

NURSING DIAGNOSES WITH CORONARY PATIENTS IN THE LIGHT OF CALLISTA ROY'S THEORY

Diagnósticos de enfermagem com pacientes coronariopatas à luz da teoria de Callista Roy

Diagnósticos de enfermería con pacientes coronarios a la luz de la teoría de Callista Roy

Daniele do Carmo Eleto Hamadé¹, Cláudia de Souza Moraes², Mônica Oliveira Duarte Martins³, Carolina Cabral Pereira da Costa⁴

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ABSTRACT

Objective: to identify nursing diagnoses in coronary patients in the light of Callista Roy's Adaptation Theory.

Method: this was a descriptive, cross-sectional, quantitative study involving 15 patients with coronary artery disease in the pre-intervention hemodynamic period. It was developed in a university hospital in Rio de Janeiro-RJ, from May to September, 2017. A structured questionnaire was used according to the five basic needs (oxygenation, nutrition, elimination, activity and rest and protection) and the complex process (neurological function) in the physiological way of Callista Roy. **Results:** ten nursing diagnoses of NANDA taxonomy II were established: risk of intolerance to activity, anxiety, fear, activity intolerance, ineffective respiratory pattern, impaired physical mobility, impaired walking, nausea, impaired urinary elimination and diarrhea. **Conclusion:** it was concluded that the Callista Roy Adaptation model provided an understanding of the experience of patients with coronary disease, through an adaptation perspective.

Descriptors: Acute coronary syndrome; Social adjustment; Nursing diagnosis; Nursing care.

RESUMO

Objetivo: identificar os diagnósticos de enfermagem nos pacientes coronariopatas à luz da Teoria da Adaptação de Callista Roy. **Método:** estudo descritivo, transversal, quantitativo, envolvendo 15 pacientes coronariopatas, no período pré-intervenção hemodinâmica. Desenvolveu-se em um hospital universitário do Rio de Janeiro-RJ, de maio a setembro de 2017. Utilizou-se questionário estruturado de acordo com as cinco necessidades básicas (oxigenação, nutrição, eliminação, atividade e repouso e proteção) e o processo complexo

- 1 Nursing Graduate by the Universidade Federal de Viçosa (UFV), Specialist's Degree in Cardiovascular Nursing by the UERJ, Residency Student at the Hospital Universitário Pedro Ernesto by the UERJ.
- 2 Nursing Graduate by the Universidade Federal do Estado do Rio de Janeiro (UNIRIO), MSc in Nursing by the UERJ, Auxiliary Professor at Centro Universitário Celso Lisboa, Nurse Head of the Cardiac Intensive Care Unit at Hospital Universitário Pedro Ernesto.
- 3 Graduada em Enfermagem pela UERJ, Mestre em Enfermagem pela Universidade Federal da Bahia (UFBA), Enfermeira Chefe do Serviço de Enfermagem Clínica do Hospital Universitário Pedro Ernesto.
- 4 Nursing Graduate by the UERJ, MSc in Nursing by the Universidade Federal da Bahia (UFBA), Nurse Head of the Clinical Nursing Service at Hospital Universitário Pedro Ernesto.

(função neurológica) do modo fisiológico de Callista Roy. **Resultados:** foram estabelecidos 10 Diagnósticos de Enfermagem da taxonomia II da NANDA: risco de intolerância a atividade, ansiedade, medo, intolerância a atividade, padrão respiratório ineficaz, mobilidade física prejudicada, deambulação prejudicada, náusea, eliminação urinária prejudicada e diarreia. **Conclusão:** conclui-se que o modelo da Adaptação de Callista Roy, propiciou o entendimento da vivência dos pacientes com adoecimento coronariano, mediante uma perspectiva de adaptação.

Descritores: Síndrome coronariana aguda; Ajustamento social; Diagnóstico de enfermagem; Cuidados de enfermagem.

RESUMÉN

Objetivo: identificar los diagnósticos de enfermería en los pacientes coronariopatas a la luz de la Teoría de la Adaptación de Callista Roy.

Método: estudio descriptivo, transversal, cuantitativo, involucrando 15 pacientes coronariopatas, en el período pre-intervención hemodinámica. Se desarrolló en un hospital universitario de Río de Janeiro-RJ, de mayo a septiembre de 2017. Se utilizó un cuestionario estructurado de acuerdo con las cinco necesidades básicas (oxigenación, nutrición, eliminación, actividad y reposo y protección) y el proceso complejo (función neurológica) del modo fisiológico de Callista Roy. **Resultados:** hubo 10 Diagnósticos de Enfermería taxonomía establecida NANDA II: riesgo de intolerancia a la actividad, la ansiedad, el miedo, la intolerancia a la actividad, el ritmo respiratorio ineficaz, deterioro de la movilidad física, deterioro de la marcha, náuseas, diarreia y deterioro de la eliminación urinaria. **Conclusión:** se concluye que el modelo de la Adaptación de Callista Roy, propició el entendimiento de la vivencia de los pacientes con enfermedad coronaria, mediante una perspectiva de adaptación.

Descriptores: Síndrome coronario agudo; Ajuste social; Diagnóstico de enfermería; Atención de enfermería.

INTRODUCTION

Non-communicable chronic diseases are a major health problem, with diseases of the circulatory system accounting for 31.3% of the causes of death.¹ It is currently the main cause of morbidity and mortality in Brazil and in the world,²⁻⁵ regardless of the income level of the countries.⁵

Among cardiovascular diseases, Coronary Artery Disease (CAD) is the most common manifestation and is associated with high morbidity and mortality. Clinical presentations of CAD include silent ischemia, stable angina, unstable angina, Acute Myocardial Infarction (AMI), heart failure, and sudden death. Distinguishing patients with Acute Coronary Syndromes (ACS) within a very large proportion with suspected chest pain is a diagnostic challenge, especially in individuals with no clear symptoms or electrocardiographic features. Despite modern treatment, the rates of death, AMI, and readmission of patients with ACS remain high.⁴

In the perspective of the World Health Organization, the patient with chronic diseases needs planned care capable of providing their basic needs and providing integrated care.⁶ Based on the care process, nursing has conceptual theories or models that consist of central concepts of the profession in an orderly and scientific way, in order to contribute to the quality of health care.^{7,8}

Among these, the conceptual model of the Callista Roy's Adaptation is underlined, in which nursing aims to promote the adaptation of the individual during his illness and health, manipulating the environment and patient elements. Roy admits that the health-disease process is subject to (in)adaptability and coping with common problems and/or influencing stimuli.⁹ And adaptation would be a positive response to internal or external stimuli, in which the individual leaves the mechanisms psychosocial factors to promote personal integrity.⁹ And when it adapts to a new experience, it results in wholeness.^{9,10}

Roy describes four adaptive modes: in the physiological mode, the person responds as a physical being to environmental incentives and involves the five basic needs (oxygenation, nutrition, elimination, rest and activity, and protection) and four complex processes (sensitive, liquid and electrolytes, endocrine function and neurological function).⁹

The elements of Roy's nursing process include the following: behavioral research, stimulus research, nursing diagnosis, goal setting, intervention, and assessment. The first consists of collecting people's responses or behaviors in relation to each of the adaptive modes. The second involves the identification of focal, contextual, and residual stimuli that are influencing behaviors. The third element of the process is the identification of nursing diagnoses, which reflects the nurses' judgment about the level of adaptation of the person. The fourth is the setting of goals and the fifth is the planning of the interventions.^{7-9,11}

Roy's Theory allows us to recognize that people, through stimuli, can trigger positive or negative responses in different situations. By enabling nurses to implement care actions that favor adaptive responses, thus contributing to adherence to the treatment and better quality of life of patients with coronary artery disease who will undergo invasive hemodynamic procedures, since they must undergo a process of adaptation to the new health condition and disease.¹²

This study intends to make visible the main adaptive problems worthy of attention, thus providing a direction of the nursing interventions that collaborate for a positive adaptation of the patients to the coronary disease.

Bearing in mind the aforesaid, the research problematic is the following: what are the nursing diagnoses found in patients bearing coronary artery disease who will undergo hemodynamic intervention? And the objective of the present study is to identify nursing diagnoses regarding coronary patients who will undergo hemodynamic intervention, in light of the Callista Roy's Adaptation Theory.

METHODS

It is a descriptive and cross-sectional study with a quantitative approach, which was performed in a University Hospital in *Rio de Janeiro* city, *Rio de Janeiro* State, Brazil. The study population included patients with coronary artery disease who underwent an invasive hemodynamic

procedure. A total of 45 percutaneous invasive procedures were carried out between May and September in this hospital. The study sample consisted of 15 patients with coronary artery disease who met the criteria for inclusion: medical diagnosis of coronary artery disease, percutaneous invasive procedure (cineangiogram) for the first time.

Data were collected from May to September 2017, through a structured questionnaire, with the patients hospitalized for coronary artery disease, at the time that preceded a percutaneous invasive procedure. For this collection, the instrument used was elaborated according to the five basic needs (oxygenation, nutrition, elimination, activity and rest and protection) and the complex process (neurological function) of the physiological way of Callista Roy.

This study followed the first three steps of Roy's nursing process, first investigating the problems of adaptation present in these patients, relating them with respective influencing stimuli and finally identified the nursing diagnoses according to taxonomy II of the North American Nursing Diagnosis Association (NANDA). The NANDA taxonomy was chosen because it was used in this hospital for the construction of the Standard Operating Procedures, and this way to be better known among nurses.

Data were typed into a database in the Excel 2013 program, quantitative variables were presented in tables of absolute and relative frequencies.

Concerning the ethical aspects, the study was approved by the Research Ethics Committee from the *Hospital Pedro Ernesto*, under the Legal Opinion No. 1.983.916 and *Certificado de Apresentação para Apreciação Ética (CAAE)* [Certificate of Presentation for Ethical Appreciation] No. 65534417.6.0000.5259. Previously, an Institutional Authorization Term was sent. All ethical issues were respected as recommended by the Resolution No. 466/2012, which regulates research with human beings.¹³ As required, the participants' prior consent was requested through the signing of the Informed Consent Form (ICF), and they were guaranteed anonymity and the freedom to participate or not in the study without prejudice to their treatment.

RESULTS AND DISCUSSION

The results were distributed in four groups of tables, the first with the profile of the patients regarding the sociodemographic characteristics and the characteristics of coronary disease; the second with the main adaptive problems of Roy's physiological mode. The third with the nursing diagnoses according to NANDA, and the fourth, the relationship between Roy's physiological mode with the identified NANDA diagnoses.

Table 1 presents the distribution of coronary patients to be submitted to hemodynamic intervention, according to sociodemographic characteristics and coronary disease.

Table 1 - Distribution of coronary patients according to sociodemographic characteristics and coronary disease. Rio de Janeiro, May/September, 2017

Variable	N°	%
Gender		
Male	12	80.0
Female	03	20.0
Age		
49 - 59	08	53.3
60 - 69	04	26.7
70 - 79	01	6.7
80 - 89	02	13.3
Marital status		
With partner	13	86.7
Without partner	02	13.3
Schooling		
Illiterate	01	6.7
Elementary school	04	26.6
High school	09	60.0
College	01	6.7
Occupation		
Working	07	46.7
Not working	02	13.3
Retired	06	40.0
Current clinical diagnosis		
Angina	10	66.7
Acute myocardial infarction	04	26.7
Other	01	6.6
Number of prior crisis		
None	03	20.0
Two	01	6.7
More than two	11	73.3
Current complaints		
None	03	20.0
Retrosternal pain	10	66.7
Shortness of breath	07	46.7
Other	07	46.7

Source: Elaborated by the authors.

The study population is predominantly male (80.0%), within the age group from 49 to 59 years old (53.3%), having a partner (86.7%), with a high school education (60.0%)

and that work (46.7%). The average age was 60.6 years old (minimum of 49 years old and a maximum of 89 years old), and a standard deviation of 11.37.

Considering the coronary disease, the prevalent clinical diagnosis was angina (66.7%), followed by Acute Myocardial Infarction (AMI) (26.7%), the other item (6.6%) refers to the case in which the patient presented a compatible clinical picture, but it was not fully clarified by exams such as electrocardiogram and dosage of cardiac enzymes.

It is observed that 73.3% of the participants experienced the crisis more than twice, and for 20.0% the current crisis was the first. The main complaints were retrosternal pain (66.7%) and shortness of breath (46.7%); the other item (46.7%) included nausea, limb paresthesia, sweating, and dizziness.

Table 2 (2.1 and 2.2) describes the main adaptive problems of Roy's physiological mode, involving the five basic needs (oxygenation, nutrition, elimination, activity and rest, and protection) and neurological function.

Table 2.1 - Distribution of coronary patients according to the main adaptive issues of the Roy's physiological mode (oxygenation, nutrition and elimination). *Rio de Janeiro, May/September, 2017*

Variable	N°	%
Oxygenation		
Respiratory support		
Present	01	6.7
Absent	14	93.3
Respiratory frequency		
Eupneia	10	66.7
Dyspnea	05	33.3
Other adaptive problems		
None	09	60.0
Pallor	04	26.7
Fatigue	05	33.3
Blood pressure		
Normotensive	12	80.0
Hypertensive	03	20.0
Heart rate		
Normocardia	14	93.3
Tachycardia	01	6.7
Capillary perfusion		
Satisfactory	12	80.0
Unsatisfactory	03	20.0
Edema		
Present	06	40.0
Absent	09	60.0
Nutrition and elimination		
Pre-catheterization fasting		
Yes	15	100.0
No	0	0

Variable	N°	%
Abnormal gastrointestinal manifestations		
None	02	13.3
Hunger	10	66.7
Thirst	07	46.7
Nausea	02	13.3
Abnormal intestinal manifestations		
None	12	80.0
Intestinal discomfort	01	6.7
Diarrhea	02	13.3
Abnormal urinary manifestations		
None	13	86.7
Urgency	02	13.3

Source: Elaborated by the authors.

Table 2.2 - Distribution of coronary patients according to the main adaptive issues of the Roy's physiological mode (activity and rest; protection and neurological function). *Rio de Janeiro, May/September, 2017*

Variable	N°	%
Activity and rest		
Predisposition for daily activities		
Absent	09	60.0
Present	06	40.0
Activity intolerance		
Absent	02	13.3
Present	13	86.7
Mobility		
Present, no alteration	10	66.7
Present, but impaired	05	33.3
Walking		
Independent	09	60.0
With help	03	20.0
No	03	20.0
Protection		
Fever		
Yes	0	0
No	15	100
Allergy		
Yes	02	13.3
No	13	86.7
Neurological function		
Nervousness		
Yes	02	13.3
No	13	86.7

Variable	N°	%
Anxiety		
Yes	10	66.7
No	05	33.3
Fear		
Yes	13	86.7
No	02	13.3

Source: Elaborated by the authors.

The clinical judgment of the adaptation problems and their possible associated stimuli, considering the Callista Roy's Adaptation Theory, led to the establishment of 10 nursing diagnoses, according to NANDA, which are arranged according to their frequency in **Table 3**.

Table 3 - Nursing diagnoses identified in coronary patients. *Rio de Janeiro, May/September, 2017*

Nursing diagnosis	N°	%
1. Risk of activity intolerance	15	100.0
2. Anxiety	10	66.7
3. Fear	13	86.7
4. Activity intolerance	13	86.7
5. Ineffective respiratory pattern	05	33.7
6. Impaired physical mobility	05	33.7
7. Impaired walking	06	40.0
8. Nausea	02	13.3
9. Impaired urinary elimination	02	13.3
10. Diarrhea	02	13.3

Source: Elaborated by the authors.

Conclusively, **Table 4** shows the relation of nursing diagnoses according to the components and complex processes of the physiological mode of Roy with the nursing diagnoses, according to NANDA, identified in the coronary patients to be submitted to a percutaneous invasive procedure.

Table 4 - Distribution of nursing diagnoses according to the components and complex processes of Roy's physiological mode and nursing diagnoses according to NANDA Taxonomy II. *Rio de Janeiro, May/September, 2017*

Roy's physiological mode	NANDA Taxonomy II
Oxygenation	Ineffective respiratory pattern
Nutrition	Nausea
Elimination	Diarrhea
	Impaired urinary elimination

Roy's physiological mode	NANDA Taxonomy II
Activity and rest	Risk of activity intolerance
	Activity intolerance
	Impaired physical mobility
	Impaired walking
Neurological	Fear
	Anxiety

Source: Elaborated by the authors.

Characterization of patients bearing coronary disease

In this study, the male population was predominant (80%), similar to other studies in which the predominance of the male gender that performs a percutaneous coronary intervention was also demonstrated.¹⁴⁻⁷ Data disclosed by the *Sistema de dados do Sistema Único de Saúde (DATASUS)* [Data System of the Brazilian Unified Health System] in the period from January 2010 to July 2017 indicates that hospital admission due to diseases of the circulatory system was higher in men (52.7%) than in women (47.3%).¹⁸

Women are more concerned about their health, they are aware of the diseases and their signs and symptoms, constantly seeking health services and prevention strategies for diseases and their diseases.¹⁷ Another factor is that natural female hormones protect them from having Coronary Artery Disease (CAD) while they are of childbearing age. For this and other reasons, probably not clarified, women develop less CAD, consequently, they are less referred for angiography.¹⁹

A survey emphasizes that in Brazil, 40% of all deaths due to cardiovascular diseases are in the age range <65 years old. And that this disease is affecting individuals of less age since 26.8% of CVD deaths occur between 25 and 59 years of age.²⁰ Herein, the age group most affected and seeking diagnosis and/or treatment is between 49 and 59 years old (53.3%), confirming data on mortality from cardiovascular diseases presented in the aforementioned study.

On the other hand, it differs from other studies that found a predominantly elderly population.¹⁴⁻⁷

The presence of a partner is in agreement with another study that also explains the benefits derived from the support of the companion in the recovery of cardiovascular events.⁷

As for coronary disease, the prevalent clinical diagnosis was angina, consistent with other studies that point to similar data, in which coronary artery disease was the main diagnosis for the procedure.¹⁴⁻⁷

Information from *DATASUS* on hospital morbidity per place of hospitalization, from January 2010 to July 2017, according to the list of ICD-10 morbidity, indicate 4,891,994 hospitalizations. Out of those, 526,480 (10.8%) were due to diseases of the circulatory system, of which

51,208 (9.7%) were AMI and 61,086 (11.6%) were other ischemic heart diseases, including angina.¹⁸

Most participants experienced the crisis more than twice and reported retrosternal pain and shortness of breath as major complaints. These symptoms were also reported in another study.⁷

Physiological mode: common adaptation problems

Considering the oxygenation component, described by Roy as the body's need for oxygen, the main mechanisms responsible for cellular oxygenation would be ventilation, alveolar gas/capillary gas exchange and transport of gases to and from tissues and that if all these mechanisms are working properly sufficient ambient oxygen is available, there will be adequate oxygenation to the body tissues.⁹

In ACS, the interruption of blood flow through the decrease in the diameter of the vessel is observed. This event will affect the oxygenation of the cells of the body, specifically of the cardiac muscle, that will go into suffering and may go from a process of ischemia to cell death (necrosis).³

On this component, the study population presented the following adaptive problems: altered tissue perfusion and hypoxia. However, these problems were manifested at low frequency, 6.7% had an abnormal respiratory rate and 33.7% had respiratory support. Although the support measures recommended for patients with coronary disease are oxygen support, a study indicates that this measure was little implemented during the care of these patients.⁷

The V Brazilian Directive of Cardiology indicates as a recommendation (class I, evidence level C), oxygen therapy in patients with pulmonary congestion and/or oxygen saturation below 94%.²¹

The stimuli associated with the adaptation problems identified for oxygenation were decreased blood supply to the cardiac (focal) muscle, pain (focal) and anxiety (contextual).

The nutrition component, according to Roy, is the need to ingest and absorb food to maintain organic functioning, promote growth and replace damaged tissues. And elimination is described as the person's need to eliminate residual metabolic products.⁹

Related to these components, the study participants presented the following adaptive problems: nutrition lower than body needs, represented by hunger (66.7%) and headquarters (46.7%). The hunger and thirst component is a transient situation since all the patients were fasted due to the surgical procedure.

Other adaptive problems that appeared were nausea (13.3%), diarrhea (13.3%) and urinary urgency (13.3%). A study conducted in *Fortaleza* city addresses that these symptoms are related to the patients' emotional state before the procedure,⁷ which are presented in this study as anxiety, reported by 66.7% of the participants.

The stimuli associated with the adaptation problems identified for nutrition and elimination were as follows:

altered alimentary pattern (focal) and emotional (contextual) tension.

The activity and rest component is defined by Roy as fundamental necessities for the human being and encompasses movement and rest.⁹ Patients expressed discomfort for daily activities (60.0%), activity intolerance (86.7%), movement limits (33.3%) and impaired walking (40.0%). The adaptive problems identified were as follows: inadequate pattern of activity and rest; activity intolerance; mobility and walking.

The stimuli associated with adaptation problems identified for activity and rest were as follows: acute (focal) pain, decreased cardiac (focal) supply, movement limitation (contextual), and emotional (contextual) tension.

Changes in locomotion and movement in patients with heart disease were a common finding in other studies.^{7,22}

A study carried out with patients undergoing cardiac surgery states that the presence of precordial pain as a focal stimulus may lead to or contribute to several alterations, such as limitation of mobility and anxiety.²³

The last component of the five physiological needs identified in Roy's model of adaptation, protection, focuses on the need for skin integrity and adequate maintenance of the immune system, since patients undergoing an invasive procedure present a potential risk of imbalance in the immune system.⁹ Integrity of the skin was not evaluated in this study, since the patients were at a time prior to the percutaneous invasive procedure.

None of the patients had fever, and 13.3% presented with drug allergy, an important fact, since during the invasive procedures, iodinated contrast agents are used, which can trigger serious allergic reactions. Thus, the common problem of adaptation to this component was: potential for inefficient coping for allergic reaction. And the associated stimuli were as follows: performing an invasive procedure (focal) and presence of coronary disease (contextual).

Regarding the complex neurological system, Roy analyzed the measurement of the following aspects: presence of nervousness and presence of anxiety.⁹ As observed, the patients were calm (86.6%), but anxious about the procedure (66.7%), and with fear (86.7%). Therefore, it was denominated then like the main adaptive problem related to the neurological system: instability of behavior and humor. For this, the associated stimuli were as follows: the need to perform an invasive procedure (focal) and coronary disease (contextual). This finding was common to that of a study carried out in *Fortaleza* city with 233 patients, in which 64.9% had altered neurological function.⁷

Fear and anxiety are a common finding, especially in those patients who perform a procedure for the first time. Researches indicate that patients present a feeling of physiological or emotional disturbance related to an identifiable source, perceived as dangerous, in this case, the percutaneous invasive procedure, which can be minimized with an understandable dialogue and information about the unknown (procedure).^{7,24}

The analysis of the adaptive problems, as well as the possible influencing stimuli, reveals the aspects worthy of greater prominence in the elaboration of a care plan, thus directing nursing care to the real needs of the coronary patient.

Given the above-mentioned, the interpretation of this information continues related to the inference of the nursing diagnoses, according to NANDA, which are present in the studied population.

Nursing diagnoses for patients bearing coronary disease

As shown in **Table 4**, 10 main nursing diagnoses according to NANDA taxonomy II were identified, with the most frequent being the risk of activity intolerance, activity intolerance, anxiety and fear.

Relating to the physiological mode of Roy, components and complex system, the most frequent was activity and rest, represented by four diagnoses of NANDA: risk of activity intolerance, activity intolerance, impaired physical mobility, and impaired walking.

Despite some differences between Roy's taxonomy and NANDA's taxonomy, there is a strong relationship between them, which may be due to the participation of Callista Roy as a member of NANDA since the first works of this taxonomy, allowing this relationship.¹¹

CONCLUSIONS

The Callista Roy's Adaptation Model, chosen as a theoretical reference for the identification of the problems, provided an understanding of the experience of patients with coronary disease, through an adaptation perspective.

This understanding is relevant for nursing care, making visible the main adaptive problems worthy of attention, thus providing a direction of the nursing interventions that collaborate for a positive adaptation of the patients to the coronary disease.

It is observed a similarity between the denomination used by Roy to describe the common adaptation problems and the diagnoses established by the NANDA Taxonomy II.

One of the major limitations of this study is its small sample: 15 patients, mainly related to the current crisis experienced by the *Rio de Janeiro* State, which directly affected the reduced number of hospital procedures, including the hemodynamic procedure.

On the other hand, the results presented highlight the important role of the nurse in the adaptation of the individuals, in an attempt to reduce some influencing stimuli, through the pre-procedure nursing visit and early guidance on the procedure.

Through this research, it is hoped to contribute both to clinical practice, with a view to improving the care of patients with coronary disease, and to the production of future studies using the Nursing Theories in the Nursing Care Systematization.

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Corresponding author:

Daniele do Carmo Eleto Hamadé

Address: R. Conde de Itaguaí, 16, bl. 2, apto 101
Bairro Tijuca, Rio de Janeiro/RJ, Brazil

Zip code: 20.511-200

E-mail address: dany_hamade12@hotmail.com

Telephone number: +55 (21) 99650-6684

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