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SHORT EDITORIAL

Chagas Disease and Maternal Mortality: An Overlooked Link in a Neglected Disease in Brazil

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Short Editorial referring to the article: Maternal Deaths by Chagas' Disease in Brazil

Maternal mortality (MM), defined as the death of a woman during pregnancy, childbirth, or within 42 days postpartum, is a key indicator of maternal health and the quality of care provided by the health care system to prevent and manage complications during this period.[1]

In 2020, there were 287,000 maternal deaths worldwide, resulting in a maternal mortality ratio (MMR) of 223 deaths per 100,000 live births.[1] According to the World Health Organization (WHO), 95% of these deaths will occur in low- and middle-income countries, and 90% will be preventable.[2]

Table 1 shows the distribution of MM and MMR in different geographic regions, including Brazil.

Approximately 75% of maternal deaths are due to obstetric complications, which include harmful interventions, omissions, indirect treatments, or a cascade of events triggered by these causes.[1,2] These complications are classified as direct obstetric maternal mortality (DOMM).[1-3] In Brazil and worldwide, the main causes of DOMM are hypertensive disorders, hemorrhage, puerperal infections, and complications related to abortion.[2,3]

The remaining 25% of maternal deaths are due to preexisting or pregnancy-related conditions aggravated by the physiological effects of pregnancy, known as indirect obstetric MM (IOMM).[1-3] Heart disease (HD), which falls into this category, accounts for one third of MM (equivalent to 8% of total IOMM).[4-6] Figure 1 presents an overview of MM from direct and indirect obstetric causes.

Keywords

Pregnancy; Maternal Mortality; Chagas Disease; Cardiovascular Diseases.

The broad spectrum of structural and electrical HD can be diagnosed in 1% to 4% of pregnancies worldwide, with approximately 140 million births annually.[1-2] Each country has its own epidemiology, which is often not fully understood.[4-5] In developed countries, HD accounts for 0.6% of maternal deaths, compared to 3.9% in developing countries.[6]

Epidemiologic studies indicate that congenital HD (CHD) is the most common condition diagnosed in pregnant women in developed countries (60% to 75%),[7] whereas rheumatic HD (RHD) predominates in underdeveloped and developing countries (60% to 88%).[8] In addition, cardiomyopathies affect 6% to 10% of pregnancies in various studies.[4-7] In Brazil, this profile is expected to be further clarified with the upcoming publication of the REBECGA Brazilian Registry of Pregnancy and Heart Disease.[9]

Risk stratification scores for complications and mortality in pregnant women with HD show that heart failure (HF), left ventricular dysfunction (EF < 30% to 40%), and arrhythmias are strong predictors of complications and death (both maternal and fetal).[4-5]

In this context, the article by Souza et al. highlights that HD caused by Chagas disease (CD), which affects 1,156,821 Brazilians (0.61% of the population of Brazil), poses a significant risk to 119,298 women of childbearing age (15 to 44 years) infected with *Trypanosoma cruzi* (TC).[10] These women are at risk of complications during pregnancy and, without trypanocidal treatment, are at increased risk of transmitting the disease to their children.[10]

Chronic chagasic cardiomyopathy (CCC), which progressively affects approximately 30% of patients with CD, leads to progressive ventricular systolic

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Table 1 – MM and MMR in Brazil and worldwide in 2020 (adapted from references 1, 2, 6).

	Whole World	Sub-Saharan Africa	Northern Africa and Western Asia	Central and Southern Asia	Eastern and South-Eastern Asia	Latin America and the Caribbean	Oceania (excluding Australia and New Zealand)	Australia and New Zealand	Europe and Northern America	Brazil
*Number of maternal deaths	287,000	202,000	9,400	48,000	18,000	8,400	540	13	647	1,965
Percentage of maternal deaths	100%	70%	3.3%	17%	6.3%	3%	0.2%	0.005%	0.2%	23% of MM in LA and the Caribbean
MMR	223 (202-255)	545 (477-654)	84 (68-107)	129 (114-149)	74 (62-92)	88 (72-99)	173 (120-255)	4 (3-4)	13 (11-15)	72

**Number of live births per year: 140,000,000. * Overall MM: 0.007% (75% = direct maternal obstetric death; 25% = indirect maternal obstetric death). *Mortality due to HD (=indirect maternal obstetric death) – 1% (developed countries – 0.6%; developing countries – 3.9%). MM: Maternal mortality; MMR: Maternal mortality ratio; LA: Latin America;*

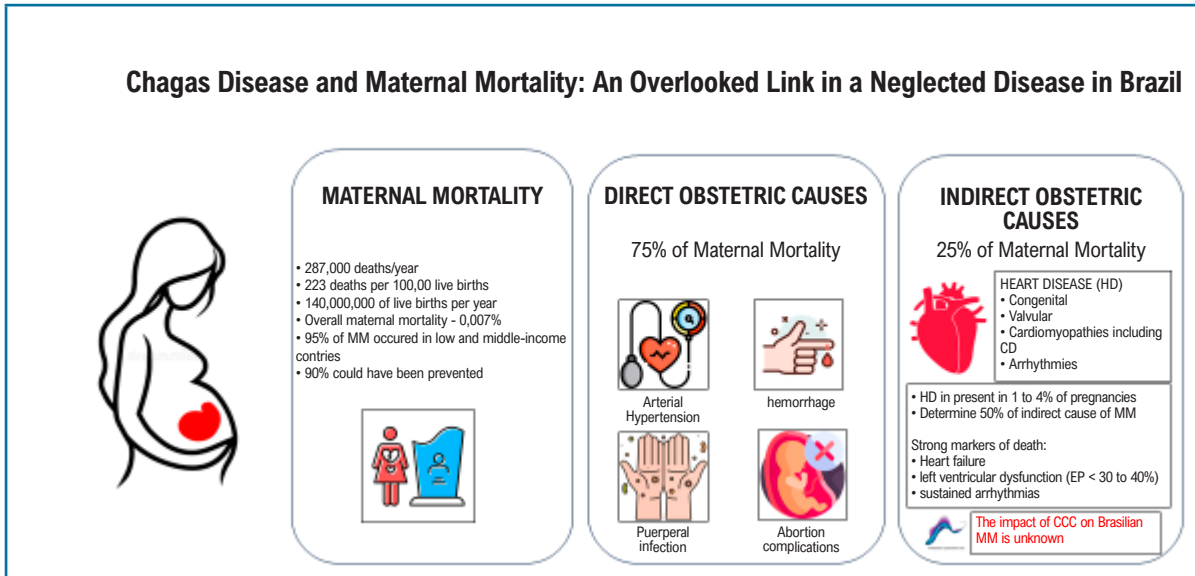

Figure 1 – Direct and indirect obstetric causes of maternal mortality.
Authors of the figure: Rivera MAM, Rivera IR, Oliveira GMM, Echeverri AGM, Ávila, WS.[1-12] CCC: chronic chagasic cardiomyopathy; CD: Chagas Disease; MM: maternal mortality

dysfunction (VSD), conduction system alterations (sinus bradycardia and atrioventricular blocks), and atrial and ventricular arrhythmias—all predictors of complications and death in pregnant women with HD.[5,10,11]

The effect of CD on pregnancy remains uncertain. Some studies have reported a high incidence of pregnancy complications, perinatal mortality, and low neonatal birth weight, classifying pregnant women with TC as an obstetric high-risk group.[11] The prognosis of pregnant women with CCC is closely related to the severity of VSD and the functional class of heart failure (FCHF) at the beginning of pregnancy. Patients in FCHF I/II typically deliver without complications, but those in FCHF III/IV have a 25% to 50% risk of death.[11]

Authors highlight the underreporting of CD at all stages in Brazil, estimating a higher number of infected individuals, including women of childbearing age, who consequently do not receive adequate counseling, treatment or follow-up for their condition.[10] For those with CCC, this increases the risk of complications and MM.[10]

The article highlights the lack of data on the true prevalence of CD in pregnant women and its impact on MM in Brazil.[10] To contribute to this knowledge, the authors propose an estimate of the MM rate due to CCC in Brazil, ranging from 0.08% to 1.0% among pregnant women with the cardiac form, based on data on all-cause mortality attributed to CD, CD in pregnant women, and mortality in pregnant women with cardiac disease.[10]

Authors call attention to this neglected disease—characterized by under-surveillance, under-reporting, low rates of trypanocidal treatment, inadequate follow-up of indeterminate carriers, and untreated progression to severe forms—and its difficult-to-quantify role in maternal morbidity and mortality in Brazil.[10]

As the article concludes, more studies are needed to identify CD in pregnant women and prevent mortality in this group,[10] emphasizing that any effort to reduce MM is beneficial to both women and society. MM is a violation of women's rights, especially when its prevention has been neglected.[1,10,12]

According to the 2030 Agenda for Sustainable Development, adopted by all members of the United Nations in 2015, there has been a 34% reduction in MMR between 2016 and 2020. However, significant efforts and investments will be needed to reach the 2030 target of reducing the global MMR to less than 70 maternal deaths per 100,000 live births.[1,12]

In Brazil, this target is to reduce the current MMR from 55 to a maximum of 30 deaths per 100,000 live births. This article highlights an important working scenario for this agenda.

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