Pregnancy-related cardiac complications: A consequence of the burden of rheumatic heart disease in sub-Saharan Africa

Les complications cardiaques liées à la grossesse : une conséquence des valvulopathies rhumatismales en Afrique sub-saharienne

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The paper by Diao et al., published in the present issue of the Archives of Cardiovascular Diseases, deserves attention because original data on the contemporary burden of heart disease in sub-Saharan Africa are scarce [1]. This paper also brings a reminder of the maternal risk inherent to pregnancy in women with rheumatic heart disease.

The distribution of heart diseases in this series from a tertiary African centre is markedly different from series reporting heart disease during pregnancy in Western countries. In series from Northern America or Europe, congenital heart disease is the most frequent heart disease during pregnancy, followed by valvular heart disease [2,3]. Most cases of maternal death during pregnancy in the UK registry are related to myocardial disease, pulmonary hypertension and myocardial infarction, death related to valvular disease being rare and mostly due to infective endocarditis [4]. Conversely, in the series by Diao et al., 92% of women hospitalized because of heart disease during pregnancy in a University Hospital from Senegal presented with rheumatic heart valve disease. Rheumatic mitral stenosis was by far the most frequent cause of heart disease during pregnancy, accounting for 64% of all cases. These striking discrepancies in the distribution of heart disease during pregnancy are the consequence of differences in the epidemiology of heart disease between Western and developing countries. The emergence of congenital heart disease as the leading cause of heart disease during pregnancy in Western countries is the consequence of decades of progress in the detection and treatment of congenital heart disease, which is not the case in developing countries. Although heart valve disease remains prevalent in Western countries, there has been a shift from rheumatic to degenerative aetiologies.

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thereby explaining a dramatic decrease in the prevalence of severe heart valve disease in young women [5]. Although accurate statistics are lacking, the incidence of rheumatic fever is estimated at 13 cases per 100,000 per year in sub-Saharan Africa [6]. The consequence is a prevalence estimated between 2.7 and 14.3 per 1000 in school-age children in Africa [7]. However, it should be stressed that such estimations are based on clinical screening, while estimations between 21.5 and 30.4 per 1000 have been reported in Cambodia and Mozambique when using systematic echocardiographic screening [8]. Besides its high prevalence, rheumatic heart disease in developing countries is characterized by the occurrence of severe heart valve disease at a younger age than in Western countries, as illustrated by series of percutaneous mitral commissurotomy [9]. Thus, mitral stenosis, which affects women more frequently than men, is particularly prevalent in women of childbearing age.

Besides epidemiological differences, the series by Diao et al. also highlights the considerable risk related to pregnancy in women with severe asymptomatic mitral stenosis. Although women were hospitalized in a tertiary centre, 15 pregnancy-related deaths occurred among the 32 women with mitral stenosis and the presence of mitral stenosis was a significant predictive factor of maternal mortality in this series. These figures should of course take into account the fact that most women were hospitalized because of heart failure, which was also a strong predictive factor of maternal mortality in the series by Diao et al., as in others. The tolerance of mitral stenosis is particularly poor during pregnancy because all haemodynamic changes contribute to deterioration: the 30 to 50% increase in cardiac output determines a sharp increase in mitral gradient, which is further enhanced by the shortening of diastole due to tachycardia [4]. Even in women who were asymptomatic before pregnancy, most develop dyspnoea during pregnancy and the majority of those with mitral valve area <1.5 cm² develop New York Heart Association class III or IV dyspnoea [10]. Haemodynamic decompensation of mitral stenosis during pregnancy exposes patients to a particularly poor prognosis during the peripartum period because of the superimposed haemodynamic stress related to delivery. This is clearly shown in the paper by Dao et al., in which the mortality of pregnant women with decompensated mitral stenosis was more than 50%.

It is important to draw attention to the frequency and risks of pregnancy-related haemodynamic decompensation in women with mitral stenosis in developing countries, which contrasts with recent series from Western countries reporting maternal mortality rates below 3% [10–12]. These differences may be due to a diagnosis at an earlier stage and to the use of therapeutic resources before the occurrence of complications, as recommended in guidelines [13]. In particular, early diagnosis enables beta-blockers to be prescribed, with a striking efficacy on mitral gradient and pulmonary artery pressures. However, when symptoms and/or pulmonary hypertension persist despite use of beta-blockers, possibly combined with diuretics, percutaneous mitral commissurotomy should be considered before delivery [13,14]. Unfortunately, percutaneous mitral commissurotomy was not available in the centre used in the study by Diao et al. because of its cost and requirements, in particular experienced interventional cardiologists. This explains why closed-heart commissurotomy is still used during pregnancy as an alternative to percutaneous mitral commissurotomy in developing countries for economic reasons [15].

Another feature of interest is the fact that most cardiac deaths occurred during the postpartum period. It is well known that cardiac output remains increased during the days following delivery and blood shifting from the placenta further increases preload [4]. This underlines the need for a close follow-up during the days following delivery in patients with known heart disease.

Finally, the paper from Diao et al. presents more than an original contribution about the contemporary presentation and prognosis of heart disease during pregnancy in sub-Saharan Africa. Beyond the specific issues related to pregnancy, this work draws attention to the consequences of the persisting high burden of rheumatic heart disease in developing countries. This should be an incentive to encourage the collection of data on the presentation and management of heart valve disease in Africa. Of course, economic considerations remain the main factor limiting the improvement in the prevention of rheumatic fever as well as the early diagnosis of heart valve disease to allow for timely intervention. However, data collection from Africa may contribute to drawing attention to the impact of rheumatic heart disease, which is largely a preventable and curable disease. This paper should also draw to the attention of cardiologists from Western countries the need to remain aware of the possibility of rheumatic mitral stenosis, which remains prevalent in Europe in migrant populations, although rheumatic fever has nearly disappeared in Western countries. This is of particular importance during pregnancy given the impact of mitral stenosis and the possibility of using medical and interventional resources to improve maternal and foetal prognosis.
Rheumatic heart disease and pregnancy-related cardiac complications


