 cases (4 in the PCH, 80%) and evaluation of nonspecific electrocardiographic abnormalities in 4 cases (4 in the PUH, 100%). Among the asymptomatic patients, 40 (65.57%) had no underlying disease.

Discussion

Echocardiography is one of the most widely used diagnostic methods in clinical cardiology. Recent studies⁶⁻¹⁰ have

compared the quality of TTE requests according to criteria of adequacy of the American College of Cardiology (ACC). The study by Ward et al.⁶, which compared inadequate outpatient requests in the academic sector and in the community, found no significant difference (17% vs. 15%, $p =$ not significant). Similarly, Willens et al.⁷ found no significant difference when comparing inadequate outpatient requests in the American system of veteran care (Veterans Affairs) and academic assistance practice (7% vs. 9.5%, $p = 0.558$). Differently in our study, when using SBC recommendations, we found a significant difference between outpatient requests Class III (inadequate) in the PUH and PCH (3.6% vs. 12%, $p < 0.001$).

Based on the criteria of adequacy of the ACC, Barbosa et al.⁹ compared inadequate outpatient requests from the same sample described in our study (n = 779). However, the study by Barbosa et al.⁹ found no significant difference between the inadequate requests in the PUH and the PCH (25% vs. 29%). Only the study by Rao et al.¹⁰ reported such high frequency (26%) of inadequate TTE requests. On the other hand, Kirkpatrick et al.⁸ showed a frequency of 8%, similar to that observed in our study (7.8%). When comparing the Brazilian guidelines³ with the ACC criteria⁵, it can be observed that SBC guidelines of 2009 only consider 41 requests as inadequate, while the ACC criteria consider 71 indications for echocardiography as inadequate. This difference suggests the need to review the current Brazilian guidelines aiming to extend its applicability.

In our study, a significant difference was observed in the profile of clinical indication for TTE between the private and the public institution ($p < 0.001$). The use of TTE for routine check-ups in asymptomatic patients and the repetition of TTE in patients without clinical alterations regarding the basal condition were the main reasons for requests Class III at the private and public institutions, respectively.

The technological developments in health care and increased availability of complementary tests have promoted an exaggeration of TTE requests, many without clinical indication. In addition to high costs, the requesting of unnecessary tests overburden health services, creating difficulties for individuals to have access and increasing the time for tests to be performed, which makes the public health system slow, costly and inefficient.

Considering that more than 800,000 TTEs are performed per year by SUS and that the frequency of inadequate use is 8%, it is estimated that approximately 64,000 tests are needlessly performed every year. Thus, the need to improve the management of financial resources of complementary medicine raises questions about cost-effectiveness of tests and the lack of continuing medical education programs.

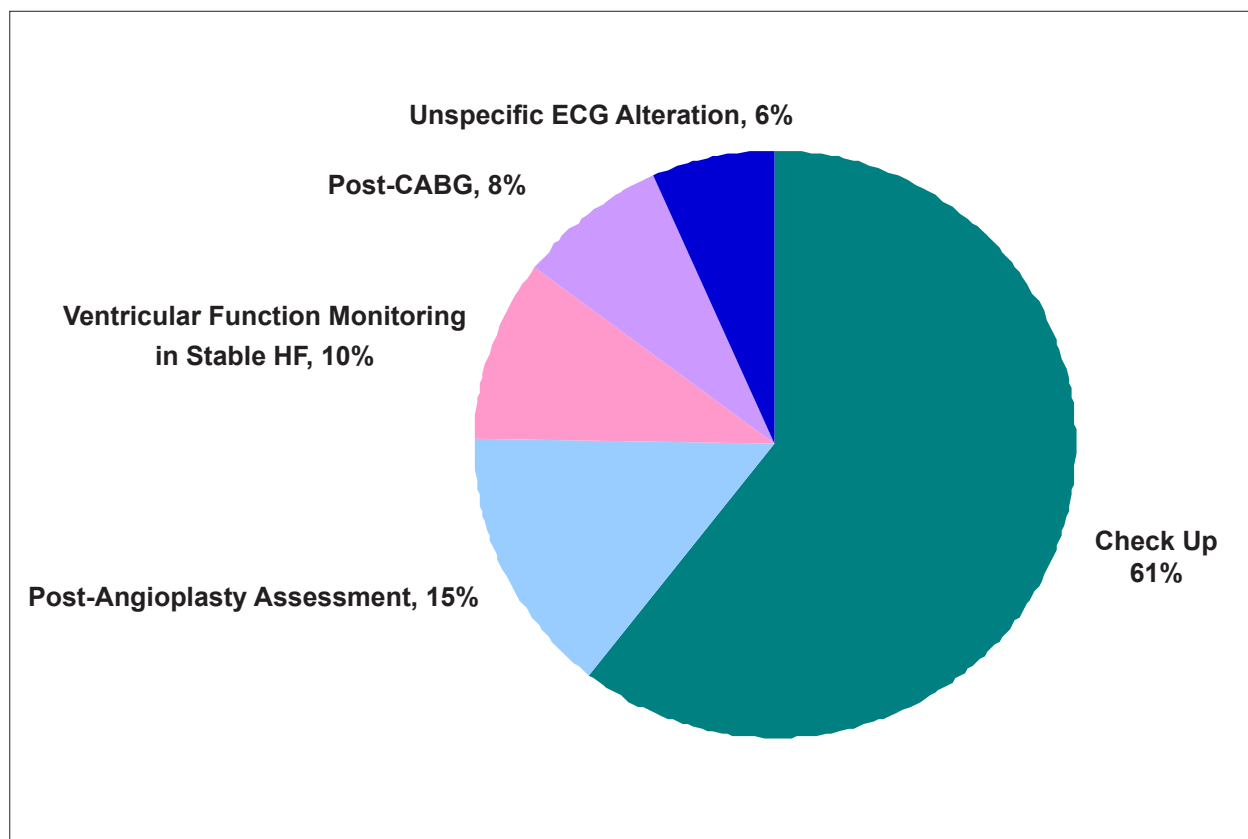


Chart 1 - General distribution of Class III indications of the Guidelines of the Brazilian Society of Cardiology for transthoracic echocardiography indications (n = 61).

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