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Review Article

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Cardiopathies in Pregnancy: A Multidisciplinary Approach

Ian Caldeira Ruppen[1*], Renam Arthur de Sousa[1], Lara Beatriz Dallaqua Bitiati[1], Gabriel Petermann[2], Alana Reigota da Costa Rosa[1], Luka Valcarenghi Pannebecker[1], Luana Padovani[1], Camilla Antunes Zanini[3], Juliana Eli Bartz Siminatto[4], Larissa da Rosa Piccoli[1], Clovis Cavalcanti de Albuquerque Neto[2], Ana Renatha Porto Melo Bandeira[5], Ana Claudia Mansano Girotto[6], Ademicris Santin[2], Isabela Viana Veronez[1], Camila Yuri Kakumoto Tsuneto[1]

Institution:
[1]Centro Universitário Ingá – Uningá, Maringá, PR, Brazil.
[2]Faculdade Cesumar – Unicesumar, Maringá, PR Brazil.
[3]Faculdade Morgana Potrich – FAMP, Mineiros, GO, Brazil.
[4]Faculdade Assis Gurgacz - FAG, Cascavel, PR, Brazil.
[5]Universidad Autónoma San Sebastián - UASS, Paraguay
[6]Universidade Paranaense – UNIPAR, Umuarama, PR, Brazil

Abstract
The presence of cardiopathy during pregnancy is one of the leading causes of maternal and fetal morbidity and mortality. The physiological hemodynamic changes of pregnancy can exacerbate preexisting cardiac conditions or unveil previously undiagnosed heart diseases. Effective management of these patients requires a multidisciplinary approach, involving obstetricians, cardiologists, anesthesiologists, and other healthcare professionals. Early diagnosis and continuous monitoring are essential to identify potential complications and implement appropriate interventions. This article reviews current strategies for managing cardiopathies during pregnancy, emphasizing the importance of collaboration between medical specialties to ensure positive outcomes for both mother and child.

***Correspondence:**
Ian Caldeira Ruppen, Centro Universitário Ingá - Uningá, Maringá, Paraná, Brazil. Email: Ian2ruppen@gmail.com

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Introduction

Pregnancy imposes a series of physiological adaptations on the maternal body, especially in the cardiovascular system. The increase in plasma volume, cardiac output, and the reduction of peripheral vascular resistance are changes that, while necessary to sustain a healthy pregnancy, may exacerbate preexisting cardiac conditions or trigger manifestations of latent cardiopathies. It is estimated that cardiopathies are among the leading causes of maternal morbidity and mortality worldwide, posing particular challenges in low- and middle-income countries where resources for diagnosis and management are often limited. Cardiopathies during pregnancy can be classified as congenital or acquired. Congenital conditions include structural defects present from birth, while acquired conditions encompass those developed later, such as cardiomyopathies or valvular diseases. The presence of cardiopathy increases the risk of complications, including heart failure, arrhythmias, and thromboembolic events, and is also associated with adverse fetal outcomes such as intrauterine growth restriction and preterm birth.

Cardiopathies in pregnancy include congenital conditions like septal defects and repaired tetralogy of Fallot and acquired conditions like cardiomyopathies, valvular diseases, and systemic arterial hypertension with cardiac repercussions. When undiagnosed or inadequately treated, these pathologies can lead to severe complications, including heart failure, arrhythmias, thromboembolism, and sudden death. Additionally, fetal risks such as prematurity, intrauterine growth restriction, and perinatal mortality underscore the need for robust clinical strategies. A multidisciplinary approach is a cornerstone in caring for pregnant women with cardiopathies. Collaborative work among cardiologists, obstetricians, anesthesiologists, neonatologists, and other healthcare professionals allows for comprehensive evaluation and personalized case management. Furthermore, continuous education and adherence to clinical guidelines are essential to implementing evidence-based care.

Objectives

This review aims to explore the specificities of cardiopathies during pregnancy, addressing diagnostic challenges, available therapeutic interventions, and the relevance of multidisciplinary follow-up in improving maternal and neonatal outcomes.

Materials and Methods

A bibliographic review of articles published in the PUBMED, ScienceDirect, and Scielo databases was conducted to support the study.

Discussion

Managing pregnant women with cardiopathies requires a deep understanding of the physiological changes in pregnancy and how they interact with underlying cardiac pathology. The increase in plasma volume and cardiac output, which primarily occurs in the second trimester, can destabilize previously stable cardiac conditions. Additionally, the reduction in systemic vascular resistance may mask symptoms of heart failure, complicating early diagnosis of complications. Risk stratification is a crucial step in managing these patients. Factors such as the New York Heart Association (NYHA) functional class, the presence of cyanosis, left ventricular function, and a history of previous cardiac events are used to predict the risk of complications during pregnancy. High-risk patients require intensive monitoring and may benefit from prophylactic

interventions, such as anticoagulant use or interventional procedures before or during pregnancy. Early diagnosis of complications is facilitated by tools like echocardiography, which allows for detailed assessment of cardiac anatomy and function without exposure to ionizing radiation. Fetal echocardiography also plays an essential role in detecting congenital heart malformations, enabling early planning of neonatal interventions.

Therapeutic management must be carefully individualized, considering the risks and benefits for both the mother and the fetus. Many medications used to treat cardiac diseases cross the placenta and may have teratogenic or fetotoxic effects. For instance, angiotensin-converting enzyme inhibitors (ACE inhibitors) are contraindicated during pregnancy due to the risk of fetal malformations. Beta-blockers can be used but require monitoring due to the risk of intrauterine growth restriction and fetal bradycardia. The ideal delivery route for pregnant women with cardiopathies depends on the patient's clinical condition and hemodynamic stability. Vaginal delivery is generally preferred, as it is associated with less blood loss and a lower risk of thromboembolic complications. However, the second stage of labor may be shortened using forceps or vacuum extraction to reduce maternal effort. Cesarean delivery is reserved for obstetric indications or when maternal cardiac conditions contraindicate labor. A multidisciplinary approach is essential for successfully managing these patients. Effective communication among healthcare team members enables early identification of complications and timely interventions. Additionally, psychological support and reproductive counseling are integral components of care.

Conclusion

Managing cardiopathies during pregnancy demands a highly personalized and multidisciplinary approach. Pregnancy imposes a physiological burden on the woman's cardiovascular system, potentially triggering or worsening preexisting cardiac conditions. The healthcare team must be well-prepared to diagnose complications early and implement appropriate therapeutic strategies to improve maternal and fetal outcomes. Collaboration among obstetricians, cardiologists, anesthesiologists, neonatologists, and other professionals is critical to ensuring an integrated approach. This team must identify risk factors, monitor the clinical progression of the pregnant woman, and adjust treatment as necessary. Additionally, diagnostic technologies such as echocardiograms and complementary tests play a significant role in early complication detection and care planning.

Pharmacological treatment must be carefully considered, balancing maternal benefits and potential fetal risks. The choice of delivery route should be based on the severity of the maternal condition and the risk of complications. Although vaginal delivery is generally preferred, intensive monitoring and timely interventions may be required to ensure the safety of both mother and baby. Finally, psychological counseling should also be integrated into the care plan, as the emotional impact of cardiac complications during pregnancy can be significant. Thus, managing pregnant women with cardiopathies extends beyond physical disease control and involves a holistic approach encompassing the physical, emotional, and psychological well-being of both the mot her and the baby.

References

1. Regitz-Zagrosek V, et al. ESC Guidelines on the management of cardiovascular diseases during pregnancy. Eur Heart J. 2018.
2. Siu SC, Colman JM. Heart disease and pregnancy. Heart. 2020.
3. Elkayam U, Goland S, Pieper PG, et al. High-risk cardiac conditions in pregnancy: Part I. J Am Coll Cardiol. 2019.
4. Thorne S, MacGregor A, Nelson-Piercy C. Risks of contraception and pregnancy in heart disease. Heart. 2019.
5. Roos-Hesselink JW, et al. Pregnancy in women with cardiovascular disease: a 10-year follow-up study. J Am Coll Cardiol. 2020.
6. Creanga AA, Syverson C, Seed K, et al. Pregnancy-related mortality in the United States. Obstet Gynecol. 2020.
7. Mendelson MA. Cardiovascular physiology in pregnancy. Clin Cardiol. 2019.
8. Cahill AG, et al. Cardiovascular and obstetric management of pregnancy in women with heart disease. Obstet Gynecol Clin North Am. 2020.
9. Sliwa K, et al. Maternal cardiology: A global call to action. Lancet. 2021.
10. Ramlakhan KP, et al. Management of heart failure during pregnancy. Eur J Heart Fail. 2021.
11. Mamas MA, et al. Cardiovascular disease in pregnancy: lessons from maternal mortality. Heart. 2019.
12. Van Hagen IM, et al. Global cardiac risk assessment in pregnant women with cardiovascular disease. Am J Obstet Gynecol. 2021.
13. Baris L, et al. Cardio-obstetrics: multidisciplinary care of pregnant women with heart disease. Can J Cardiol. 2021.
14. Anthony J, et al. Peripartum cardiomyopathy: current state and future research. J Clin Med. 2020.
15. Mehra MR, et al. Contemporary diagnosis and management of peripartum cardiomyopathy. Circulation. 2022.
16. Taran, L., & Peltonen, T. (2020). Pregnancy and Heart Disease: A Multidisciplinary Approach. Cardiology Clinics, 38(3), 381-388.
17. Lang, R. M., & Bierig, M. (2019). Recommendations for the Use of Echocardiography in Pregnancy. Journal of the American Society of Echocardiography, 32(10), 1150-1158.