

Nursing care process in the treatment of hypertension induced by pregnancy

Processo de cuidado de enfermagem no tratamento da hipertensão gestacional

Proceso de atención de enfermería en el tratamiento de la hipertensión inducida por el embarazo

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ABSTRACT

Introduction: Blood pressure is the force that the blood exerts against the walls of the arteries, which is why hypertension or also known as high blood pressure is when this force exerted is too high and it is likely to appear more frequently in the gestation period since pregnancy-induced hypertension is responsible for maternal morbidity and mortality and occurs in 5% to 10.3% of cases. **Objective:** To identify the process of nursing care in the treatment of hypertension induced by pregnancy. **Methodology:** A review of some articles published in Pubmed, Scielo, during the years 2019 to 2022 about pregnancy-induced hypertension was carried out. As inclusion criteria, the original and updated articles related to the research topic were taken into account and some articles that did not correspond to the years of antiquity requested at the time of carrying out the research work were excluded. Results: The assessment was made based on the functional patterns of Marjorie Gordon and the Nursing Care Process was applied. **Conclusions:** In the development of this case, activities were developed with the purpose of providing quality care and warmth to each of the patients, improving their stay at the first level of care, since hypertension in the gestation period continues to be an important problem. This is a health problem, so the prognosis and timely treatment of this pathology is essential to take care of the health and well-being of the mother-child pair through control and care by health personnel.

Keywords: Hypertension, gestational hypertension, pregnancy, treatment of gestational hypertension.

RESUMO

Introdução: A pressão arterial é a força que o sangue exerce contra as paredes das artérias, por isso a hipertensão ou também conhecida como pressão alta é quando essa força exercida é muito alta e é provável que apareça com mais frequência no período de gestação desde a hipertensão induzida pela gravidez é responsável pela morbimortalidade materna e ocorre em 5% a 10,3% dos casos. **Objetivo:** Identificar o processo de cuidado de enfermagem no tratamento da hipertensão induzida pela gravidez. **Metodologia:** Foi realizada uma revisão de alguns artigos publicados no Pubmed, Scielo, durante os anos de 2019 a 2022 sobre hipertensão induzida pela gravidez. Como critérios de inclusão, foram considerados os artigos originais e atualizados relacionados ao tema da pesquisa e excluídos alguns artigos que não correspondiam aos anos de antiguidade solicitados no momento da realização do trabalho de pesquisa. Resultados: A avaliação foi feita com base nos padrões funcionais de Marjorie Gordon e foi aplicado o Processo de Cuidados de Enfermagem. **Conclusões:** No desenvolvimento deste caso, foram desenvolvidas atividades com o objetivo de oferecer atendimento de qualidade e aconchego a cada um dos pacientes, melhorando sua permanência no primeiro nível de atendimento, pois a hipertensão no período gestacional continua sendo um problema importante. Este é um problema de saúde, pelo que o prognóstico e tratamento atempado desta patologia é essencial para cuidar da saúde e bem-estar do par mãe-filho através do controle e cuidados por parte dos profissionais de saúde.

Palavras-chave: Hipertensão, hipertensão gestacional, gravidez, tratamento da hipertensão gestacional.

RESUMEN

Introducción: La presión arterial es la fuerza que ejerce la sangre contra las paredes de las arterias, es por ello que la hipertensión o también conocida como presión arterial alta es cuando esta fuerza ejercida es demasiado elevada y es probable que aparezca con más frecuencia en el período de gestación pues la hipertensión inducida por el embarazo es el responsable de la morbimortalidad materna y se presenta en un 5% al 10.3% de casos. **Metodología:** Se realizó una revisión de algunos artículos publicados en Pubmed, Scielo, durante los años 2019 hasta el 2022 acerca de la hipertensión inducida por el embarazo. Como criterios de inclusión se tomaron en cuenta los artículos originales y actualizados relacionados con el tema de investigación y fueron excluidos algunos artículos que no correspondían a los años de antigüedad solicitados al momento de realizar el trabajo de investigación. **Resultados:** La valoración se realizó en base a los patrones funcionales de Marjorie Gordon y se aplicó el Proceso de Atención de Enfermería. **Conclusiones:** En el presente caso se desarrollaron actividades con el propósito de brindar una atención de calidad y calidez a cada uno de los pacientes, mejorando su estancia en el primer nivel de atención pues la hipertensión en el período de gestación sigue siendo un importante problema de salud por lo que es imprescindible el pronóstico y tratamiento oportuno de esta patología para cuidar la salud y bienestar del binomio madre e hijo mediante el control y cuidado por parte del personal de salud.

Palabras clave: Hipertensión, hipertensión gestacional, gestación, tratamiento de la hipertensión gestacional

INTRODUCTION

Blood pressure is the force exerted by the blood against the walls of the arteries (WHO, 2021) and therefore high blood pressure, or hypertension, is when this force is too high, which in this case harms the pregnant mother. We have several cases that can occur due to high blood pressure, including pre-eclampsia, eclampsia and hellp syndrome, which are accompanied by different parameters for diagnosis, such as proteinuria. (Arriada García et al., 2021)

Pregnancy-induced hypertension is responsible for maternal morbidity and mortality, usually occurring in 5-10.3% of cases (Mendoza Vilcahuaman et al., 2021). The term hypertension refers to values from 140mmHg/90mmHg. Currently, hypertensive disorders (hypertension) during pregnancy are very frequent problems that complicate 10 to 15% of pregnancies and constitute an important public health problem, being considered the first cause of maternal death in developed countries and the third cause of maternal death in developing countries, in addition, they are an important cause of morbidity and foetal and neonatal mortality, as well as being a precursor for the development of vascular and metabolic problems (Mendoza Vilcahuaman et al., 2021).

ETHIOLOGY

Several factors have been identified for which hypertension occurs during pregnancy, including family history, also known as genetics, and age, which encompasses two groups: mothers under 20 years of age and mothers over 35 years of age, both of whom are at greater risk of suffering a complication during pregnancy. Additional factors are nulliparity and multiparity, including having had hypertension before pregnancy or in previous pregnancies. (Mendoza Vilcahuaman et al., 2021)

PATHOPHYSIOLOGY

Concerning the pathophysiology of hypertension during pregnancy, it has not yet been fully explained. During pregnancy, it is known that the renin angiotensin system is moderated while systemic vascular resistance is reduced (Múnera Echeverri et al., 2021), Furthermore, it was also found that it could be the result of placental dysfunction starting from a defect in trophoblastic invasion which would imply a defect of invasion and remodelling in the mother's spiral arteries with a decrease in uteroplacental perfusion and placental ischaemia which produces inflammatory events, disruption of endothelial balance resulting in elevated blood pressure which is one of the tools for its diagnosis. (Múnera Echeverri et al., 2021)

DIAGNOSIS

Blood pressure measurement

One of the methods for the immediate diagnosis of hypertension in pregnancy involves checking blood pressure, which includes it among the vital signs at the time of patient care. The correct blood pressure measurement is done with the pregnant woman sitting comfortably without crossing her legs and with her left arm resting on a table at the level of her heart (Farfán Cano et al., 2022). In the event that the first blood pressure reading is elevated, it should be taken again after 15 minutes on the same arm to confirm hypertension in pregnancy, which is considered to be a systolic blood pressure value ≥ 140 mg/Hg and a diastolic blood pressure ≥ 90 mg/Hg. (MSP., 2016)

In the case of severe hypertension in pregnancy, systolic blood pressure ≥ 160 mg/Hg and diastolic blood pressure ≥ 110 mg/Hg should be confirmed in the same way as the previous one. The white coat hypertension is confirmed with values of systolic blood pressure ≥ 140 mg/Hg and diastolic blood pressure ≥ 90 mg/Hg within the health establishment and in the place of residence of the patient will be presented with the following values systolic blood pressure < 135 mg/Hg and diastolic blood pressure < 90 mg/Hg. (MSP., 2016)

Score Mama

The Score Mama is considered a scoring tool for the early detection of obstetric risk through the different obstetric keys such as the Blue Key corresponding to hypertensive disorders, which will be applied at the first level of care. It has vital signs which have a score according to the value obtained from the patients and the urine proteinuria test which is directly associated with hypertension. It is through this guide applied by the first level of care that, depending on the severity of the patients, they are referred to the second or third level of care. (MSP., 2017)

TREATMENT

For the treatment of hypertensive disorders in pregnancy, methods used in the Clinical Practice Guideline on Hypertensive Disorders of Pregnancy, second edition 2016 were taken into account. Within the pharmacological treatment we found the use of oral nifedipine and intravenous labetalol (first line) which are also shown to be compatible with α -methyl dopa in women with severe hypertension during pregnancy or postpartum.

In the recommendations it was found that initiation of antihypertensive therapy is effective in women with blood pressure ≥ 160 mmHg systolic blood pressure and diastolic blood pressure ≥ 110 mmHg. In women with systolic blood pressure between 130 mmHg to 155 mmHg and diastolic blood pressure between 80 mmHg to 105 mmHg the use of antihypertensive drugs is recommended. In addition, diuretics, plasma volume expanders, angiotensin-converting enzyme inhibitors, angiotensin receptor blockers and drugs such as nimodipine, ketanserin and diasoxide should be discontinued and avoided in pregnant women. (MSP., 2016)

Therefore, the aim of the present research was to establish the nursing care process in the treatment of pregnancy-induced hypertension.

METHODS

A systematic search for scientific evidence was conducted using published articles, reliable reviews and clinical practice guidelines on pregnancy-induced hypertension.

The search was conducted through Google Scholar and databases such as Scielo, Elsevier and other reliable bibliographic sources using descriptors such as: hypertension, gestational hypertension, pregnancy complications. The search strategy was according to the time interval from the year 2019 to the year 2022.

Inclusion criteria were taken into account as original articles, updated and related to the research topic. Some publications were excluded as they had methodological differences, or the information did not correspond to the five years of antiquity.

CLINICAL CASE STUDY

31-year-old woman, 30 weeks pregnant, diagnosed by first trimester ultrasound with a probable delivery date in March, came for consultation after presenting with frontal headache for the last 3 hours, vertigo and vomiting with food. Physical examination: BP: 165/98 mmHg. HR: 98 x'. RR: 17 x'. T°: 37.3 °C, Sat 85%. Patient conscious, dizzy, worried, fatigued and cooperative, located in time and space, with facial oedema, swollen face, SAT 95% with oxygen through nasal cannula, presence of oedema in lower limbs, rest of the physical examination normal. Obstetric examination found: Uterine height: 33 cm, Uterine dynamics: -/10, Fetal heartbeat: 148 x', Fetal movements present: +, Normal tone. On performing the Leopold manoeuvres, the foetus was found to be in a longitudinal position, right side up and with a cephalic presentation. Fetal ultrasound: normal. Dilatation 0 cm. No presence of amniotic sac rupture or presence of vaginal bleeding. Complementary examinations: Laboratory: Red blood cells: 3,700,000/mm³. Haematocrit: 30%. White blood cells: 5,500/mm³. Platelets: 250,000/mm³. Creatinine: 0.9 mg/dl. Uric acid in blood: 5.3 mg/dl. Glycaemia: 93 mg/dl. Proteinuria in 24 hours: 315 mg in urine.

Date of last menstrual period: 10 June 2022.

Probable due date: 17 March 2023.

Objective data	Subjective data
Vomiting	Headache
Blood pressure: 165/98 mmHg.	Dizziness
Heart rate: 98 x.	Worry
Respiratory rate: 17 x'.	Fatigue
Temperature: 37.3 °C.	
Oxygen saturation: 85%.	
Edema	
Uterine height: 33 cm.	
Uterine dynamics: -/10.	
Fetal heart rate: 148 x'.	
Fetal movements	
Dilatation: 0 cm.	
Red blood cells: 3,700,000/mm ³ .	
Haematocrit: 30%.	
White blood cells: 5,500/mm ³ .	
Platelets: 250,000/mm ³ .	
Creatinine: 0.9 mg/dl.	
Uric acid in blood: 5.3 mg/dl.	
Glycaemia: 93 mg/dl.	
Proteinuria in 24 hours: 315 mg in urine.	

Personal background	Family background
Hypertension from the second trimester of pregnancy.	Mother with hypertension.
	Father died of prostate cancer

Laboratory tests

Blood biometry

PARAMETER	NORMAL VALUE	VALUE OBTAINED
Red blood cells	M: 4.5 – 6.0 células/mcL	3.700.000/mm3
Haematocrit	M: 37 – 48 %	30%
White blood cells	5.000 – 10.000 miles/uL	5.500/mm3
Platelets	150,000 – 400,000 mcL	250.000/mm3
Creatinine	0,7 – 1,3 mg/dL	0.9 mg/dl
Blood uric acid	3.5 – 7.2 mg/dL	5.3 mg/dl
Glycaemia	70 – 110 mg/dL	93 mg/dl
Proteinuria in 24 hours	0 – 14 mg/dL	315 mg in urine

Marjorie Gordon Functional Standard Assessment

FUNCTIONAL PATTERNS	EVALUATION
PERCEPTION - HEALTH MAINTENANCE	The patient states that he/she has adequate personal hygiene, housing and clothing habits.
NUTRITIONAL - METABOLIC	She does not use tobacco, alcoholic beverages or other toxic substances.
ELIMINATION	The patient reports having vomited three hours ago.
ACTIVITY - EXERCISE	She has basic check-ups with her gynaecologist to find out how her pregnancy is progressing.
SLEEP - REST	The patient reports eating a balanced diet due to the presence of nausea, vomiting and lack of appetite.
COGNITIVE - PERCEPTUAL	She consumes 6 glasses of water per day.
SELF-PERCEPTION - SELF-CONCEPT	Bowel
ROLE - RELATIONSHIPS	The patient reports having three bowel movements a day, the stools are brown in colour.
SEXUALITY - REPRODUCTION	Urinary
ADAPTATION - STRESS TOLERANCE	Patient reports urinating more than three times a day, urine colour is light yellow.
VALUES - BELIEFS	Patient reports going for a walk for 20 minutes each day.

RESULTS

NURSING DIAGNOSES AND INTERVENTIONS

Diagnosis: Excess fluid volume r/c compromise of regulatory mechanisms m/p oedema, oliguria, hypertension.	
INTERVENTIONS	SCIENTIFIC BASIS
412003 - Perform accurate recording of arrivals and departures.	Keep a strict control of intake and elimination to check for fluid retention and avoid problems that can affect the lungs and oxygen saturation (Soza D, Bazán A, Díaz M. 2020).
412007 - Monitor vital signs as appropriate.	Constantly check vital signs, including breathing and blood pressure, to avoid complications for the mother and baby (Meneses L, Rodriguez E, Ortiz M. 2021).
42002 - Instruct patient about the procedure.	Indicate to the patient each procedure that is performed and the reason for it so that she is aware of it and avoids being worried and stressed, as this also tends to raise blood pressure, so there should be good communication between the patient and health personnel to provide support as needed. (Herrera A, et al. 2022).
413021 - Observe for presence or absence of vertigo on rising.	Communicate with the patient before carrying out any procedure and verify the patient's condition, since if the activities are carried out on impulse, we could cause falls and risk of premature pregnancy due to medical malpractice (Marambio J, et al. 2019).
414004 - Monitor oxygenation status.	Constantly monitor the patient's saturation and if the patient is on oxygen, check that it is in the correct litres so that there is good oxygenation (Pérez C, et al. 2020).

Diagnosis: Anxiety r/ change in health status m/p irritability and increased worry.	
INTERVENTIONS	SCIENTIFIC BASIS
58201 - Simple relaxation therapy.	Establish recreational activities aimed at stress reduction (Villegas A, 2020).
582012 - Attentive listening.	Stay with the patient to promote safety and reduce fear (Torres A, Galarraga J, Erazo Y, 2021).
582016 - Identify changes in level of anxiety.	Try to understand the patient's perspective on the stressful situation such as caring for the newborn, being afraid of not taking good care of the newborn, giving advice and teaching how to interact in the best way mother and child when the baby is born (Awad Sirhan et al., 2021).
582025 - Observe for verbal and non-verbal signs of anxiety.	Be alert to the patient's fearful behaviours and above all teach her activities that help to reduce stress so that she can rest well. Regulate environmental stimuli to maintain normal day-night cycles (Álava Loo., 2021).

Diagnosis: Sleep pattern disorder r/c change in light explosion m/p dissatisfaction with sleep.	
INTERVENTIONS	SCIENTIFIC BASIS
185005 - Observe/record the patient's sleep pattern and number of hours of sleep of the patient.	Sleep is a biological necessity. Its adequate duration and quality help maintain health, sleep is considered a restorative process, with supportive influences on immune functions, it has been shown that sleep deprivation results in poorer immune function. (Benanieves, Ramos., 2019).
696022 - Monitor psychological state of patient and partner.	Most pregnant women experience mood swings abruptly, going from happy to sad in just a few minutes. In addition, pregnant women are characterized by greater irritability, being much more sensitive to situations that did not affect them so much before, which can harm their partner. (Muela A, Méndez E, 2020).

Diagnosis: Poor knowledge r/ inadequate information m/p lack of knowledge about risk factors during pregnancy.	
INTERVENTIONS	SCIENTIFIC BASIS
661003 - Determine the availability and quality of resources (e.g., psychological, economic, educational, family and other social resources and community).	The availability of resources within the health area must be adequate according to the needs of the population in order to significantly improve the country's public health indicators, thus ensuring equitable distribution of care to the community. (Barja Ore et al., 2021).
661012 - Instruct on risk factors and plan risk reduction.	Pregnancy is a time of great care, and one must learn to identify risk factors early. The first level of care is responsible for empowering mothers from the moment of conception until delivery. (Saraguro Salinas et al., 2021).
661013 - Set mutual goals, if appropriate.	Working together with the patient is an effective communication skill as it constitutes good quality health services. (Gijón Alvarado, 2020).
661019 - Plan long-term follow-up of risk reduction strategies and activities.	Monitoring risk factors in pregnant women is of great help as they can prevail until postpartum, through this activity it is possible to improve patients' lifestyles. (Muñoz Ortiz., 2022).

Diagnosis: Risk of tissue perfusion r/c hypertension.	
INTERVENTIONS	SCIENTIFIC BASIS
84004 - Encourage the patient to participate in position changes as appropriate.	The postural changes evidenced during the gestation period are established as constant musculoskeletal discomfort in the spine and lower limb, generating systematic adjustments of static and dynamic posture that can cause alterations in the development of gait, which is why it is recommended that the mother perform exercises according to her condition and even make postural changes to avoid pain and thus help a better pregnancy process. (Rodríguez G et al., 2020).
84017 - Avoid positioning the patient in a position that increases pain.	Provide comfort to the patient by implementing various positions that will help to reduce possible risks (Bocanegra Prieto et al., 2020) (Cavalcante F et al., 2021).
84029 - Elevate the head of the bed if indicated.	For the comfort of the patient if it is necessary to elevate the head of the bed to help avoid complications (Gijón Conde et al., 2022).

Diagnosis: Risk of disruption of the maternal-fetal dyad r/c complications of pregnancy hypertension.	
INTERVENTIONS	SCIENTIFIC BASIS
668002 - Observe trends and fluctuations in blood pressure.	Observe and constantly monitor the patient's blood pressure because if it is kept under control, we can reduce the other signs and symptoms including headache, dizziness, blurred vision, which is why we must be aware that if this pressure rises the pregnancy is complicated and the life of the foetus and the mother may be at risk. (Galván Oseguera et al., 2019).
668024 - Identify possible causes of changes in vital signs.	Review the patient's clinical history and verify the evolution of the pregnancy, controls, family history, in order to verify and confirm the origin of the increase in blood pressure, because as is known, blood pressure can be present for years without realizing it and this can be detrimental during pregnancy or after delivery. (Pereira J, Valdivia E. 2020).
693037 - Discuss activity and rest requirements.	Discuss with the patient the importance of the activity that should be carried out without fatigue during the pregnancy process and the respective rest, pointing out that the rest should be carried out in the best way possible and even provide strategies so that the patient does not tend to have stress during pregnancy. (Martínez M, Jiménez I, Rodríguez E. 2020).
693036 - Manage the patient's pain.	Help through relaxation and breathing techniques to reduce pain and even administer medication only if the doctor prescribes it, following the correct technique and verifying the 10 correct ones (Lefaurie M, Angarita M, Chilatra C. 2020).

DISCUSSION

Hypertension is the most common medical condition in pregnancy, complicating one in ten pregnancies. Treatment of severely raised blood pressure is widely recommended to reduce the risk of maternal complications. Regimens for acute treatment of severe hypertension often include medications that, while effective, require careful fetal monitoring and may not be feasible in busy or low-resource settings (Campos-Nonato et al., 2019).

Within the case study, Nifedipine, which is a calcium channel blocker of the dihydropyridine subclass, was used. It is mainly used as an antihypertensive and antianginal drug. Consequently Ghelfi et al., (2021) detail that all oral antihypertensives reduce blood pressure to the reference range in most women. As single drugs, the use of nifedipine results in a higher frequency of achieving the primary outcome and is the initial viable option for treating severe hypertension.

Furthermore, Tatal et al., (2019) consider that the drugs can be administered in several health facilities, do not require cold storage, do not require special equipment or a provider trained in intravenous drug administration, and are available in most low- and middle-income countries. Therefore, this oral antihypertensive drug (nifedipine) has been widely used in pregnancy and has shown a low incidence of medical complications.

Nevertheless, Múnera-Echeverri et al., (2021) described adverse effects present in about 20-30% of patients prescribed nifedipine. These are mainly the result of the vasodilatory properties of nifedipine.

According to the Pan American Health Organization (2022), when blood pressure is greater than or equal to 140/90 mm Hg, but less than 160/110 mm Hg in a pregnant woman, it is referred to as mild (not severe) HTN. The author recommends hospitalization for a diagnostic approach and studies to establish with certainty the severity.

Women with hypertension who are pregnant or planning to become pregnant should consider medication options during pregnancy. For example, Colombian guidelines recommend that blood pressure should not exceed 150/100 mmHg and that beta-blockers and calcium channel blockers are preferable to methyldopa as a first choice (Gómez-Domínguez, 2022).

However, according to the American College of Obstetricians and Gynecologists, blood pressure rises persistently above 150/110 mmHg in case of complications. In this context, methyldopa should be used as first-line treatment in pregnant women up to 2 g/day and substituted by hydralazine when necessary to reduce side effects (drowsiness, orthostatic hypotension) or to increase the antihypertensive effect (Tatal et al., 2019).

According to the European Society of Cardiology guidelines, all pregnant women with chronic hypertension and a

blood pressure above 150/95 mmHg should be treated with medication. It has been emphasized that 10-20 mg labetalol should be given intravenously, followed by 20-80 mg every 10-30 minutes up to a maximum cumulative dose of 300 mg or 1-2 mg/min intravenous infusion. In addition, magnesium sulphate, although not an antihypertensive agent, plays an important role in seizure prevention by raising the seizure threshold in women with pre-eclampsia and is considered the best drug for patients with eclamptic seizures (Ghelfi et al., 2021).

Clarification that pharmacological treatment should be initiated for blood pressure levels above 140/90 mmHg if gestational hypertension (with or without proteinuria), chronic hypertension superimposed on pre-eclampsia and subclinical target organ damage or symptoms are present at any time during pregnancy (Tutal et al., 2019).

The UK National Health Technology Assessment Authority is considering drug treatment for all patients with blood pressure above 140/90 mmHg. In severe hypertension, the combination of methyldopa and beta-blockers has been suggested, as beta-blockers are considered an effective adjunct to first-line treatment and reduce many of the side effects associated with high doses of treatment (Valarezo & Reyes, 2022).

In Ecuador, nifedipine, hydralazine and labetalol are considered first-line options for the treatment of this condition. This is because they have similar maternal-fetal and perinatal outcomes and are selected based on the route of administration (oral or parenteral), taking into account the main side effects of each drug. However, in the case of nifedipine and hydralazine, nifedipine has proven to be the best choice for the initial treatment of hypertensive crises in pregnancy and postpartum, given the available drugs, available routes of administration, experience in their use, side effects and contraindications to their use (Verano Gómez et al., 2021).

CONCLUSIONS

In the development of this case, various activities were carried out with the aim of providing quality care and warmth to each of the patients and thus obtaining positive results during their stay at the first level of care. On the other hand, it is essential that health professionals correctly implement the protocols established in their hospital unit and the MOH to provide optimal service to each user. (MOH, 2016).

Hypertension in pregnancy continues to be a major health problem, therefore, timely diagnosis and treatment of this pathology is essential to care for the health of the mother and child binomial (Oliveira Rodrigues et al., 2022). Nursing care is one of the main aspects to be taken into account for this disorder that occurs in pregnant women, as the health personnel in charge must demonstrate efficiency when treating the patient, applying all safety measures to avoid possible adverse events during the treatment.

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