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Review Article

Non-communicable diseases in pregnancy in Uganda: a growing threat to maternal and neonatal outcomes

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ABSTRACT

In Uganda, the number of non-communicable diseases (NCDs) that contribute to poor maternal and newborn outcomes is rising. These diseases include hypertension, diabetes mellitus, cardiovascular diseases, asthma and thyroid disorders. The burden of non-communicable diseases (NCDs) among pregnant women is increasing due to increased urbanization, changes in lifestyle and constraints in the health system. The epidemiology, pathophysiology, screening methods and accepted practices of the common NCDs affecting pregnant women in Uganda are examined in this review. The report also highlights significant shortcomings in the health system and contrasts national recommendations with international standard.

Keywords: Asthma, Cardiovascular diseases, Diabetes mellitus, Fetal complications, Hypertension, Kampala international university, Maternal complications, Non-communicable diseases, Prenatal care, Thyroid disorders, Yei civil hospital

INTRODUCTION

Over 70% of deaths worldwide are caused by NCDs, which have a major effect on women of reproductive age.[1] Although infectious diseases like HIV and malaria continue to be the most common in Uganda, changes in lifestyle, urbanization and demographics are contributing to an increase in the prevalence of NCDs. Pregnancy-related or pre-existing NCDs increase the risk of problems for both the mother and the fetus. This review explores the prevalence, pathophysiology and diagnosis of prevalent non-communicable diseases (NCDs) in pregnancy in Ugandan pregnant settings.

HYPERTENSIVE DISORDERS OF PREGNANCY

In Uganda, maternal morbidity is greatly increased by hypertension, which complicates 5-10% of pregnancies globally.[2] In low- and middle-income countries, hypertensive disorders during pregnancy are a leading cause of maternal death. Due to hypertensive disorders in pregnancy, Ugandan women have experienced higher than anticipated rates of morbidity and mortality; for severe preeclampsia, the case specific fatality ratio is 1940 per 100,000 live births.[3] According to a prospective cohort that evaluated near-miss cases according to WHO criteria in more than 2600 Ugandan women, severe preeclampsia was the leading cause of morbidity. This significant burden is caused by a lack of lower level healthcare personnel who can identify and treat hypertensive disorders in pregnancy and delayed diagnosis of hypertension in pregnancy.[4]

Abnormal trophoblastic invasion of the spiral arteries causes endothelial injury, vasospasm and ischemia, which leads to preeclampsia.[5] It presents as a systemic inflammatory syndrome that can damage the liver, kidneys, lungs and central nervous system, among other maternal organs. Placental insufficiency, placental abruption, intrauterine growth restriction, premature birth

and intrauterine fetal death are among the placenta-related consequences of preeclampsia. Thrombocytopenia, disseminated intravascular coagulation, acute pulmonary edema, cerebrovascular disorders and chronic hypertension are among the related systemic complications of the disorder. The risk of developing these conditions is 3-25 times higher than that of women without hypertension.[6]

Chronic hypertension is a major risk factor for preeclampsia and may be present or pre-exist before 20 weeks of pregnancy. Urine protein analysis and blood pressure measurement at each visit are part of routine prenatal care screening for hypertensive disorders in pregnancy. The WHO defines diagnostic thresholds as blood pressure of ≥140/90 mmHg measured twice, separated by at least 4 hours apart or a single reading of ≥160/110 mmHg. According to Uganda Clinical Guidelines, pregnant women should have their blood pressure checked regularly during every prenatal visits and severe cases should be referred to specialized hospitals. Only 71.8% of Ugandan women who had ANC for their most recent delivery within the previous five years had their blood pressure checked and 39.4% had their proteinuria evaluated.[7] Essential equipment, such as blood pressure monitors and urine test strips, are not readily available, according to surveys of necessary supplies for the management of hypertensive disorders in pregnancy. In rural areas, lack of resources and skilled workers results in delays in early detection and treatment, which can cause serious complications or even maternal mortality from hypertensive disorders.[8]

DIABETES IN PREGNANCY

According to world health organization, Gestational diabetic mellitus (GDM) is carbohydrate intolerance of varying severity that initially occur or is diagnosed during the second or third trimester of the pregnancy. According to a recent systematic analysis, the pooled global prevalence of GDM ranges from 2.075% to 38.25% in Africa, it ranges from 9% to 13.6% and in Ugandan health facilities, it ranges from 15.6% to 30.3%.[9-11] Increased placental hormones, such as progesterone and human placental lactogen, during pregnancy cause insulin resistance and β-cell malfunction, making it a diabetogenic state. Adverse maternal and neonatal outcomes as well as an increased risk of diabetes and cardiovascular disease in later life are linked to gestational diabetes mellitus.

Women with GDM are less likely to experience unfavourable pregnancy outcomes if they are diagnosed early. Therefore, it is recommended by World Health Organization that all pregnant women receiving prenatal care undergo routine GDM screening. Although it is recommended globally by World Health Organization to use the oral glucose tolerance test (OGTT) for universal screening of GDM at 24-28 weeks, selective risk-based screening is recommended in Uganda Clinical Guidelines. Compared to universal screening using a one-step 75 g OGTT, selective risk factor-based screening missed 31.11% of patients with GDM.[12] GDM screening among pregnant women in Uganda is affected by selective risk factor screening recommendation, inconsistent follow-up at antenatal care and limited access to oral glucose tolerance testing.

CARDIOVASCULAR DISEASES IN PREGNANCY

Over 10% of all maternal death cases worldwide are caused by cardiovascular diseases, making it one of the top causes of maternal mortality globally. Nonetheless, there are notable differences in the prevalence and consequences of heart disease during pregnancy between high-income countries (HICs) and low- and middle-income countries (LMICs). Rheumatic heart disease (RHD) is still prevalent in LMICs, in contrast to HICs where congenital heart disease accounts for the majority of cardiac disease burden.[13] Rheumatic heart disease (RHD) continues to be the most common cardiovascular disease among pregnant women in Uganda.[14]

For women with cardiomyopathy and valvular diseases, pregnancy exacerbates the symptoms of heart failure by increasing cardiac output and blood volume. Due to physiological changes during pregnancy, pregnant women with heart disease are particularly vulnerable to unfavourable cardiovascular events. With significant regional and national differences in the burden, cardiovascular adverse events (AEs) during and after pregnancy remain a major global cause of maternal death and morbidity. The symptoms of cardiovascular diseases and normal physiological changes in pregnancy are similar, making diagnosis and treatment heart disease challenging.[15]

During antenatal care, a detailed cardiac history, echocardiography and electrocardiograms are essential diagnostic tools. The therapy of rheumatic heart disease during pregnancy is emphasized in Ugandan clinical guidelines however, due to the lack of cardiology services in the majority of the referral hospitals, implementation is subpar. In many hospitals in Uganda, the absence of qualified cardiologists, diagnostic equipment and necessary drugs for cardiovascular disorders frequently causes delays in diagnosis and proper treatment.

ASTHMA IN PREGNANCY

The most prevalent respiratory disorder affecting pregnant women is Asthma. Despite being reversible, it can have an adverse impact on perinatal outcomes and women quality of life, particularly in severe and poorly managed cases. On the other hand, pregnancy affects how asthma develops by altering the immunological, hormonal and respiratory systems. One of the main characteristics of asthma is flare-ups, which can be a serious issue if they are severe enough to necessitate hospitalization or even intensive care unit admission.[16] The prevalence of asthma among Ugandan women of reproductive age is estimated to be between 3

and 5%.[17] Chronic inflammation and hyper-responsiveness of the airways cause Asthma. The severity of Asthma may get better, get worse or stay the same throughout pregnancy. In order to screen for asthma during pregnancy, history of symptoms, respiratory system examination and spirometry are essential. When accessible, peak expiratory flow monitoring may be employed. According to Ugandan clinical standards, pregnant women should continue taking their Asthma treatments nevertheless, most Ugandan hospitals still struggle with a lack of proper diagnostic equipment, such as spirometers and peak flow meters. Another difficulty in managing asthma during pregnancy in Uganda is the lack of availability to inhaled corticosteroids and misunderstandings about the condition among the general public and medical professionals.

THYROID DISORDERS IN PREGNANCY

Thyroid dysfunction is one of the most common endocrine disorders. Pregnancy complications from this condition have been associated with adverse outcomes for both the mother and the fetus. However, information about thyroid disorders in pregnant women in low-income countries is scarce and inconsistent.[18]

In Uganda, hypothyroidism and subclinical thyroid dysfunction are not well recognized. If left untreated, pregnancy raises thyroid-binding globulin and changes the control of TSH, endangering the neurodevelopment of the fetus. Although they are diagnostic, free T4 and thyroid stimulating hormone are not easily accessible in Uganda.[18] Access to trustworthy diagnostics and universal screening for thyroid disorders during pregnancy are lacking in Uganda. For high-risk cases, screening is recommended. However inconsistent follow-up and limited access to thyroid function tests pose serious problems.

CONCLUSION

In Uganda, the prevalence of non-communicable diseases during pregnancy is rising and has a major negative impact on the health of both the mother and the fetus. Frameworks for addressing these conditions are provided by national guidelines, although implementation varies, especially in rural areas. Access to necessary medications is still limited and screening services are underutilized. Improving maternal and newborn outcomes requires strengthening the healthcare system, guaranteeing uniform training and including non-communicable disease care into standard prenatal care.

Recommendations

Develop and implement a national policy framework that includes integration of routine ANC with NCD screening and care (such as diabetes, hypertension, asthma and thyroid problems). Replace the current selective risk factor-based screening recommendation for gestational diabetes mellitus (GDM) with universal screening using a standardized 75 g OGTT at 24–28 weeks. Ensure the availability of functional medical equipment, such as blood pressure monitors, urine dipsticks, glucometers, OGTT kits, peak flow meters and spirometers, as well as investigations, such as echocardiograms, electrocardiograms, TSH, T3 and T4 testing kits. Provide district hospitals and Health Center IVs with the tools and skills they need to manage mild-to-moderate non-communicable diseases in pregnancy and create reliable referral networks for more serious cases. To monitor prevalence, treatment outcome and resource shortages, incorporate non-communicable disease indicators into the health management information system (HMIS). Ensure that frontline health workers are informed of updated and streamlined clinical practices for managing non-communicable diseases during pregnancy.

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