



PERIPHERAL VENIPUNCTURE IN PREMATURE NEWBORNS: PROCEDURE MANAGEMENT AND PATIENT SAFETY

VENOPUNÇÃO PERIFÉRICA EM RECÉM-NASCIDOS PREMATUROS: MANEJO DO PROCEDIMENTO E SEGURANÇA DO PACIENTE

VENOPUNCIÓN PERIFÉRICA EM RECIÉN NACIDOS PREMATUROS: MANEJO DEL PROCEDIMIENTO Y SEGURIDAD DEL PACIENTE

Erika Maria Araujo Barbosa de Sena¹, Ingrid Martins Leite Lúcio², Luana Cavalcante Costa³, Mércia Lisieux Vaz da Costa Mascarenhas⁴, Mariana Gonzaga de Souza⁵, Rossana Teotônio de Farias Moreira⁶

ABSTRACT

Objective: to analyze the practice of nursing care with peripheral venipuncture in premature newborns and the use of measures to promote comfort and minimize pain. **Method:** a descriptive study with a qualitative approach by semi-structured interview, carried out in the Neonatal Unit of a University Hospital with 42 professionals. The research project was approved by the Research Ethics Committee, Opinion No 608 622. **Results:** sensitivity between professionals and care in peripheral trans-venipuncture period; valuing care humanization; scientific knowledge associated with the professional practice; leveling the knowledge in the same category; applicability of non-pharmacological techniques for pain relief in neonates during the procedure; attention to the newborn demonstrations; interest in professional development. **Conclusion:** professional demonstrated sensitivity and interest in promoting comfort and adopting measures reducing the pain of the newborn in venipuncture. An individualized care, with quality is characterized, expanding the scale of this practice. **Descriptors:** Neonatology; Nursing Staff; Intravenous Infusions; Nursing Care; Patient Safety.

RESUMO

Objetivo: analisar a prática do cuidado de enfermagem com a venopunção periférica em recém-nascidos prematuros e o uso de medidas de promoção do conforto e minimização da dor. **Método:** estudo descritivo, com abordagem qualitativa, realizado na Unidade Neonatal de um Hospital Universitário, com 42 profissionais, mediante entrevista semiestruturada. O projeto de pesquisa foi aprovado pelo Comitê de Ética em Pesquisa, parecer n° 608.622. **Resultados:** sensibilidade dos profissionais com os cuidados prestados no período de transvenopunção periférica; valorização da humanização do cuidado; conhecimento científico associado ao da atuação profissional; nivelamento do conhecimento, numa mesma categoria; aplicabilidade de técnicas não farmacológicas para alívio da dor em recém-nascidos durante o procedimento; atenção às manifestações do recém-nascido; interesse pelo aprimoramento profissional. **Conclusão:** profissionais demonstraram sensibilidade e interesse em promover conforto e adotar medidas redutoras da dor do recém-nascido em venopunção. Caracteriza-se uma assistência individualizada, de qualidade, ampliando a dimensão desta prática. **Descritores:** Neonatologia; Equipe de Enfermagem; Infusões Intravenosas; Cuidados de Enfermagem; Segurança do Paciente.

RESUMEN

Objetivo: analizar la práctica del cuidado de enfermería con la venopunción periférica en recién nacidos prematuros y el uso de medidas de promoción del confort y minimización del dolor. **Método:** estudio descriptivo, con enfoque cualitativo, realizado en Unidad Neonatal de uno Hospital Universitario, con 42 profesionales, mediante entrevista semi-estructurada. El proyecto de investigación fue aprobado por el Comité de Ética en Investigación, parecer n° 608.622. **Resultados:** sensibilidad de los profesionales con los cuidados prestados en el período de trans-venopunción periférica; valorización de la humanización del cuidado; conocimiento científico asociado al de la actuación profesional; nivelación del conocimiento, en una misma categoría; aplicabilidad de técnicas no farmacológicas para alivio del dolor en recién-nacidos durante el procedimiento; atención a las manifestaciones del recién nacido; interés por la actualización profesional. **Conclusión:** profesionales demostraron sensibilidad e interés en promover confort y adoptar medidas reductoras del dolor del recién nacido en venopunción. Se caracteriza una asistencia individualizada, de calidad, ampliando la dimensión de esta práctica. **Descriptors:** Neonatología; Equipo de Enfermería; Infusiones Intravenosas; Cuidados de Enfermería; Seguridad del Paciente.

¹Nurse, Neonatal Unit and Surgical Center of the University Hospital Professor Alberto Antunes/HUPAA/UFAL, Master degree student, Graduate Program in Nursing, Federal University of Alagoas/Ufal. Maceió (AL), Brazil. E-mail: erikasaenaf@gmail.com; ²Nurse, Ph.D. Professor in Nursing, Nursing and Pharmacy School, Graduate Program in Nursing, Federal University of Alagoas/Ufal. Maceió (AL), Brazil. E-mail: ingridmll@esenfar.ufal.br; ³Nurse, Federal University of Alagoas/Ufal. Scholar at PIBIC/CNPq. Maceió (AL), Brazil. E-mail: luazinha_costa@hotmail.com; ⁴Nurse, Federal University of Alagoas/Ufal. Scholar at PIBIC/Ufal. Maceió (AL), Brazil. E-mail: marysouza_15@hotmail.com; ⁵Nurse, Neonatal Unit and Surgical Center of the University Hospital Professor Alberto Antunes/HUPAA/UFAL, Maternity-School Santa Mônica (MESM/UNCISAL, Master degree student, Graduate Program in Nursing, Federal University of Alagoas/Ufal. Maceió (AL), Brazil. E-mail: mercialisieux@hotmail.com; ⁶Nurse, Professor, Nursing and Pharmacy School, Federal University of Alagoas/Ufal. Ph.D. student in outoranda em Environmental and Experimental Pathology, Ph.D. Program, Paulista University. Maceió (AL), Brazil. E-mail: rossanateo@hotmail.com

INTRODUCTION

In neonatology there is the provision of nursing quality care and the implications of such care in the newborn health-disease process (NB). This category has a significant interface in the peripheral venipuncture technique, safely and effectively ensuring the success of the patients' treatment¹, so that two thirds of activities performed by nurses are related to intra-venous therapy (IVT).¹

This is one of the most difficult practices to accomplish in the NB, being a growing challenge for these professionals minimize the pain and suffering of PTNB², making it necessary technical and scientific knowledge on intravenous therapy for the early prevention and detection of possible complications.³

Nursing care on the specificity of premature newborns (PTNB) and the need for peripheral venipuncture for patient safety in the Neonatal Intensive Care Unit (NICU), is the object of this study and has been the focus of research in Brazil.

Given the anatomical and physiological conditions of the NB, this procedure may have its effectiveness affected, making necessary additional venipuncture and exposing the infant to repeated painful stimulus. Thus, it is relevant the applicability of the nursing care before, during and after the procedure.

Due to the impossibility of any kind of verbalization, the main form of a NB express the pain is by behavioral attitudes. Thus, the evaluation of pain in newborns is based on their answers that can be analyzed from changes in physiological and behavioral measures observed before, during and after a potentially painful stimulus.⁴

NB's care should be structured and organized, highlighting the importance of monitoring and updating on the therapeutic and technological advances in this area⁵ as well as knowledge of the indications, techniques, use of appropriate materials and assessment of risks and benefits of procedures.⁶ It is promoted by global care and specifically aimed at newborns, reducing their risk exposure and enhancing the offer of comfort and safety, using a sequence of activities, respecting the manifestations of the NB and adopting additional measures, approaching to a quality care.

Nursing care related to patient safety in intravenous therapy system is still a major challenge, needing investments in continuous and permanent education for nursing.⁷ For the World Health Organization, patient safety corresponds to the reduction to acceptable

minimum risk of unnecessary harm associated with health care.⁸

Intrinsic to peripheral venipuncture in the NB is the nursing professionals care to the expressions of pain. It should be structured, for the assistance to be provided, applying measures to minimize discomfort, highlighting the importance of knowledge concerning this theme, considering it is an essentially painful procedure.

The pain from these procedures has been the subject of growing concern among health professionals and the peculiar characteristics of the NB as no pain verbalization and the limited capacity to express it for an extended period of time make it difficult to review, presenting subsidies for the implementation of strategies for the prevention and relief of pain⁹.

Excess handling interferes with the NB welfare by changing the physiological and behavioral aspects, which comes from a pathophysiological condition and are caused by the therapy, ambience, excessive handling and other factors.¹⁰ The experienced pain can cause immediate consequences of long-term and even permanent, including chronic pain and altered neurobehavioral responses against the subsequent pain.⁹

A field that is very appreciated is the pain treatment in the newborn. Nursing has excelled in implementing these actions, recognizing the pain through their assessment and using non-pharmacological methods for their relief while avoiding adverse effects on growth and development.¹¹

There were important advances regarding the evaluation of pain, such as standardization of pain as the fifth vital sign, by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). For JCAHO, pain assessment includes location, intensity based on behavioral pain scales, physiological parameters, among others.¹²

Proper assessment of pain is essential since it determines the appropriate management. The measure requires use of quantitative methods and validated by the use of instruments or indicators that consider the behavioral changes and physiological changes.¹³

By effective evaluation of the anatomical and physiological conditions of the NB, the nursing professional choose the best method for preventing or relieving pain. Some measures such as non-nutritive sucking or breastfeeding, use of oral sugary solution (glucose or sucrose), skin to skin contact, multi-sensory stimulation are cited in many studies as measures for pain relief.^{1,3,9}

Prepare the patient before the painful procedure, use an indoor or swaddling cloth, with flexion of the lower extremities, align the midline of the upper limbs bent, placing their hands near the mouth, and the lateral position with flexion of the extremities bring calm and avoid prolonged pain and suffering.¹⁴

With this problem, there is the following guiding question: How do nursing care with peripheral venipuncture in premature newborns and the use of comfort measures occur to promote and minimize pain?

Studies show that despite the expansion of knowledge about pain in the neonatal period, considering the advancement in the treatment and the use of analgesia for painful procedures such as peripheral venous puncture, is still insufficient and inadequate.^{9,12} In this context, this study is justified by the importance of providing a nursing care with quality and sensitivity.

OBJECTIVE

- To analyze the practice of nursing care with peripheral venipuncture in premature newborns and the use of measures to promote comfort and minimize pain.

METHOD

Descriptive, qualitative study¹⁵⁻⁶ with the participation of 42 nursing professionals (nurses, nursing assistants and technicians), which met the following inclusion criteria: nursing team professionals (nursing assistant, nursing technicians and nurses) performing peripheral venipuncture. The ones who were not in the data collection period, because of vacation or sick leave were excluded.

The scenario was the Neonatal Unit (Intensive Care Units and Intermediate Care - ICU and IMC) of the University Hospital Professor Alberto Antunes (HUPAA/UFAL), located in Maceió/AL, reference at high risk.

As data collection instrument, the semi-structured interview was used consisted of: characterization of nursing professionals; conceptions about nursing in neonatology; patient safety; indications, advantages, disadvantages of peripheral venipuncture; theoretical foundation; NB preparation for painful procedure; care during venipuncture; complications; job satisfaction.

The record was made in audio recorder (mp4), with subsequent transcription of data and scheduling a second meeting, to validate it. To analyze the data, a database in Microsoft Word was built, using the Content Analysis technique in thematic modality. This technique explores various representations of

reality based on certain methodological theoretical framework, characterized as a technique for understanding the social dynamics and the relationships established between the subjects in their life contexts.¹⁷

Approved by opinion n° 608,622 of the Ethics Committee in Research (CEP) of the Federal University of Alagoas (UFAL), data collection covered the period from April to September 2014. The study was conducted with the professionals who agreed to participate in it, by reading and signing the Informed Consent Form (TCLE).

RESULTS AND DISCUSSION

In this study, we obtained the participation of 42 nursing professionals with 13 nursing assistants, 22 nursing technicians and seven nurses. The subject's name is expressed according to their professional category and number sequence that they were interviewed.

The information obtained in data collection of this study resulted in three major categories: Professional practice in neonatology; Humanization in nursing care; Non-pharmacological techniques for pain relief.

• Professional practice in neonatology

The results show that the skin characteristics and fragility of the NB's venous network need care, by providing quality nursing care, a category highlighted as the most important in the context of Neonatology:

- It is present continuously, not limited to the complications presented by the NB. (N6)*
- Without nursing, neonatology work would be impossible. (A10)*
- She is all the time with the NB, since the doctor only prescribes and is not continuous with him. (T17)*
- It represents most of professional, the center of the sector. (A4)*

Only one nurse said not performing peripheral venipuncture (she is not identified with the practice), despite the presented theoretical foundation. It must be noted that peripheral venipuncture can be hampered by many factors, such as the suffering of the infants at the time of puncture, and the severity of symptoms¹⁸, so that the success of the procedure requires the use of smaller gauge needles.¹⁹

In the professional knowledge, there were as indications for peripheral venipuncture: intravenous infusion (for hypo/hyperglycemia or zero diet); administration of fastest effect drugs, parenteral nutrition and blood products; blood collecting material for examination.

We held the peripheral venipuncture when it is necessary to collect blood, start antibiotic ... and also for the installation of venous puncture and blood products. Ah, NPT also! (N5)

As achievements of the NB, they reported: absorption and faster effects; efficiency and simplicity; minor damage and invasion than the central access; autonomy of nursing; use in short-term therapy. However, the reports were relevant showing the central access of peripheral insertion (PICC) and central venous access (CVA) as more resolute when to antibiotics for long periods.

As disadvantages, they quoted: loss ease; impaired venous network; caliber and length of abocath disproportionate to the size of the blood vessel; agitation, NB pain and edema; gateway to infections; insufficient human resources.

Ah, the disadvantages is just the ease of losing access. Especially when the baby is making use of antibiotics for a long time, we need to keep changing frequently. Then he suffers a lot. In addition, there is the fact representing a gateway to infection, right? (N2)

Therefore, there is similarity with the literature, which states the following advantages for the IVT: administration of drugs that cannot be absorbed by other drugs with access and irritant properties; (...) better control the rate of administration; (...) electrolyte imbalance; infection.²⁰ However, in spite of its low cost, ease of handling and absence of surgical procedures for insertion and maintenance, (...) the AVP has the disadvantage of difficulty in maintenance when there is the need of prolonged therapy fact which will require the completion of several punctures, increasing thus the suffering of the child²¹, which is found in:

It's painful, it's tiring, an open door to other infections. (T4)

I see only disadvantages, mainly because they lose access easily. (A10)

The nurse and assistant team that performs the IVT need to provide technical and scientific knowledge for prevention and early detection of possible complications²²; (...) ability; (...) promoting patient safety²³; interacting with the NB premature, before, during and after the performance of the procedure.²⁴

In this study, all of them justified their practice with the study in the course of training, and education contributions in service and on-line courses offered by the Brazilian Society of Pediatrics. They cited to professional practice as a strategy for technical improvement through exchange of

experiences and knowledge in an intra-sectoral approach.

I have a lot of skills, even viewing as well. I cannot be sure I'll hit at first. I try three times, then give up. Only practice can help me. (A6)

Requested the description of the technique, we obtained the following sequence of actions/attitudes: basic hand washing; material gathering; NB in a comfortable position, heated and exposing the area to be punctured; evaluation of its peripheral venous network; supply of glucose 25%; member tourniquet with procedure of glove fragment; antisepsis of the area with 70% alcohol; introducing Abocath until blood reflux; introduction of 1ml physiological saline or distilled water; fixation with tape or micropore; venoclysis installation or extender to salinization of access as prescription; nursing record, the medical record; continuous evaluation of the NB and the catheter insertion site.

From these aspects, it is noted that washing hands before the procedure was reported by a minority, while after the procedure, they did not wash hands in any of the times. The offer of 25% glucose was cited by almost all respondents. Antisepsis in the area, meaning cotton was not described. For fixing the access, the micropore was cited once as well as the nursing record, in the chart, communication to the mothers 'newborns, the signature and the date on the tape, heating the area, the use of sterile gloves and the fact punching the NB when hypothermic.

As for the difficulties encountered in performing the procedure, a nurse and nine nursing techniques denied them. When present, they cited as practice to ask help to another professional to carry out new AVP, PICC or CVA.

I seek deeper veins, such as the axillary, jugular vein and saphenous since they are less sought. (N2)

In the same approach, the maximum aforementioned embodiment has three attempts.

The value of educational activities and professional training regularly is the guideline for the formation of a critical and conscious health staff of their role in prevention and control of complications associated with invasive procedures.²⁵ In the study, a minority expressed satisfaction with the practice adopted, whichever the need to stay current, especially regarding the humanization of nursing care:

I always read, watch, because people can always help, there is always something going on for us. I can get even better. (T4)
It's all very specific. (A8)
I've got a theory, but when you pull away for some reason, I lose a bit of practice. (A7)

◆ Humanization in nursing care

In the case of patient safety, it is still presented as a great challenge⁷. In this study, the considerations that have relevance to no exposure newborns to risk or loss and be careful to not cause them damage are highlighted:

Health professionals should adopt rigorous nursing care in order to recognize some signs and symptoms that the NB manifests in a non-verbal way. (T2)
Kangaroo method care, for example, lets newborns all wrapped and put it in the bath. (A23)
Provide quality nursing care by reducing the risk of damage that the provision of my care will bring him, not aggravating his condition. (N2)

As for safety care factors, there are: NB thermoregulation and skin care; perfect operation of the equipment; cleaning and bath; changing positions; quiet and peaceful environment; NB overdressed, comfortable, clean and free of materials that hurt him; pulse monitoring; personal protective equipment (PPE); constant vigilance; dark sheet over the bed; incubators and locked cots and doors and hatches closed; aseptic, basic handwashing and infection prevention; care to phototherapy; preparation of the team; availability of necessary materials; respect to vacancies limit; meet the patient by his name; review of the medical prescription; daily physical examination; comply with the rules and routines of the institution; humanized care. The failure of fully comply of this care, limited human resources were cited as justification.

First, I wash my hands, I calm the baby, offer glucose, I gather the material, puncture the vein, I see his face, I keep him clean, gather all and watch the access. (T8)
During venipuncture, I pay attention more in the vein, I am not looking the NB because I always puncture with another person, so she is who watches the baby. (A8)
I'm in love, it is very rewarding ... The adult can say what you feel, it's much easier. The NB does not say. So it is necessary to have insight to colic, hunger, pain. Even if it is a caring, he'll be wanting. (T6)

With all these manifestations, the behavior was: interruption of the procedure; care for complications; stabilization of the NB. The

doctor was quoted as the one to ask to follow the activities.

When venipuncture is finished, they referred: collect the material used; leave the NB clean and warm and comfortable; remain vigilant to the area of AVP; offer caresses and/or diet; ask the mothers' lap, when possible.

Therefore, there are recommendations in order to avoid or minimize the possible complications from venipuncture: local infiltration, pyrogenic reactions by contamination during preparation of medication or during administration of the drug; venous thrombosis and phlebitis; bruising; necrosis.²¹

About the complications of a venipuncture, only one nurse conceptualized them:

Injuries resulting from the loss of a venous access. (N3)
These complications are quite visible and the baby becomes agitated. (T7)
There are more in the lower limb. (A5)

As for the reported cases, there were: erythema, hyperemia or redness, heat, pain, hardening of the affected area, wound, ulcer, hematoma, loss of tissue, skin breakdown, injury, embolism, thromboembolism, "extracellular leakage", phlebitis or inflammation, infection, swelling, abscess, infiltration, infection, "leakage", blister, burn, "loss of scalp portion", "member loss" or amputation, bruising, necrosis, vasospasm.

If there is not in the vein, you can burn the affected area, mainly by calcium gluconate, widely used. We have many patients with congenital syphilis and the medication is penicillin, which already hurts when performed at the vein, imagine outside the vein. (T5)

Previously, using the scalp, it happened much more frequently, especially on the scalp. Even Abocath, being a flexible material, causes less complications. (N2)

Today, with the advent of PICC, the incidence of these complications decreased significantly. (E4)

In order to prevent injuries and promote safety of newborns undergoing IVT, the nursing staff should periodically review peripheral access²⁶. In this study, prophylaxis was mentioned by some care: punching and visible caliber vein; avoid repeated venipunctures; strict adherence to the puncture site, control of time/intensity tourniquet member; prevent venous access in the instep; no punching artery; avoid joints; antisepsis with 70% alcohol; test the AVP; change the AVP every 72 hours, however, observation obtained a prominent position:

When I am in duty, I approach just of those with venous access, to check if there is some problem, redness, swelling; and always do the test before medication, plus exchange, when it is too old, not to cause a disease. (T9)

As the behavior in front of complications, they cited: immediate removal of the catheter; provide new access; compression area; use compress (without specifying); sodium bicarbonate; “gelox”; saline; “reparil” gel; essential fatty acid; report it to the nurse, doctor and mothers’ or caregiver; register in the medical records; offer warmth to the NB.

♦ Non-pharmacological techniques for pain relief

The health technologies can be divided into hard and soft, the soft ones being the implementation of care, requiring the establishment of relationships (bonds and host), making nursing care and technology interconnected²⁴.

The sample proved to be aware with the preparation of the NB for the procedure, including the safer location selection, with good lighting, and then observe and analyze their venous network; view for punching; do not reuse the catheter and to preserve the brachial vein for possible insertion of PICC.

For the minimization of pain in PTNB, the reports showed some care in the literature: suction and glucose; comfort; cherish; careful handling; concern for venipuncture and the NB²⁷; reducing the number of procedures; evaluation of heart and respiratory rate, oxygen saturation, facial expressions, body movements and crying²⁸.

As non-pharmacological techniques reported, there were mentioned: heating with sheets; comfort; glucose 25%; talk to the NB; which can be recognized below:

I offer 1 to 2 ml of 25% SG, 1 to 2 minutes before the procedure. (N3)

The supply of glucose minutes before the procedure differs from non-nutritive sucking, and we need to apply the NB pain scale. (N1)

I do not use glucose when the NB is already sedated. (A5)

I use gloves, wet with glucose solution and offer it to him to suck. (T10)

When you explain to him, it is as if he understood, it does not take much shock, he cries, but cries less. (A15)

However, there was a record to substantiate with the information that in the prolonged pain and consequent NB passivity state, signs of stress should be recognized when the newborns open the fingers, divert

look and yawn; signals to change the procedure, because care is not being effective.²⁸

As for the care given to the manifestations of the newborn during venipuncture, all mentioned adherence, highlighting the crying identification, forehead wrinkle and facial expressions, and dyspnea, regurgitation, central cyanosis, lethargy, intubation. In the care for the procedure: monitoring saturation and respiratory rate and availability of oxygen and vacuum.

CONCLUSION

This study provided the analysis of nursing care practice with peripheral venipuncture in PTNB, featuring the procedure, the knowledge about the professional and research use comfort measures to promote and minimizing their pain.

Various specifications involving the peripheral venipuncture procedure promoted a careful extraction of data related to the phases that involve the procedure and are not identified any signs of embarrassment or discomfort on the part of professionals.

Entre os desfechos alcançados, destaca-se a sensibilidade dos profissionais quanto à humanização da assistência de enfermagem, fazendo-se referência à aplicabilidade de uma de diversidade de cuidados que a caracterizam. Especialmente ao se tratar do preparo do RN para procedimentos dolorosos, os relatos evidenciaram a importância de diversas variáveis, discutidas anteriormente.

Among the achieved outcomes, there are the sensitivity of professionals and humanization of nursing care, with reference to the applicability of a variety of care that characterize it. Especially when it comes to the NB preparation for painful procedures, the reports emphasized the importance of several variables discussed earlier.

Some considerations proved to be coated, including emotional content. In the case of a context endowed with such great peculiarities, whose target audience is babies holders of additional weaknesses, awakens the professional a degree of commotion, beyond the interest to do more in order to contribute in the process of recovery.

With regard to nursing care given to the PTNB, the position occupied by this profession was highlighted, in the hospital context. The sample referred to this professional an integral and continuously present in Neonatology sector, not limited to the resolution of complications or providing emergency care.

Continuity of care was highlighted by these professionals, with emphasis on scientific knowledge of detention by each professional, associated with daily search for technical improvement. Despite continuing education not be present in the sector, according to the reports, the individual interest and seeking for continuous professional development was present predominantly in the interviews. Moreover, despite the existence of isolated cases, in which terms not found in the literature are used, scientific terminologies were prevalent form used.

Although some answers have shown reduced and/or sporadically little founded, it became possible to create a profile of the group studied. Concepts, definitions and routines were listed, as each contribution acted in a complementary manner to the other, contextualizing the object of this study. In this case, there is the description of the procedure, which could be implemented through joint aspects reported in several testimonies.

Depending on the results achieved, the subjects in this study identify the target audience of their assistance as weak points, which makes them more aware of the importance of providing humanized nursing care.

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Corresponding Address

Erika Maria Araujo Barbosa de Sena
Av. Eraldo Lins Cavalcante, 933
Barro Duro
CEP 57046-570 — Maceió (AL), Brazil