RESEARCH IN BRIEF

Clinical comparison of patients with refractory angina with and without the nursing diagnosis of activity intolerance

Clarissa G Rodrigues, Maria Antonieta P de Moraes, Andreia OR Coutinho, Jaquelini M Sauer, Renato AK Kalil and Emiliane N Souza

Aims and objectives

The aim of this study is to compare angina and heart failure classes and the results of the stress test in patients with refractory angina with and without the nursing diagnosis (ND) of activity intolerance.

Background

Refractory angina is resistant to all of the conventional treatments available for coronary artery disease, including medication, percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG) (Mannheimer *et al.* 2002). Patients with refractory angina generally have limited functional capacity and restricted activities (Sevinç & Akyol 2010), which can be evaluated through stress tests and indicated by determining angina [Canadian Cardiology Society (CCS)] and heart failure (New York Heart Association [NYHA]) classes. The ND of activity intolerance, defined as insufficient physiological or psychological energy to endure or complete ten required or desired daily activities, might be appropriate for these patients (NANDA-I 2008).

The defining characteristics of the ND of activity intolerance are electrocardiographic changes reflecting ischemia, electrocardiographic changes reflecting arrhythmia, exertion discomfort and/or dyspnea, verbal reports of fatigue and/or weakness, abnormal heart rate and/or blood pressure response to activity (NANDA-I 2008), which indicate the potential suitability of this particular ND for patients with refractory.

It is noteworthy that identification the ND is important because nurses prescribe nursing interventions based on this and consequently better care priorities are established (Müller-Staub *et al.* 2009). Systematised care using the nursing process, which includes the identification of ND, was studied (Müller-Staub *et al.* 2009, Martins *et al.* 2010) and the findings confirmed that the appropriate use of ND contributes to the scientific foundation for its use.

Design

A case–control study with a non-probabilistic sample composed of patients with refractory angina in follow-up in a hospital of excellence in cardiology in Southern Brazil. This was an arm of a study conducted to validate the ND of activity intolerance in patients with refractory angina.

Authors: *Clarissa G Rodrigues*, RN, PhD Candidate, Cardiology Specialist, Instituto de Cardiologia do RS, Fundação Universitária de Cardiologia, Porto Alegre, RS, Brazil and Coordinator for the Research and Innovation Coaching Program, Department of Surgery, Duke University, Durham, NC, USA; *Maria Antonieta P de Moraes*, PhD, RN, Doctor, Coordinator for the Post-Graduate Nursing in Cardiology Program, Coordinator for Nursing Residency in Cardiology and Director for the Research Group, PROCARDIO (CNPq), Instituto de Cardiologia do RS; *Andreia OR Coutinho*, MSc, RN, Nurse, Instituto de Cardiologia do RS, Fundação Universitária de Cardiologia, Porto Alegre; *Jaquelini M Sauer*, RN, MSc, Chief Nurse, Instituto de Cardiologia do RS, Fundação

Universitária de Cardiologia, Porto Alegre; *Renato AK Kalil*, MD, PhD, Instituto de Cardiologia do RS, Fundação Universitária de Cardiologia, Porto Alegre and Universidade Federal de Ciências da Saúde de Porto Alegre; *Emiliane N Souza*, MSc, RN, Assistant Professor, Instituto de Cardiologia do RS, Fundação Universitária de Cardiologia and Universidade Federal de Ciências da Saúde de Porto Alegre, Brazil

Correspondence: Clarissa G Rodrigues, Cardiology Specialist, Research Unit of Instituto de Cardiologia do RS, Fundação Universitária de Cardiologia, Princesa Isabel, 370 Porto Alegre, RS 90620-001, Brazil. Telephone: +55 (51) 3230-3600.
E-mail: clarissagarciarodrigues@gmail.com

Methods

Data were collected from March 2009–March 2010 in an outpatient department. The patients were evaluated by a multidisciplinary team consisting of a cardiologist, a cardiovascular surgeon, an interventional cardiologist, and nurses specialized in cardiology. All patients, of both genders and aged 18 years or older, with ischemic heart disease and without the option of percutaneous or surgical treatment, who were symptomatic despite optimal medical therapy, who were characterised by the clinical condition of refractory angina. Patients who did not consent to participation were not included. All patients accepted to participate of the study.

The presence of the ND of activity intolerance was assessed as described in previous study conducted by Rodrigues *et al.* (2011). Eligible patients with the ND of activity intolerance were included in the Case Group (CaG) and patients without this ND were included in the Control Group (CoG) for later comparison. A nurse took each patient's medical history, performed a physical assessment and evaluated whether the patient had the ND of activity intolerance or not. The physician confirmed the CCS angina class and the NYHA heart failure class, and analysed the myocardial scintigraphy to obtain the left ventricular ejection fraction (LVEF) and the stress test to obtain the patient's oxygen consumption [metabolic equivalents (METs)] and completed steps. These examinations are routinely applied in this clinic. The data were stored on forms specifically developed for this study. The study was conducted according to the standards guiding research involving human subjects and was approved by the local Research Ethics Committee (registration 4216/08). All participants voluntarily consented to participate in the study and signed free informed consent forms.

Statistical analyses were performed using the statistical program PASW, version 18.0 (SPSS Inc., Chicago, IL, USA). Continuous variables were expressed as averages $\pm$ standard deviations and categorical variables in absolute (n) and relative (%) frequencies, medians and interquantile intervals (25–75). The groups were compared using the Chi-square test for categorical variables and the student's t test for continuous variables. Variables were considered statistically significant at $p < 0.05$.

Results

A total of 44 patients with refractory angina were included. Of these, 22 individuals diagnosed with the ND of activity intolerance were included in the CaG and 22 who were not diagnosed with activity intolerance were included in the CoG.

The average age was 59 (SD 5) years among the Case patients and 60 (SD 5) years old among the CoG ($p = 0.76$). There was predominance of men (CaG = 90.91% vs. CoG = 95.45%; $p = 0.5$) and the groups were similar in hypertension index values (CaG = 90.91% vs. CoG = 95.45%; $p = 0.50$), diabetes (CaG = 45.45% vs. CoG = 50.0%; $p = 0.38$), and dyslipidemia (CaG = 72.73% vs. CoG = 86.36%; $p = 0.23$), and also in relation to previous PCI (CaG = 90.91% vs. CoG = 68.18%; $p = 0.12$) and CABG (CaG = 86.36% vs. CoG = 95.54%; $p = 0.30$). The LVEF was similar between the groups (CaG = 58 $\pm$ 12% vs. CoG = 61.79%; $p = 0.36$). The results showed that all patients in both groups had already experienced myocardial infarctions.

Analysis of the CCS angina class showed that the group of patients with the ND of activity intolerance were generally rated as belonging to higher classes than patients without this diagnosis ($p = 0.01$). Similar results were also found when the heart failure class was evaluated ($p = 0.01$). The analysis of the stress tests showed that the group of patients with the ND of activity intolerance completed fewer steps ($p < 0.001$) and consumed less oxygen ($p < 0.001$) when compared to patients without this ND, although when the ejection fraction was analyzed no differences were found between the groups ($p = 0.36$) (Table 1).

Table 1 Comparison of clinical characteristics between groups with and without the ND of activity intolerance

	Patients (n = 44)		
Characteristics	Cases: with ND (n = 22)	Controls: without ND (n = 22)	p
*CCS class**	2.5 (2–3)	1.5 (1–2)	0.01
I[†]	1 (4.22%)	11 (50%)	
II[†]	10 (45.45%)	10 (45.45%)	
III[†]	9 (40.91%)	1 (4.22%)	
IV[†]	2 (9.09%)	0 (0%)	
*NYHA class**	3 (2–3)	1.5 (1–2)	0.01
I[†]	1 (4.22%)	11 (50%)	
II[†]	8 (36.36%)	10 (45.45%)	
III[†]	12 (54.55%)	1 (4.22%)	
IV[†]	1 (4.22%)	0 (0%)	
Stress test			
Oxygen consumption (METs)[‡]	4.4 $\pm$ 4.7	12.7 $\pm$ 4.3	<0.000
Completed steps[‡]	2.4 $\pm$ 2.2	4.9 $\pm$ 2.0	<0.000

[*]Percentiles 50 (25–75).
[†]Absolute and relative frequencies.
[‡]Average and standard deviation.
ND, nursing diagnosis (activity intolerance); METs, metabolic equivalents; LVEF, left ventricular ejection fraction; CCS, Canadian Cardiology Society; NYHA, New York Heart Association.

Conclusion

This study, involving ischemic patients with refractory angina who were diagnosed with the ND of activity intolerance and who presented higher angina and heart failure classes, revealed that these patients consumed less oxygen and completed fewer steps in the stress tests compared to patients without this ND.

Relevance to clinical practice

ND of activity intolerance represents the physical limitations of patients. Such limitations are identified in clinical practice through the anamneses and physical assessments performed by nurses. However, the evidence that this group of patients also presented higher angina and heart failure classes, completed fewer steps and consumed less oxygen in the stress test confirms the clinical nursing findings and also reflects on the quality of the care plan. Hence, the relevance of this evidence is highlighted in that it confirms the clinical nursing findings and contributes to the scientific consolidation of accuracy in the identification of nursing diagnoses, as well as supporting patient safety and quality of care.

Key words

nursing diagnosis, heart disease, clinical nursing specialist

References

Mannheimer C, Camici P, Chester MR, Collins A, DeJongste M, Eliasson T, Follath F, Hellemans I, Herlitz J, Lüscher T, Pasic M & Thelle D (2002) The problem of chronic refractory angina; report from the ESC Joint Study Group on the Treatment of Refractory Angina. *European Heart Journal* **23**, 355–370.

Martins QC, Aliti G & Rabelo ER (2010) Decreased cardiac output: clinical validation in patients with decompensated heart failure. *International Journal of Nursing Terminologies and Classification* **21**, 156–165.

Müller-Staub M, Lunney M, Odenbreit M, Needham I, Lavin MA & van Achterberg T (2009) Development of an instrument to measure the quality of documented nursing diagnoses, interventions and outcomes: the Q-DIO. *Journal of Clinical Nursing* **18**, 1027–1037.

NANDA-I (2008) *Nursing Diagnoses: Definitions and Classification 2009–2011*. Wiley-Blackwell, Oxford.

Rodrigues CG, Moraes MA, Sauer JM, Kalil RAK & Souza EN (2011) Nursing diagnostic of activity intolerance: clinical validation in patients with refractory angina. *International Journal of Nursing Terminologies and Classification* **22**, 117–122.

Sevinç S & Akyol AD (2010) Cardiac risk factors and quality of life in patients with coronary artery disease. *Journal of Clinical Nursing* **19**, 1315–1325.

The Journal of Clinical Nursing (JCN) is an international, peer reviewed journal that aims to promote a high standard of clinically related scholarship which supports the practice and discipline of nursing.

For further information and full author guidelines, please visit JCN on the Wiley Online Library website: http://wileyonlinelibrary.com/journal/jocn

Reasons to submit your paper to JCN:

High-impact forum: one of the world's most cited nursing journals, with an impact factor of 1·118 – ranked 30/95 (Nursing (Social Science)) and 34/97 Nursing (Science) in the 2011 Journal Citation Reports® (Thomson Reuters, 2011)

One of the most read nursing journals in the world: over 1·9 million full text accesses in 2011 and accessible in over 8000 libraries worldwide (including over 3500 in developing countries with free or low cost access).

Early View: fully citable online publication ahead of inclusion in an issue.

Fast and easy online submission: online submission at http://mc.manuscriptcentral.com/jcnur.

Positive publishing experience: rapid double-blind peer review with constructive feedback.

Online Open: the option to make your article freely and openly accessible to non-subscribers upon publication in Wiley Online Library, as well as the option to deposit the article in your preferred archive.