Clinical treatment of metabolic syndrome in pregnant women

Jéssica de Vasconcelos Oliveira Viégas
Institution: University of Vassouras - Vassouras, RJ
E-mail: jessicaoviegas@yahoo.com.br

Tainá Rodrigues Toqueton
Institution: Unicid - pine trees - SP
E-mail: tainatoqueton@hotmail.com

Délio Guerra Drummond Júnior
Institution: Federal University of Western Bahia - BA
E-mail: kerecodrummond@yahoo.com.br

Renata Ferreira Chagas
Institution: University of Gurupi – UNIRG
E-mail: renatafchagas@unirg.edu.br

Lênio Airam de Pinho
Institution: New Lima-MG – Brazil
E-mail: lenioendocrinologia@gmail.com

Clara Araújo Montenegro Fonseca
Institution: FACEMINES
E-mail: claramontenegro21@gmail.com

Igor Costa Santos
Institution: Federal University of Jataí
E-mail: italomedicina01@gmail.com

ABSTRACT
Metabolic syndrome is a medical condition characterized by a set of cardiovascular risk factors, including obesity, hypertension, insulin resistance, and dyslipidemia. During pregnancy, a woman's body undergoes complex metabolic and hormonal changes to facilitate fetal development. However, when the pregnant woman has metabolic syndrome, these changes can be exacerbated, increasing the risk of serious obstetric complications and having a potential impact on maternal-fetal health.

Keywords: Metabolic Syndrome, Gestation, Clinical Treatment, Therapeutic Interventions, Cardiovascular Risk Factors.

1 INTRODUCTION

Metabolic syndrome is a medical condition characterized by a set of cardiovascular risk factors, including obesity, hypertension, insulin resistance, and dyslipidemia. During pregnancy, a woman's body undergoes complex metabolic and hormonal changes to facilitate fetal development. However, when the

pregnant woman has metabolic syndrome, these changes can be exacerbated, increasing the risk of serious obstetric complications and having a potential impact on maternal-fetal health.

The presence of metabolic syndrome during pregnancy can cause several challenges to the health of the mother and fetus. Increased cardiovascular risk factors, such as hypertension and insulin resistance, may predispose pregnant women to develop preeclampsia, a condition characterized by high blood pressure associated with the presence of protein in the urine. Preeclampsia can lead to serious complications, such as placental abruption and preterm delivery, posing significant risks to both mother and baby.

The clinical treatment of metabolic syndrome in pregnant women presents specific challenges, since many of the common therapeutic interventions may not be safe or appropriate during pregnancy. The choice of medications and interventions should be careful, considering the well-being of the mother and fetus. For example, some medications commonly used to treat hypertension or control blood glucose may have potential adverse effects on fetal development, and therefore their use requires a careful evaluation of the risks and benefits.

2 MATERIALS AND METHODS

The systematic literature review was performed following the PRISMA checklist. Using the databases PubMed, Scielo and Web of Science. Inclusion criteria: studies available in full text; studies written in English, Portuguese or Spanish and studies conducted in humans. Exclusion criteria: Studies not related to the clinical treatment of metabolic syndrome in pregnant women; studies with samples composed only of animals; studies with inadequate methodology or low quality. We used 5 descriptors for the theme: Metabolic Syndrome; Gestation; Clinical Treatment; Therapeutic Interventions; Cardiovascular Risk Factors.

3 FINDINGS

The 7 studies analyzed noticed that in cases of metabolic syndrome in women, it was found that the vast majority, approximately 88.3%, had high levels of triglycerides (TGs) above the cutoff point established by the International Diabetes Federation (IDF) for the diagnosis of diabetes mellitus (DM). In addition, approximately 83.9% of these women had elevated blood glucose (Grieger JA, et al. 2018).

The components of MS that have been shown to increase the risk of preeclampsia (PE) were high blood pressure, elevated triglycerides, and elevated waist circumference, after adjusting for factors such as maternal body mass index, age, study center, ethnicity, socioeconomic status, physical activity, smoking, depressive status, and fetal sex (Barrett HL, et al. 2014).

The individual components of metabolic syndrome (MS) that were shown to increase the risk of gestational diabetes (GDM) were high triglycerides, high blood pressure, and high glucose. Elevated waist

circumference and reduced HDL-C levels showed no significant association with the risk of GDM. Women with metabolic syndrome had a substantially higher risk for GDM (White SL, et al. 2017).

Regarding the risk of fetal growth restriction (SGA), there was an increase associated with high blood pressure, but none of the other metabolic components, nor the metabolic syndrome itself, showed a significant association with SGA. In the case of preterm births (TBPs), the risk was increased in women with elevated triglycerides, but none of the other individual metabolic components, nor the metabolic syndrome itself, has been shown to increase the risk of TBPs (Phillips CM, 2013).

Lifestyle changes, such as personalized nutritional guidelines and encouragement of moderate physical activity, are fundamental pillars in the treatment of metabolic syndrome in pregnant women. These measures contribute to controlling excessive weight gain and maintaining healthy glucose and lipid levels (Spradley FT, Palei AC and Granger JP, 2015).

For the control of dyslipidemias, it is possible to use drugs such as statins, which are safe in certain situations and under appropriate medical supervision. However, during pregnancy, drug therapy for dyslipidemias is usually avoided or restricted to very specific cases, choosing to prioritize lifestyle changes (Magann EF, et al. 2013).

In the treatment of systemic arterial hypertension in pregnant women, some classes of antihypertensive drugs are considered safe and recommended during pregnancy. Examples include methyldopa, labetalol, and long-acting nifedipine. The choice of the appropriate medication should consider the specific clinical situation of the pregnant woman, always with regular medical follow-up to monitor blood pressure and response to treatment (Macdonald-Wallis C, et al. 2013).

For the control of gestational diabetes, initial treatment measures usually involve lifestyle changes, such as proper diet and moderate physical activity. In some cases, insulin may be prescribed to ensure proper control of glucose levels. The use of oral diabetes medications during pregnancy is rare and generally avoided due to the potential risks to the fetus (Macdonald-Wallis C, et al. 2013).

4 FINAL CONSIDERATIONS

Metabolic syndrome in pregnant women is a clinical challenge that requires a careful and integrated approach. Research has shown that the clinical treatment of this condition should be guided by a multidisciplinary approach, involving obstetricians, endocrinologists, nutritionists and physiotherapists. Lifestyle changes, such as personalized nutritional guidelines and moderate physical activity, are critical to controlling the components of metabolic syndrome and ensuring a healthy pregnancy.

Regarding medications, the approach should be judicious and selective, prioritizing safety for both the mother and the fetus. Some medications are considered safe during pregnancy and can be used to treat dyslipidemias, systemic arterial hypertension, and gestational diabetes. However, drug therapy should be

conducted with caution, considering the particularities of each case and under appropriate medical supervision.

REFERENCES

Grieger JA, Bianco-Miotto T, Grzeskowiak LE, et al. Metabolic syndrome in pregnancy and risk for adverse pregnancy outcomes: A prospective cohort of nulliparous women. PLoS Med. 2018;15(12):e1002710. Published 2018 Dec 4. doi:10.1371/journal.pmed.1002710

Barrett HL, Dekker Nitert M, McIntyre HD, Callaway LK. Normalizing metabolism in diabetic pregnancy: is it time to target lipids?. Diabetes Care. 2014;37(5):1484-1493. doi:10.2337/dc13-1934

White SL, Pasupathy D, Sattar N, et al. Metabolic profiling of gestational diabetes in obese women during pregnancy. Diabetologia. 2017;60(10):1903-1912. doi:10.1007/s00125-017-4380-6

Phillips CM. Metabolically healthy obesity: definitions, determinants and clinical implications. Rev Endocr Metab Disord. 2013;14(3):219-227. doi:10.1007/s11154-013-9252-x

Spradley FT, Palei AC, Granger JP. Increased risk for the development of preeclampsia in obese pregnancies: weighing in on the mechanisms. Am J Physiol Regul Integr Comp Physiol. 2015;309(11):R1326-R1343. doi:10.1152/ajpregu.00178.2015

Magann EF, Doherty DA, Sandlin AT, Chauhan SP, Morrison JC. The effects of an increasing gradient of maternal obesity on pregnancy outcomes. Aust N Z J Obstet Gynaecol. 2013;53(3):250-257. doi:10.1111/ajo.12047

Macdonald-Wallis C, Tilling K, Fraser A, Nelson SM, Lawlor DA. Gestational weight gain as a risk factor for hypertensive disorders of pregnancy. Am J Obstet Gynecol. 2013;209(4):327.e1-327.e17. doi:10.1016/j.ajog.2013.05.042