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RESEARCH

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FACTORS FOR NON-DONATION OF ORGANS AND TISSUES IN NEUROLOGICAL INTENSIVE CARE UNIT

Fatores para não doação de órgãos e tecidos em uma unidade de terapia intensiva neurológica
Factores de no donación de órganos y tejidos en unidad de cuidados intensivos neurológicos

Shirlene Cerqueira dos Santos¹ 
Mavy Batista Dourado¹ 
Mineia Pereira da Hora Assis² 
Mabel Olimpia Lima Silva Silva² 
Raisa Noelia Sant'Ana Souza Santos¹ 
Anna Paula Lima de Souza¹ 

ABSTRACT

Objective: to identify the factors related to non-donation of organs and tissues in potential donors diagnosed with brain death, in a Neurological Intensive Care Unit. **Method:** descriptive, cross-sectional, retrospective, documentary study with a quantitative approach, of brain death protocols, from May 2017 to May 2020 and analyzed using the Statistical Package for Social Sciences program, version 22.0, using descriptive statistics. **Results:** 72 brain death protocols were completed, predominantly female (63.9%), brown (66.2%), aged 50 to 64 years (43.1%), described as the main cause subarachnoid hemorrhage (40.3%), with the outcome of non-effective donation (62.1%) and the main factor for non-donation to family refusal (45.7%). **Conclusion:** the need for greater investment in educational campaigns is emphasized, in order to reduce the rates of family refusal.

DESCRIPTORS: Intensive care units; Brain death; Tissue and organ procurement.

¹ Hospital Geral Roberto Santos, Bahia, Salvador, Brazil

² Secretaria da Saúde do Estado da Bahia, Bahia, Salvador, Brazil

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Corresponding Author: Shirlene Cerqueira dos Santos, E-mail: shirlene_cerqueira@hotmail.com

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RESUMO

Objetivo: identificar os fatores relacionados a não doação de órgãos e tecidos em potenciais doadores com diagnóstico de morte encefálica, em uma Unidade de Terapia Intensiva Neurológica. **Método:** estudo descritivo, transversal, retrospectivo, documental com abordagem quantitativa, de protocolos de morte encefálica, no período de maio de 2017 a maio de 2020 e analisados através do programa Statistical Package for Social Sciences, versão 22.0, por meio de estatística descritiva. **Resultados:** foram finalizados 72 protocolos de morte encefálica, predominância do sexo feminino (63,9%), pardas (66,2%), na faixa etária de 50 a 64 anos (43,1%), descreve-se como principal causa a hemorragia subaracnoidea (40,3%), com o desfecho de doação não efetiva (62,1%) e o principal fator para não doação a recusa familiar (45,7%). **Conclusão:** salienta-se a necessidade de um maior investimento em campanhas educativas, com o intuito de reduzir os índices de recusa familiar.

DESCRITORES: Unidade de terapia intensiva; Morte encefálica; Obtenção de tecidos e órgãos.

RESUMEN

Objetivo: identificar factores relacionados con la no donación de órganos y tejidos en potenciales donantes diagnosticados de muerte encefálica, en una Unidad de Cuidados Intensivos Neurológicos. **Método:** estudio descriptivo, transversal, retrospectivo, documental con enfoque cuantitativo, de protocolos de muerte encefálica, de mayo de 2017 a mayo de 2020 y analizados mediante el programa Statistical Package for Social Sciences, versión 22.0, utilizando estadística descriptiva. **Resultados:** se completaron 72 protocolos de muerte cerebral, predominantemente mujeres (63,9%), morenos (66,2%), de 50 a 64 años (43,1%), descrita como la principal causa de hemorragia subaracnoidea (40,3%), con el resultado de donación efectiva (62,1%) y principal factor de no donación por rechazo familiar (45,7%). **Conclusión:** se enfatiza la necesidad de una mayor inversión en campañas educativas, con el fin de reducir las tasas de rechazo familiar.

DESCRIPTORES: Unidades de cuidados intensivos; Muerte encefálica; Obtención de tejidos y órganos.

INTRODUCTION

Organ and tissue donation is a frequently discussed topic today, as transplantation is a therapeutic option in cases where the patient suffers from a chronic disabling disease.¹

Regarding this, Brain Death (BD) is understood as the complete and irreversible loss of brain functions, defined by the cessation of cortical and brainstem activities, because of the presence of edema and massive destruction of brain tissue, which implies the impossibility of maintaining life despite the use of artificial means such as mechanical ventilation and vasoactive drugs.²

After the determination of BD, the potential donor (PD) should be cared for with the aim of maintaining the body in favorable conditions for organ and tissue donation, through precise and complex actions carried out by the multidisciplinary health team.³

In this scenario, the PD has clinical conditions consistent with the BD criteria and is therefore considered from the opening of the protocol, while the effective donor is the one who has undergone confirmation of the diagnosis of BD, has no medical contraindication to donation and is referred to the operating room for the removal of organs.⁴

In this sense, the effective donation of organs and tissues is extremely important, because it contributes to the reduction of the waiting list for the performance of transplants, as well as to the return of transplanted patients to the activities performed on a daily basis. Thus, the early detection of BD, as well as adequate care to ensure its viability for transplantation and the proper management of the family, recognizing that for the family, the

diagnosis of BD is a moment full of doubts and fears, becomes crucial for the effectiveness of the donation process.⁵

With respect to non-donation, family refusal is one of the main causes of non-effective organ and tissue donation⁶, so family members should be welcomed from the opening of the BD protocol to the family interview, and the time for decision making is a significant factor for the effectiveness of organ and tissue donation or not.⁷

According to data published by the Brazilian Association of Organ Transplantation (ABTO), between January and September 2020, 7,725 potential donors were notified in the country, of which only 2,438 became effective donors. The main reasons for not donating are family refusal (37%) and medical contraindication (18%).⁶

The problems of organ and tissue donation are related to failures in the BD recognition processes, failures in the family interview, which in many cases is conducted by professionals not trained for this function, failures in the clinical care of the deceased donor, and poorly identified contraindications.⁴

Thus, adequate clinical management of the PD and knowledge of the potential donor's wishes, combined with a correct understanding of the BD process by family members, are some of the factors that favor the effectiveness of the donation, in addition to offering humanized care that promotes a relationship of trust between the care team and the family members.⁸ That being said, the objective is to identify factors associated with non-donation of organs and tissues in potential donors diagnosed with BD in a neurological intensive care unit (ICU).

METHOD

This is a descriptive, cross-sectional, retrospective, documentary study with a quantitative approach, based on data from brain death protocols of patients hospitalized in the neurological intensive care unit of a large public hospital in the state of Bahia, from May 2017 to May 2020, who were included in the follow-up forms used by the Intra-Hospital Commission for Organ and Tissue Donation for Transplantation (CIHDOTT) of the referring hospital.

The CIHDOTT follow-up forms that were analyzed had as inclusion criteria: 1. protocols in which people described were potential organ and tissue donors of both sexes and older than 18 years. 2. Complete BD protocol records (from the opening of the brain death protocol to its outcome).

And as exclusion criteria: 1. CIHDOTT follow-up forms with incomplete records, e.g. not including socio-demographic data of potential donors and information on reasons for non-donation. 2. Patients who were effective corneal donors but whose death was not confirmed by opening and closing the BD protocol. 3. Patients who had cardiorespiratory arrest prior to protocol closure.

The sample was selected by a non-probabilistic method, e.g. by convenience. Thus, the total number of protocols analyzed resulted from the quantitative protocols followed by CIHDOTT during the predetermined period of the study. A data collection instrument developed by the authors was used, which included sociodemographic data of the patient, clinical information related to the diagnosis of BD, and the outcome of the protocol.

Data were tabulated and processed using the Statistical Package for Social Sciences (SPSS), version 22.0, with descriptive statistics. Variables were presented descriptively in tables with absolute (n) and relative (%) frequencies.

The ethical aspects of the research were respected, and the study was approved by the Ethics and Research Committee of the referring hospital through "Plataforma Brasil", through the Consubstantiated Opinion n°4.456.435, CAEE n°33746020.7.0000.5028.

RESULTS

From May 2017 to May 2020, 72 PD-BD protocols were completed in the neurological intensive care unit, of which 31 (43.1%) were between 50 and 64 years of age, 22 (30.6%) were between 35 and 49 years of age, and 12 (16.7%) were in the age group of 18 to 34 years. Regarding the gender of the PDs, 46 (63.9%) were female and 26 (36.1%) were male.

Race/color was reported as brown in 43 (66.2%) protocols, black in 17 (26.2%), and white in 5 (7.7%). Regarding origin, 53 (75.7%) were from Salvador and the metropolitan region, and 17 (24.3%) from cities in the interior of Bahia.

The variable religion was found only in 1 (1.4%) of the protocols analyzed, because it was present in the social service form attached to it, since this item is not present in the spreadsheets of follow-up of patients with suspected BD used by CIHDOTT.

With respect to the clinical variables analyzed, 29 (40.3%) patients had subarachnoid hemorrhage as the cause of BD, 21 (29.2%) hemorrhagic stroke, 12 (16.7%) intracranial tumors, 5 (6.9%) ischemic stroke and 5 (6.9%) hypoxic-ischemic lesions.

Table 1 – Distribution of socio-demographic data of BD patients hospitalized in the Neurological Intensive Care Unit of a large public hospital in the State of Bahia. Salvador, BA, Brazil, May 2017 to May 2020

| Sociodemographic data | N | % |
|--|----|------|
| Age | | |
| 18 to 34 years | 12 | 16,7 |
| 35 to 49 years | 22 | 30,6 |
| 50 to 64 years | 31 | 43,1 |
| Older than 60 years | 7 | 9,7 |
| Sex | | |
| Female | 46 | 63,9 |
| Male | 26 | 36,1 |
| Race/Color* | | |
| Black | 17 | 26,2 |
| Brown | 43 | 66,2 |
| White | 5 | 6,9 |
| Provenance** | | |
| Salvador and metropolitan area | 53 | 75,7 |
| Cities in the interior of the State of Bahia | 17 | 24,3 |
| Religion | | |
| Evangelical | 1 | 1,4 |

Table 1 – Cont.

| | | |
|-----------|----|------|
| Not found | 71 | 98,6 |
|-----------|----|------|

Source: Data Collection. Salvador, Bahia, Brazil. 2020.

* Data missing for 7 protocols.

** Data missing for 2 protocols.

About the comorbidities related, arterial hypertension was present in isolation in 23 (33.3%) and in 12 (17.4%) associated with other diseases, in addition to 11 patients (15.9%) who had no type of comorbidity associated with the diagnosis of BD.

Regarding risk habits, 47 patients (67.1%) did not have any risk habits, but 9 (12.9%) were alcoholics, 7 (10.0%) smokers, 6 (8.6%) had alcohol consumption and smoking and 1 (1.4%) had the use of smoking associated with other drugs.

About the factors of ineffectiveness of organ donation identified in the analyzed protocols, in the family interview there was refusal for organ donation in 34 (47.2%), acceptance for donation in 24 (33.3%) and in 14 (19.4%) it was not performed.

Regarding the effectiveness of donation, in 36 protocols (62.1%) it was not effective, in 22 (37.9%) it was effective. Finally, in 27 protocols (47.4%), the main reason for not performing donation was family refusal, followed by medical contraindication in

20 (35.1%), cardiorespiratory arrest in 4 (7.0%) and the patient's lack of willingness to donate in 4 (7.0%). Family refusal was justified in 10 (38.5%) cases by the desire of the family members to have an intact body, in 7 (26.9%) cases by the family members' unwillingness to wait for organ recovery, in 5 (19.2%) cases by the family members' previous opposition to donation, and in 4 (15.4%) cases by disagreement among the family members.

DISCUSSION

In the present study, there was an incidence of BD cases in female PDs aged between 50 and 64 years, in which the age range found corroborates with the Brazilian Association of Organ Transplantation, that in 2020, 34% of BD cases were in PDs aged 50 to 64 years.⁴

Table 2 – Distribution of clinical aspects of BD patients hospitalized in the Neurological Intensive Care Unit of a large public hospital in the State of Bahia. Salvador, BA, Brazil, May 2017 to May 2020

| Clinical Aspects | N | % |
|------------------------------|----|------|
| Diagnosis of BD | | |
| Ischemic Stroke | 5 | 6,9 |
| Hemorrhagic Stroke | 21 | 29,2 |
| Subarachnoid Hemorrhage | 29 | 40,3 |
| Intracranial Tumors | 12 | 16,7 |
| Hypoxic-ischemic lesion | 5 | 6,9 |
| Comorbidities* | | |
| Arterial Hypertension (SAH) | 23 | 33,3 |
| Diabetes mellitus (DM) | 2 | 2,9 |
| Neoplasms | 2 | 2,9 |
| Others | 9 | 13,2 |
| SAH+DM | 5 | 7,2 |
| SAH+ Others | 12 | 17,4 |
| SAH+ DM+ Overweight | 1 | 1,4 |
| SAH+ DM+ Others | 4 | 5,8 |
| Had no comorbidities | 11 | 15,9 |
| Risk habits* | | |
| Alcoholism | 9 | 12,9 |
| Smoking | 7 | 10,0 |
| Alcoholism + Smoking | 6 | 8,6 |
| Smoking + other drugs | 1 | 1,4 |
| Didn't have any risky habits | 47 | 67,1 |

Source: Data Collection. Salvador, Bahia, Brazil. 2020.

* Data missing for 3 protocols.

** Data missing for 2 protocols.

Table 3 – Distribution of factors of non-effectiveness of organ donation in BD patients hospitalized in the Neurological Intensive Care Unit of a large public hospital in the State of Bahia, Salvador, BA, Brazil, May 2017 to May 2020

| Organ donation ineffectiveness factors | N | % |
|---|----------|----------|
| Family Interview | | |
| Acceptance to donate | 24 | 33,3 |
| Refusal to donate | 34 | 47,2 |
| Not done | 14 | 19,4 |
| Outcome of the donation | | |
| Effective | 22 | 37,9 |
| Not effective | 36 | 62,1 |
| Factors of non-effectiveness of the donation | | |
| Family refusal | 26 | 45,7 |
| Patient did not manifest desire in life | 4 | 7,0 |
| Discontent with hospital care | 1 | 1,8 |
| Religious convictions | 1 | 1,8 |
| Medical contraindication | 20 | 36,8 |
| Cardiorespiratory Arrest | 4 | 7,0 |
| Justification of family refusal | | |
| Desire of the whole body | 10 | 38,5 |
| Family opposed to donation | 5 | 19,2 |
| Family divergence | 4 | 15,4 |
| Delay in the capture process | 7 | 26,9 |

Source: Data Collection. Salvador, Bahia, Brazil. 2020.

In a study conducted in a hospital of high complexity of care in the southern region of Brazil, it was found that 56.68% of the cases of BD occurred in women⁹, which can be explained by the physiological changes specific to women in this age group, such as the predisposition to cerebrovascular diseases associated with hormonal problems.

Corroborates an Asian study conducted in 2017, showed that the prevalence of aneurysms is higher in women in the age group found from 50 to 64 years, due to the decline in estrogen concentrations in the postmenopausal period, which favors the weakening of the vascular endothelium, predisposing to the occurrence of cerebrovascular disease.¹⁰

Race/color was included in the present study to determine if there is a prevalence of BD in individuals with certain skin colors, as susceptibility to certain diseases may be greater due to genetic issues specific to a population group. The analysis of this variable was not found in studies dealing with BD, proving that this is an aspect still neglected in this type of investigation, but it is a predictor of the prevalence of certain diseases in certain populations, as well as social inequalities, such as worse health conditions due to skin color, understood as a public health problem.¹¹

The variable religion was not found in 98.6% of the protocols, which can be justified by the fact that there is no specific place to fill it in, demonstrating that such information is not yet

understood as important for the process of effective organ and tissue donation, which explains the fact that it is not included in quantitative studies dealing with the subject.

In this study, it was demonstrated that the prevalence of hypertensive PDs was 33.3% of the cases, since according to the Brazilian Society of Cardiology, stroke is the main pathology associated with vascular lesions caused by systemic arterial hypertension.¹² The main risk factors were alcoholism and smoking, confirming the main findings of national studies on the subject.^{9;4;5;13;14-15}

Subarachnoid hemorrhage (SAH) was found to be the leading cause of BD (40.3%), followed by hemorrhagic stroke (29.2%). A North American and Asian study investigating the association of SAH predisposition in male and female smokers showed that, regardless of race/color, the likelihood of suffering from SAH increases with age in women who are persistent smokers.¹⁶⁻¹⁷

Another finding that may justify the prevalence of people with advanced age in whom the cause of BD was non-traumatic, such as SAH, is the fact that the place where the study was conducted is a specialized unit that preferentially meets this patient profile, being the only one existing in the Unified Health System (SUS) of Bahia, which acts in the integral care of neurosurgical patients in the pre – and post-operative period, of AVCH, hemorrhage and intracranial tumors, being among the existing units in the

institution, the one that is a reference in the opening and closing of the BD protocol, as well as in the care of the PD.¹⁸

Regarding the family interview for the action of organs and tissues, it was negative, that is, the family members decided not to perform organ donation in 4 7.2% of cases, where in 4 5.6% there was family refusal as the main reason, corroborating with national studies that emphasize family refusal as the greatest obstacle to the effectiveness of organ donation.^{13,5}

A study conducted in 2018 in a large public hospital in the interior of the state of São Paulo showed that family refusal alone accounted for almost half of the causes of non-organ donation, or approximately 45.3%⁴, significantly affecting the shortage of available organs and reducing the probability of cure for patients on the waiting list.¹⁹

Some of the reasons for non-donation are: family disagreement; lack of knowledge about the will of the potential donor; desire to keep the body intact; lack of understanding about the diagnosis of BD; religious issues; dissatisfaction with hospital care; delay in releasing the body; distrust and fear of organ trafficking.²⁰⁻²¹

In addition to family refusal as a factor preventing the continuity of the organ donation process, medical contraindications were also present in this study in 35.1% of cases, the main causes being intracranial tumors and infections such as HTLV I and II.

Regarding the medical contraindications mentioned above, these fall into the group of absolute contraindications to organ donation, due to the increased risk of transmission of serious infections to the PD, such as uncontrolled sepsis (even with the use of antibiotics), HIV, HTLV I and II, acute hepatitis and viral diseases (such as viral meningoencephalitis) and the spread of neoplasms with a recent history or with any degree of malignancy, in addition to some primary tumors of the central nervous system, among them the glioblastoma.⁴

The donation of organs and tissues is extremely important for society, as it allows countless people to return to activities of daily living and the labor market, so it is essential to develop campaigns aimed at disseminating the donation process, as well as research on the subject and activities of permanent training in the service²² to train the professionals involved in the process, with the aim of increasing the rates of effective donation.

A limitation of the study is the collection of retrospective data over a relatively short period of time, which made it impossible to analyze a larger number of BD protocols.

CONCLUSION

It was found that the cases of BD in PDs, in which the majority were females aged 50 to 64 years, had arterial hypertension as a risk factor, as a cause for the development of BD subarachnoid hemorrhage and because of ineffective donation due to family refusal.

In a scenario where the main cause of non-effective organ and tissue donation was family refusal, the need for greater investment by institutions and the involvement of health profes-

sionals in educational campaigns is highlighted, whether at the institutional level through health education activities or through dissemination means such as television channels and social networks, in order to raise awareness among the general population of the importance of accepting donation, since the increase in the number of transplants performed annually has a significant impact on reducing the number of people waiting for an organ and, consequently, being able to return to their daily activities.

Finally, it is suggested that further studies be carried out in other intensive care units with a diversified care profile, e.g. not only for neurological patients, with the aim of identifying and possibly linking the occurrence of BD cases in critically ill patients of different specialties, in addition to including the question of religion in the CIHDOIT follow-up worksheets for future studies linking acceptance of organ donation and religion.

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