PATIENT WITH LATE DIAGNOSIS OF TYPE 2 DIABETES MELLITUS AND DIABETIC NEUROPATHY: CASE REPORT

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ABSTRACT

The present study aims to describe, through a clinical case report and the systematic construction of the Nursing Process, the care provided to a patient diagnosed with type 2 Diabetes Mellitus (DM2) and Systemic Arterial Hypertension (SAH), both associated with the complication of Peripheral Diabetic Neuropathy. The methodological approach is based on the elaboration of four Nursing Processes based on the classifications of NANDA, NIC and NOC, characterizing the study as explanatory and correlational. The clinical case refers to the patient identified by the initials S.D.C., and data collection was carried out at his home, located in the city of Manaus, state of Amazonas. In addition, bibliographic searches were carried out in the electronic databases PubMed, LILACS and SciELO, with the objective of theoretically substantiating the discussion of clinical findings and nursing planning. This case report reinforces the significant risks associated with inadequate control of DM2 and SAH, which can result in chronic complications, such as peripheral neuropathy. Thus, the importance of continuous and effective monitoring by a multiprofessional team is evidenced, as well as the adoption of strategies that favor treatment adherence. Such actions are essential to prevent or minimize complications that compromise the quality of life and functional autonomy of patients affected by these chronic conditions.

Keywords: Type 2 diabetes mellitus. Diabetes Complications. Peripheral Diabetic Neuropathy. Systemic Arterial Hypertension. Nursing Process.

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INTRODUCTION

Type 2 Diabetes Mellitus (DM2) is a chronic pathology of metabolism that has a high global prevalence rate, characterized by an imbalance in the production and use of insulin, this condition manifests itself with several serious complications, both microvascular and macrovascular in nature. According to the International Diabetes Federation (IDF, 2019), "these complications compromise the health and well-being of patients, requiring continuous medical attention and management strategies."

Diabetic neuropathy (DN) is a common chronic complication of type 2 diabetes mellitus (T2D), resulting from peripheral nerve damage due to inadequate glycemic control. As highlighted by Rolim et al., (2022), DN is an early, polymorphic, and stealthy complication, in which at least half of individuals remain asymptomatic for many years, while the other half manifest with acute or chronic neuropathic pain.

Gagliardi and Antonio (2019), state that peripheral neuropathy associated with diabetes mellitus is insidious and its development may not be immediately evident. Often, the severity of the condition is not clearly reflected in the signs and symptoms that develop, which can delay diagnosis and, consequently, appropriate treatment.

This reality is especially worrying in view of the epidemiological data in Brazil. According to the Brazilian Diabetes Society (2024), the country registers more than 16 million people with diabetes, which places it among the five countries with the highest number of cases in the world. Studies show that diabetic neuropathy affects between 30% and 50% of individuals with type 2 diabetes mellitus, and is considered one of the most common and debilitating chronic complications.

In addition, the prevalence tends to increase with the duration of the disease and with poor glycemic control, common factors in the Brazilian population due to the difficulty of access to regular health care and the lack of adherence to healthy lifestyles.

Diabetic neuropathy (DN) is one of the most common chronic complications of type 2 diabetes mellitus (DM2), characterized by progressive lesions in the peripheral nerves. According to the Brazilian Diabetes Society (2024), its evolution is usually slow and silent. This insidious nature is reinforced by Gagliardi and Antônio (2019), who point out the absence of evident signs and symptoms in the early stages, making diagnosis and treatment difficult.

The clinical presentation of DN is varied, with distal symmetrical peripheral neuropathy being the most frequent form. It preferentially affects the lower limbs, bilaterally, with symptoms such as tingling, numbness, burning pain, sensation of electric shock and

progressive sensory loss. These changes increase the risk of injury, infection, and, in severe cases, amputations.

Another relevant manifestation is autonomic neuropathy, which compromises involuntary functions of the body. Symptoms include gastrointestinal changes (nausea, constipation, diarrhea), urinary and sexual dysfunctions, abnormal sweating, and postural hypotension. Although often underestimated, these changes have a significant impact on quality of life.

Focal or multifocal neuropathy can also occur, with the involvement of isolated nerves or groups of nerves, resulting in intense pain, localized weakness and even paralysis, as in cranial nerves.

The objective of this report is to deepen the understanding of the nuances of diabetic neuropathy and to emphasize the importance of early diagnosis and effective intervention to prevent the worsening of the disease.

METHODOLOGY

This article is a type of descriptive case study that presents the clinical experience of a patient, addressing his clinical picture, diagnosis, treatment and evolution. Gomes, Silva (2020), states that this methodology allows sharing knowledge and reflections on specific cases, contributing to professional practice and improvement of health care.

This is a case report of a patient with diabetes mellitus and systemic arterial hypertension, complicated by peripheral neuropathy, using the Nursing Process based on COFEN Resolution No. 736/2020 as a method, following the steps. On the theoretical basis, the research was collected in the databases: SCIELO, LILACS, PUBMED in the period of time from 2019 to 2024.

The nursing process will be systematic, individualized and based on scientific evidence, ensuring a safe and effective outcome. In addition, it is a dynamic process, which can be adjusted according to the evolution of the patient's clinical condition and the response to the implemented interventions

The study participant was duly informed about the objective of the research, guaranteeing the confidentiality of his information and the right to withdraw from participation in any stage of the study, without prejudice. After the clarification, the Informed Consent Form (ICF) was presented, which was signed. Data collection took place in March 2025, during a home visit.

CASE REPORT

S.D.C., 51 years old, male, brown, residing in Manaus/AM. Height: 1.79 m; Weight: 86kg. Diagnosis: Type 2 Diabetes Mellitus (DM2) and Systemic Arterial Hypertension (SAH). Main Complaints: reports gastric discomfort and stomach pain after medication administration.

Current clinical history: Approximately two years ago, the patient developed complications resulting from peripheral diabetic neuropathy, characterized by progressive loss of sensation in the upper and lower limbs, accompanied by tingling, frequent muscle spasms, neuropathic pain, and a persistent sensation of cold in the lower limbs. In addition, there were hyperpigmented spots on the left lower limb, skin dryness, and mild edema in the feet.

Clinical Evaluation and Parameters on the Day of the Consultation: Fasting glucose: 163 mg/dL; Blood pressure: 140x90 mmHg; F.C: 20 ipm; F.R: 26 imp. Continuous use medications: Metformin 850 mg, twice a day; Glycaside 60 mg, twice a day; Olmesartan Medoxomil 20 mg, once daily.

Health and Lifestyle History: The patient faced difficulties in adhering to a balanced diet. She reports that carelessness with preventive measures is associated with the stressful routine of her profession as a military police officer and a family history of Diabetes Mellitus and Systemic Arterial Hypertension; his father, who also had DM and SAH, died due to an aneurysm. He admits the delay in seeking medical assistance, a situation that worsened after two SARS-CoV-2 infections in 2020, which exacerbated the symptoms of fatigue and further decompensated his glycemic control. The use of specification stockings and analgesic creams has not provided significant interruption of neuropathic pain in the lower limbs.

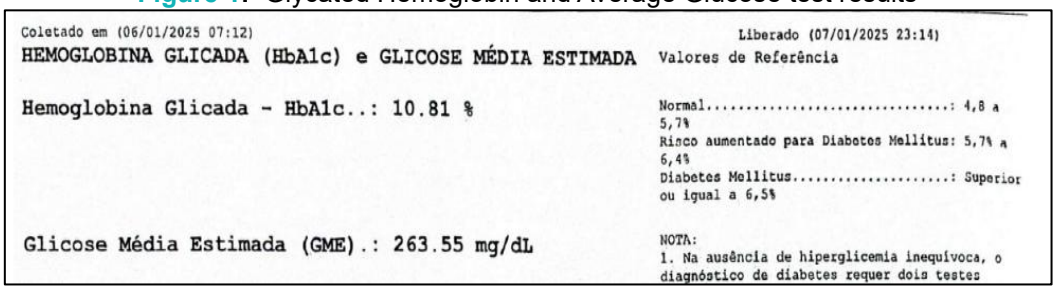
On physical examination: hypertensive, hyperglycemic, overweight, normocardium, afebrile, eupneic, on room air, lucid, oriented in time, space and person, walks. Hypergmentation spots on the skin, on the skull without abnormalities, decreased visual acuity, use of prescription glasses, photoreactive pupils; normal hearing; mouth without abnormalities other fissures; neck without abnormalities; normal thoracic expansion and no anatomical changes; pulmonary auscultation; no evidence of abnormalities and adventitious sounds, painless, globose, and flaccid abdomen on palpation with RHA+; genitourinary with oliguria; in the upper and lower limbs with decreased bilateral sensitivity and motor strength.

Laboratory tests indicated: complete blood count, glycated hemoglobin, electroneumiography.

The results of the glycated hemoglobin (HbA1c) test, the value of 10.85% is significantly altered, as evidenced in Figure 1, indicating unsatisfactory glycemic control over the last 60 to 90 days. Unlike fasting blood glucose, which reflects only glucose concentration at the time of collection, HbA1c allows for a broader assessment of long-term glycemic control. According to Silva et al. (2019), "glycated hemoglobin reflects the average blood glucose concentrations during the previous two or three months, being an essential tool in the follow-up of diabetic patients". Also according to the authors, in individuals with diabetes, the ideal HbA1c value should be kept below 7%, in order to reduce the risk of micro and macrovascular complications.

Estimated mean glucose (EMG) is an indicator used to translate glycated hemoglobin (HbA1c) values into mean blood glucose levels, expressed in mg/dL. It is a practical tool that allows you to assess glycemic control over the last two to three months.

Figure 1: Glycated Hemoglobin and Average Glucose test results



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HEMOGLOBINA GLICADA (HbA1c) e GLICOSE MÉDIA ESTIMADA

Valores de Referência

Hemoglobina Glicada - HbA1c..: 10.81 %

Normal.....: 4,8 a 5,7%
Risco aumentado para Diabetes Mellitus: 5,7% a 6,4%
Diabetes Mellitus.....: Superior ou igual a 6,5%

Glicose Média Estimada (GME).: 263.55 mg/dL

NOTA:
1. Na ausência de hiperglicemia inequívoca, o diagnóstico de diabetes requer dois testes

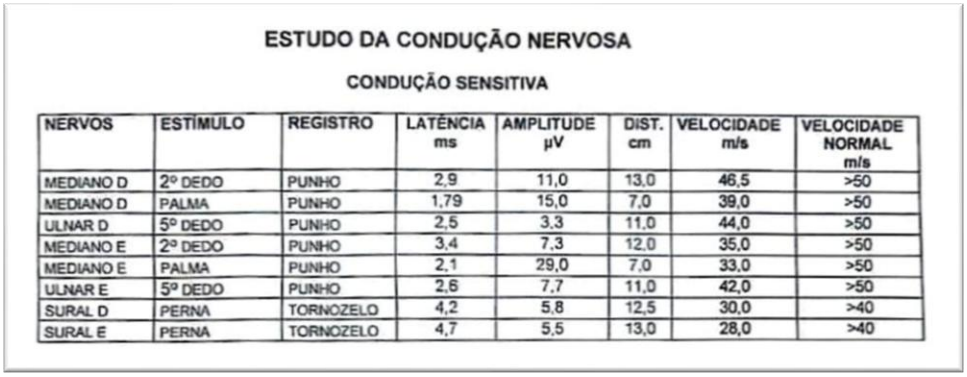
Source: Research authors, 2025 (image authorized).

According to the American Diabetes Association (2025), "GME is calculated from the formula: GME (mg/dL) = (28.7 × HbA1c) – 46.7, allowing health professionals to translate the HbA1c result into a more understandable value for patients". For example, an HbA1c of 7% corresponds to an estimated average glucose of approximately 154 mg/dL. Also according to the ADA (2025), it is recommended that individuals with type 2 diabetes maintain HbA1c levels below 7%, as well as the result of the Average Glucose with a value of 263.55 mg/dL, where the average is altered (Figure 1).

Another electroneuromyographic examination of patient S.D.C., as illustrated in Figure 2, revealed alterations compatible with a picture of sensory-motor polyneuropathy of probable axonal etiology, with moderate involvement and a symmetrical and diffuse pattern.

Sensory conduction examination showed a bilateral reduction in conduction velocity in the median, ulnar and sural nerves. Similarly, the motor nerves — right median, right ulnar, fibular, and posterior tibialis — showed decreased conduction velocity on both sides.

Figure 2: Results of the Nerve Conduction test: Sensory conduction



ESTUDO DA CONDUÇÃO NERVOSA

CONDUÇÃO SENSITIVA

NERVOS	ESTÍMULO	REGISTRO	LATÊNCIA ms	AMPLITUDE µV	DIST. cm	VELOCIDADE m/s	VELOCIDADE NORMAL m/s
MEDIANO D	2º DEDO	PUNHO	2,9	11,0	13,0	46,5	>50
MEDIANO D	PALMA	PUNHO	1,79	15,0	7,0	39,0	>50
ULNAR D	5º DEDO	PUNHO	2,5	3,3	11,0	44,0	>50
MEDIANO E	2º DEDO	PUNHO	3,4	7,3	12,0	35,0	>50
MEDIANO E	PALMA	PUNHO	2,1	29,0	7,0	33,0	>50
ULNAR E	5º DEDO	PUNHO	2,6	7,7	11,0	42,0	>50
SURAL D	PERNA	TORNOZELO	4,2	5,8	12,5	30,0	>40
SURAL E	PERNA	TORNOZELO	4,7	5,5	13,0	28,0	>40

Source: Research authors, 2025 (image authorized).

In addition, prolongation of distal latency was identified in the left median and left posterior tibial nerves, while the F-wave responses of the right ulnar and right posterior tibial nerves remained within normal limits.

Examination with a monopolar needle electrode demonstrated preserved muscle potentials, with normal amplitude, duration, and morphology. No evidence of spontaneous activity at rest was found (Figure 3).

Figure 3: Results of the Nerve Conduction test: Motor conduction

ESTUDO DA CONDUÇÃO NERVOSA

CONDUÇÃO MOTORA

NERVOS	ESTÍMULO	REGISTRO	LATÊNCIA ms	AMPLITUDE µV	DIST. cm	VELOCIDADE m/s	VELOCIDADE NORMAL m/s
MEDIANO D	PUNHO	APB	3,6	7,1			>50
	COTOVELO	APB	9,3	5,8	25,0	44,0	>50
MEDIANO E	PUNHO	APB	4,6	6,9			>50
	COTOVELO	APB	9,5	6,4	25,5	52,0	>50
ULNAR D	PUNHO	ADM	2,5	10,4			>50
	ABX. COTOVELO	ADM	8,1	9,3	23,5	42,0	>50
	ACM. COTOVELO	ADM	10,1	9,8	8,0	40,0	>50
FIBULAR D	TORNOZELO	EDB	5,2	5,4			>40
	ABX.CBÇA.FIB.	EDB	16,5	3,4	36,0	32,0	>40
	ACM.CBÇA.FIB.	EDB	18,2	3,1	8,0	35,0	>40
FIBULAR E	TORNOZELO	EDB	6,5	2,2			>40
	ABX.CBÇA.FIB.	EDB	18,4	2,0	36,0	30,0	>40
	ACM.CBÇA.FIB.	EDB	19,7	2,0	5,0	38,5	>40
TIBIAL D	TORNOZELO	ABD. HÁLUX	5,6	15,5			>40
	FOSSA POPLÍTEA	ABD. HÁLUX	18,9	7,7	42,0	31,5	>40
TIBIAL E	TORNOZELO	ABD. HÁLUX	6,0	13,5			>40
	FOSSA POPLÍTEA	ABD. HÁLUX	19,3	7,6	43,0	32,0	>40

Legenda: APB: abdutor curto do polegar ADM: abdutor do dedo mínimo
EDB: extensor curto dos dedos ABD. HÁLUX: abdutor do hálux

Source: Research authors, 2025 (image authorized).

This resulted in a condition compatible with sensory-motor polyneuropathy with an axonal pattern, with diffuse, symmetrical distribution and a moderate degree of impairment, evidencing the effects of chronic glycemic uncontrol.

RESULTS AND DISCUSSION

Nursing process

To structure the clinical case of the S.D.C., the systematic nursing process will be used for data collection, nursing diagnosis, planning, implementation and evaluation according to the needs of the S.D.C., according to NANDA, NIC, NOC.

Nursing Diagnosis (D.E)

D.E 1: Impaired skin integrity (00046)				
Related Factors	**Evidence**	**Goal**	**Interventions**	**Evaluation**
Chronic hyperglycemia and vascular changes vascular changes	Hyperpigmented spots, dryness and edema in the lower limbs	Maintain skin integrity, preventing injury and infection until the end of follow-up	Assess the integrity of the skin and extremities on a daily basis Advise on skin hydration with appropriate creams. Encourage the correct use of compression stockings to monitor for signs of infection or ulcerations	Patient with intact skin, with no appearance of lesions or signs of infection.
D.E: Chronic pain (00133)				
Related Factors	**Evidence**	**Goals**	**Interventions**	**Evaluation**
Diabetic Neuropathy	Reports of pain, cramps, and tingling of the lower limbs	Relieve patient-reported pain by reducing pain scale by at least 50%	Daily assessment of pain intensity and location. Administration of medication prescription according to and observation of effects. Application of non-pharmacological measures, such as massages and proper positioning	Significant reduction in patient-reported pain.
D.E 3: Risk of Adverse Drug Reactions (00235)				
Related Factors	**Evidence**	**Goals**	**Interventions**	**Evaluation**
Drug hypersensitivity	Associated clinical conditions.	Prevent or minimize the occurrence of adverse drug reactions by ensuring patient safety during treatment.	Monitoring for signs and symptoms of adverse reactions. Education of the patient and caregivers about the medication. Laboratory monitoring	Patient with stable pattern, without signs and symptoms of adverse reactions. Understands the importance of correct medication use and demonstrates safe adherence to treatment.
Diagnosis 4: Impaired willingness to self-care (00168)				
Related Factors	**Evidence**	**Goals**	**Interventions**	**Evaluation**
Insufficient knowledge about the	In inattention to signs and symptoms	Expand patient knowledge and	Provide educational guidance on food,	Patient demonstrating greater autonomy

management of DM and SAH.		participation in self-care	medication and glycemic control. Encourage participation in support groups; involve the family in the care plan	and knowledge in the management of chronic condition.

Source: Prepared by the authors of the research, (2025).

In view of those exposed to the nursing process, the problems were discussed as findings in the clinical case of S.D.C., proving through scientific evidence the complications that diabetes can cause in the adult individual.

Peripheral diabetic neuropathy is a common complication of type 2 diabetes mellitus (T2D), resulting in damage to the peripheral nerves. Feldman et al., (2019), emphasized that muscle spasms are not often highlighted as a primary symptom, the associated muscle weakness may predispose patients to cramps or spasms.

According to Vivanco and Pirolo (2019), peripheral nerve damage results in symptoms such as tingling, numbness, muscle weakness, and loss of sensation, especially in the extremities such as hands and feet. Among the most common causes are diabetes mellitus, vitamin deficiencies (such as B12), exposure to toxins, infections, and autoimmune diseases

Study published by Nascimento et al., (2016), painful and acute neuropathy also known as diabetes cachexia neuropathy, called because it develops after significant weight loss, secondary to the glycemic uncontrol of DM. It evolves in a monophasic manner with acute onset of symptoms in the lower limbs, which are predominantly painful, in an intense and disabling manner. Because there is a strong correlation between glycemic uncontrol and the development of this neuropathy, it is speculated that there is the participation of metabolic alterations in its pathophysiology.

According to a report by S.D.C., hyperpigmented spots appeared, including anhidrosis, (Figure 1), Pereira et al., (2025), confirm that autonomic neuropathy, especially when it is affecting the sympathetic nerves, alters the characteristics of the skin and increases vulnerability to infections.

Figure 4: Hyperpigmented Spots

Source: Research authors, 2025 (image authorized).

In the research by Souza et al., (2022), constant monitoring of the skin in patients with type 2 diabetes mellitus (T2DM) is essential to prevent dermal complications, since chronic hyperglycemia and vascular changes significantly increase the risk of injury and infection. Interventions such as adequate skin hydration and the use of compression stockings have been shown to be effective in maintaining the skin integrity of these patients.

According to the Ministry of Health, (2023), skin dryness in diabetic patients is common and can predispose to fissures and infections. Diabetic neuropathy can lead to decreased sweating, resulting in dry skin, especially on the feet.

Figure 5: Skin dryness in lower limbs

Source: Research authors, 2025 (image authorized).

According to Silva, Oliveira and Sousa (2024), diabetic patients may present gastrointestinal symptoms due to the impairment of the enteric nervous system, resulting in motility disorders such as diabetic gastroparesis.

CONCLUSION

The clinical trajectory of the S.D.C. patient evidences the importance of multidisciplinary follow-up and the strategic role of nursing in the management of type 2 diabetes mellitus and its complications, especially peripheral diabetic neuropathy. The applied nursing process allowed a systematic assessment, early recognition of the patient's needs, and the implementation of personalized interventions, focusing on the prevention of complications, symptom relief, and promotion of autonomy in self-care.

The monitoring of parameters such as glycated hemoglobin and estimated mean glucose showed unsatisfactory glycemic control, reinforcing the need for adherence to drug treatment, a balanced diet and regular physical activity. In addition, complaints of pain, skin and sensory alterations highlighted the functional and emotional impact of neuropathy, requiring continuous care and educational actions.

In this context, the essential role of nursing in guiding, welcoming and accompanying patients throughout their therapeutic journey is highlighted. Patient empowerment through health education and strengthening self-care is essential for controlling the disease, improving quality of life, and reducing the risks of new complications. The case of S.D.C. reinforces that, even in the face of a late diagnosis, well-planned interventions and adequate support can promote significant and sustainable changes in the care of people with diabetes.

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